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IDA/R2014-0202/1

May 29, 2014

Closing Date: Tuesday, June 17, 2014 at 6 p.m.

FROM: The Corporate Secretary

Nigeria - Ibadan Urban Flood Management Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Nigeria for an Ibadan Urban Flood Management Project (IDA/R2014-0202), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

Document of
The World Bank

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Report No: PAD687

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 129.1 MILLION
(US$200 MILLION EQUIVALENT)

TO

THE FEDERAL REPUBLIC OF NIGERIA

FOR

THE IBADAN URBAN FLOOD MANAGEMENT PROJECT

MAY 23, 2014

Urban Development & Services Practice (AFTU2)
Country Department AFCW2
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective: April 30, 2014)

Currency Unit	=	Nigerian Naira (NGN)
NGN160.60000161	=	US$1
SDR 0.64529035	=	US$1

FISCAL YEAR

January 1 December 31

ABBREVIATIONS AND ACRONYMS

ARAP	Abbreviated Resettlement Action Plan
CBO	Community Based Organizations
CDA	Community Development Association
CDC	Community Development Committee
CDS	Cross Drainage Structures
CERT	Community Emergency Response Team
CPS	Country Partnership Strategy
CSDP	Community Social Development Project
DA	Designated Account
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSR	Dam Safety Report
EPP	Emergency Preparedness Plan
ESIA	Environment and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environment Screening Sheet
FME	Federal Ministry of Environment
FMWR	Federal Ministry of Water Resources
FPM	Financial Procedures Manual
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIS	Geographic Information System
GRM	Grievance Resolution Mechanism
HFA	Hyogo Framework for Action
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IFRs	Interim Financial Reports
IGR	Internally Generated Revenue
IIFRMM	Ibadan's Integrated Flood Risk Management Masterplan
IAG	Independent Advisory Group
IITA	International Institute for Tropical Agriculture
ISA	International Standards on Auditing
ISP	Implementation Support Plan
ISR	Implementation Status Results and Report
IUFMP	Ibadan Urban Flood Management Project
LEMCs	Local Emergency Management Committees
LGAs	Local Government Areas

LPAs	Local Planning Authorities
LUAC	Land Use Allocation Committee
MDAs	Ministries, Department and Agencies
MIC	Middle Income Country
ML	Management Letter
MoU	Memorandum of Understanding
MPP&UD	Ministry of Physical Planning and Urban Development
NCB	National Competitive Bidding
NDMF	National Disaster Management Framework
NEMA	National Emergency Management Agency
NGOs	Non-Governmental Organizations
NIHSA	Nigeria Hydrological Services Agency
NIMET	Nigeria Meteorological Agency
NSBD	National Standard Bidding Document
OORBDA	Ogun Oshun River Basin Authority
OSEMA	Oyo State Emergency Management Agency
OSEMEPB	Oyo State Ministry of Economic Planning and Budgeting
OSEMF	Oyo State Ministry of Finance
OSEMLH	Oyo State Ministry of Land and Housing
OSEPA	Oyo State Environment Protection Agency
OSMEH	Oyo State Ministry of Environment and Habitat
OSMWR	Oyo State Ministry of Water Resources
OSMW	Oyo State Ministry of Works
OSSWMA	Oyo State Solid Waste Management Authority
OYOWMA	Oyo Waste Management Authority
PC	Performance Contract
PCN	Project Concept Note
PFMU	Project Financial Management Unit
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMC	Project Management Consultancy
PPA	Project Preparation Advance
PPIAF	Public Private Infrastructure Advisory Facility
PRAMS	Project Risk Assessment and Management System
PRIMA	Portfolio and Risk Management System
PSC	Project Steering Committee
PTC	Project Technical Committee
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SA	Subsidiary Agreement
SAI	Supreme Audit Institution
SBD	Standard Bidding Document
SWM	Solid Waste Management

Regional Vice President:	Makhtar Diop
Country Director:	Marie Francoise Marie-Nelly
Sector Director:	Jamal Saghir
Sector Manager:	Alexander E. Bakalian
Task Team Leader:	Sateh Chafic El-Arnaout

FEDERAL REPUBLIC OF NIGERIA
IBADAN URBAN FLOOD MANAGEMENT PROJECT

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PAD DATA SHEET

Nigeria

Ibadan Urban Flood Management Project (P130840)

PROJECT APPRAISAL DOCUMENT

AFRICA

AFTU2

Report No.: PAD687

Basic Information		
Project ID P130840	EA Category A - Full Assessment	Team Leader Sateh Chafic El-Arnaout
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]	
Project Implementation Start Date 17-June-2014	Project Implementation End Date 30-June-2022	
Expected Effectiveness Date 17-Dec-2014	Expected Closing Date 30-June-2022	
Joint IFC No		

Sector Manager	Sector Director	Country Director	Regional Vice President
Alexander E. Bakalian	Jamal Saghir	Marie Francoise Marie-Nelly	Makhtar Diop

Borrower: Federal Republic of Nigeria			
Responsible Agency: Oyo State Government			
Contact:	Mr. Dayo Ayorinde	Title:	Project Coordinator
Telephone No.:	2347059739604	Email:	dayo1ayorinde@yahoo.com

Project Financing Data(in US$ Million)					
[ ] Loan	[ ] Grant	[ ] Guarantee			
[X] Credit	[ ] IDA Grant	[ ] Other			
Total Project Cost:	220.00		Total Bank Financing:	200.00	
Financing Gap:	0.00				

Financing Source	Amount
BORROWER/RECIPIENT	20.00
International Development Association (IDA)	200.00
Total	220.00

Expected Disbursements (in US$ Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Annual	9.00	11.30	26.20	27.00	32.20	34.10	32.10	28.10	0.00
Cumulative	9.00	20.30	46.50	73.50	105.70	139.80	171.90	200.00	200.00

Proposed Development Objective(s)

The project development objective is to improve the capacity of Oyo State to effectively manage flood risk in the city of Ibadan.

Components

Component Name	Cost (US$ Millions)
Component 1: Flood Risk Identification, Prevention and Preparedness Measure	43.0
Component 2: Flood Risk Reduction	149.0
Component 3: Project Administration and Management	8.0

Institutional Data

Sector Board

Urban Development

Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Water, sanitation and flood protection	Flood protection	80		
Water, sanitation and flood protection	General water, sanitation and flood protection sector	20		
Total		100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes		
Theme (Maximum 5 and total % must equal 100)		
Major theme	Theme	%
Social protection and risk management	Natural disaster management	100
Total		100

Compliance	
Policy	
Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	

Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**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**

Key Non Standard Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Financial Management		90 days after Effective Date	once

Description of Covenants

The Recipient shall, not later than ninety (90) days after the Effective Date, cause the Project Implementing Entity to appoint the independent auditors referred to in Section 4.09 (b) of the General Conditions, in accordance with the provisions of Section III of Schedule 2 of the Financing Agreement, with qualifications, experience and terms of reference satisfactory to the Association.

The Recipient shall, not later than ninety (90) days after the Effective Date, cause the Project Implementing Entity to ensure that the training on risk-based internal auditing is provided to Project internal auditor in form and substance satisfactory to the Association.

The Recipient shall, not later than ninety (90) days after the Effective Date, cause the Project Implementing Entity to ensure the updating of the existing computerized financial management system at the Project Financial Management Unit.

Conditions

Source Of Fund	**Name**	**Type**
	Project Implementation Manual	Effectiveness

Description of Condition

The Project Implementing Entity has adopted the Project Implementation Manual, in form and substance satisfactory to the Association.

Source Of Fund	**Name**	**Type**
	Subsidiary Agreement	Effectiveness

Description of Condition		
The Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.		
Source Of Fund	**Name**	**Type**
	Completion of Performance Contracts	Effectiveness
Description of Condition		
The performance contracts between the Office of Oyo State Governor and the Participating MDAs have been executed in form and substance satisfactory to the Association.		
Source Of Fund	**Name**	**Type**
	Completion of Memorandum of Understanding	Effectiveness
Description of Condition		
The memoranda of understandings between the Office of Oyo State Governor and NEMA and NIHSA, have been executed in form and substance satisfactory to the Association.		
Source Of Fund	**Name**	**Type**
	Official establishment of the Independent Advisory Group (IAG)	Effectiveness
Description of Condition		
The Project Implementing Entity has established the Independent Advisory Group with composition, functions and resources satisfactory to the Association.		
Source Of Fund	**Name**	**Type**
	Official nomination of the Project Implementation Unit (PIU)	Effectiveness
Description of Condition		
The Project Implementing Entity has established the Project Implementation Unit with functions, staffing (including hydraulic engineer and monitoring and evaluation specialist) and resources satisfactory to the Association		
Source Of Fund	**Name**	**Type**
	Deduction of counterpart funding at source by FMoF	Effectiveness
Description of Condition		
The Oyo State Governor has sent a letter to the Federal Minister responsible for finance communicating his approval of deduction at source - of agreed sum of counterpart funds required in the respective Fiscal Year and set forth in the corresponding Annual Work Plan and Budget - and transfer of the deducted sums to the Project Account.		

Team Composition			
Bank Staff			
Name	**Title**	**Specialization**	**Unit**
Sateh Chafic El-Arnaout	Sector Leader	Task Team Leader	AFTSN
Asmita Tiwari	Disaster Risk Management Specialist	Co-Task Team Leader in DC	AFTN2
Joseph Ese Akpokodje	Senior Environmental Specialist	Co- Task Team Leader in Abuja	AFTN1
Knut Opsal	Lead Social Safeguard Specialist	Social Safeguard Specialist	AFTCS
Hocine Chalal	Lead Environmental Specialist	Environmental Specialist	AFTN1
Fook Chuan Eng	Senior Water and Sanitation Specialist	Water and Sanitation Specialist	EASIS
Christophe Prevost	Senior Water and Sanitation Specialist	Water and Sanitation Specialist	LCSWS
Andrea Zanon	Senior Disaster Risk Management Specialist,	Disaster Risk Management	MNSSU
Evarist F. Baimu	Senior Counsel	Legal	LEGAM
Luis M. Schwarz	Senior Finance Officer	Financial Management	CTRLA
Faly Diallo	Finance Officer	Financial Management	CTRLA
Akinrinmola Oyenuga Akinyele	Senior Financial Management Specialist	Financial Management	AFTMW
Adebayo Adeniyi	Senior Procurement Specialist	Procurement Specialist	AFTPW
Daniel Werner Kull	Senior Disaster Risk Management Specialist	Disaster Risk Management Specialist	GCCDR
Salim Rouhana	Urban Specialist	Urban Specialist	AFTU2
Katsuhito Miyake	Senior Disaster Risk Management Specialist	Disaster Risk Management Specialist	
Ruth Adetola Adeleru	Team Assistant	Team Assistant	AFCW2
Belinda Lorraine Asaam	Program Assistant	Program Assistant	AFTU1
Bamidele Emmanuel Oladokun	Public Information Associate	Public Information Associate	AFREC
Michael Gboyega	ET Consultant	Social Safeguard	

Ilesanmi			
Ohn Myint	Consultant	Consultant	AFTU2
Anushika H. Karunaratne	Consultant	Consultant	AFTN1
Olayinka Olufunke Babalola	Consultant	Consultant	AFTP3
Uchenna Prince Onyebuchi	Consultant	Consultant	AFTDE
Kanbak Christyn Labar	Temporary	Temporary	AFTP3
Bolanle Waheed Wahab	Consultant	Consultant	AFTU2
Hafiz Abiodun Olayiwola	Consultant	Consultant	AFTU2

Non Bank Staff

Name	Title	Office Phone	City

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Nigeria	Oyo State	Some of the sites are ready and others will be phased in when designs are ready for Implementation			

I. STRATEGIC CONTEXT

A. Country Context

1. **With an estimated population of 168 million in 2011, Nigeria has experienced more than a decade of rapid GDP growth** averaging close to 8 percent per annum and concentrated in sectors driven by domestic demand: trade, agriculture, telecommunications, and other services. This makes Nigeria one of the continent's potential economic powerhouses. The country is poised to develop a prosperous economy building on its large reserves of human and natural resources, and has set up an ambitious development agenda of becoming one of the 20 largest economies by 2020[1]. Nigerian GDP is now estimated at close to US$500 billion, thereby surpassing South African GDP and making Nigeria the largest economy on the continent. The rebasing has also revealed a different structure of GDP, with services now accounting for a full 50 percent of economic activity and the share of oil and gas falling to less than 20 percent.

2. **Responsible macroeconomic policies by the Federal Government of Nigeria have supported a high degree of economic stability. Since 2011, the Government has actively pursued fiscal consolidation, and monetary policy has been tightened along with the recovery of the banking sector from the crisis of 2009.** The government has also formulated a clear vision (Vision 20:2020), and is implementing its Transformation Agenda focusing on promoting sustainable growth and welfare improvements. Specifically, the Vision aims to: (a) optimize the country's human and natural resource potential to achieve rapid economic growth and (b) translate that growth into equitable Social Development for all citizens.

3. **A number of challenges still exist such as natural disasters and climate change which pose a severe threat to the achievement of Nigeria's development goals**. Natural disasters, like frequent flooding negatively affect GDP growth and reverse hard-earned development gains, affecting the most vulnerable and the poor. Over the last 30 years, some 40 flood events have been recorded in Nigeria, impacting over 10 million people, and resulting in the loss of close to 1,400 lives. The 2012 flood alone affected 4 million people and caused an estimated US$16.9 billion in damages and losses[2] in key sectors of the economy affecting 28 State capital cities in Nigeria

4. **Climate and disaster shocks are likely to increase in the future.** According to the recent disaster and climate risk assessment undertaken by the World Bank[3], water availability will only remain stable in 20 percent of the country over the coming decades. The remaining 80 percent will face very different water cycles than those experienced historically; and many areas may be subject to increased risk of floods. That assessment also indicates that climate change is expected to affect Nigeria's ability to attain its 20:2020 visions. The likely impacts include reduced crop yields, declining productivity of livestock, and variability in water availability. Climate-related challenges will be compounded by increasing population pressure on land and water resources and rapid urbanization.

[1] Nigeria Vision 20: 2020.
[2] Nigeria Post Disaster Needs Assessment 2012 Floods, May 2013, Government of Nigeria. A weighted exchange rate for the year of 160 Naira per US Dollar was adopted.
[3] Enhancing the Climate Resilience of Growth. World Bank, 2013.

5. **Nigerian cities are growing at a scale never seen before and are exposing more people to disaster impacts.** Nigeria's population is expected to reach 200 million by 2020 and nearly 300 million around 2050, which will add to the growing exposure to climate and environmental insecurities. About half of Nigeria's total population now lives in cities compared to 35.3 percent in 1990[4], generating 60 percent of the country's GDP. By 2025, the urban population is projected to increase to about 65 percent. This rapid urbanization, that is largely unplanned and uncoordinated, has deepened the tremendous challenges in Nigerian cities, including solid waste and waste water management, access to basic infrastructure, preparedness to potential natural disasters and climate change[5], accentuated by weak local governance. Due to those challenges as well as weak institutions, poor connectivity and infrastructure, Nigeria is reaping limited benefits of urbanization, which is globally linked with better economic and human development.[6]

B. Sectoral and Institutional Context

Profile of Oyo State:

6. **Oyo state, an inland state in south-western Nigeria, covers a total land area of approximately 28,454 sq.km and has an estimated population of 7,080,532 persons in 2013.** Since its creation in 1976, Oyo state has been playing leading roles in many facets/sectors of national development including being (i) hub of socio-cultural heritage in south-west Nigeria, particularly the Yoruba region; (ii) the educational cradle of the nation and a human resources hub with a multiplicity of universities and higher research institutions; and (iii) a gateway to the coastal mega city of Lagos from the northern part of Nigeria by rail, road, and air. The state had a total GDP of US$16 billion, with a US$2,666 per capita income in 2010.[7]

7. **Oyo State has a relatively low poverty rate for a Nigerian State, but a large part of the population is vulnerable to slippage into poverty**. The most recent poverty headcount estimate from 2009/2010 (29 percent) would imply that more than two million residents of the State live below the poverty line. A recent analysis of household data from 2012-2013 also reveals that over 40 percent of the population in the South West lives on less than $2 a day (PPP corrected). Thus, many of the "non-poor" are very close to the poverty line, and the impact of natural disasters on wealth and income in Ibadan and Oyo State can push millions more into poverty, as well as implying even more extreme poverty for the already poor. Indeed, the poor and vulnerable part of the population in Oyo State is disproportionately affected by flooding. Weak housing affordability and non-enforcement of planning regulations drive the poor towards living in flood prone areas exposing the population to flooding risks.

8. **The current Oyo State Government has adopted a development plan along a 6 points strategy.** The plan focuses on good governance through: (i) an open data initiative; (ii) the provision of free and qualitative education; (iii) accessible and suitable health care for all and

[4] Nigeria Urbanization Review, draft, WB.
[5] Nigerian cities are witnessing a high rate of environmental deterioration and are rated among urban areas with the lowest livability index in the world. It is estimated that only between 20 percent and 30 percent of the urban population enjoy decent urban life in the country.
[6] World Development Report 2009.
[7] NPC 2013, Oyo State Government 2013.

free health services for children and elderly; (iv) rehabilitation and provision of public infrastructure; (v) improving security conditions; and (vi) rural development and integration.

Oyo State Revenues:

9. **A high dependence on federal transfers leaves Oyo State vulnerable to adverse movements in the international oil market.** In 2013, oil revenues accounted for 81 percent of total federal government net revenues. Current challenges with illegal oil bunkering and damage to oil infrastructure in the Niger Delta have led to reductions in shared federation revenues since mid-2012,. The volatile nature of oil revenues complicates state efforts at revenue forecasting and budget planning.

10. **Recognizing the need to diversify revenue sources, Oyo State is making efforts to increase its Internally Generated Revenues (IGR).** In real terms, actual IGR receipts grew by 0.6 percent on average between 2008 and 2011 with income taxes representing the highest revenue category. In order to identify means by which Ministries, Department and Agencies (MDAs) can improve their revenue collection efforts, the state plans to convene a tax stakeholder's forum and hire a consulting firm to identify opportunities for improving IGR generation and collection efforts.

11. **Revenues performed below expectations during 2008-2011.** On average, actual revenues deviated from budget revenues by 35 percent. Although variations in IGR revenues were higher than Federation Account revenue categories, the larger weighting of Federation Account revenues in total revenues resulted in a more significant impact. A review of the pattern of IGR projections reveals a consistent overestimation of revenues despite poor performance in previous years. This undermines the credibility of the budget and results in difficulties in carrying out expenditures as planned.

Oyo State Expenditure:

12. **Average budget utilization by all MDAs from 2008 to 2011 was quite poor and the environmental development sub-sector[8] utilized only 3.2 percent of the total state budget on average during the same period**. This is in contrast with planned spending of 11 percent of the state budget according to the state development plan, OYO-SEEDS2[9] and planned expenditure of 4.9 percent on average as stated in the annual budgets for 2008 to 2011. MDAs within the sub-sector were only able to utilize on average 31 percent of their total budgets between 2008 and 2011. This disparity in budget allocations and actual spending is a sector wide phenomenon and is repeated across other sectors/MDAs within the state. The low level of budget

[8] The subsector includes the Ministries of Environment and Water Resources/Habitat, Physical Planning and Urban Development, Water Resources and the Oyo State Water Corporation, Oyo State Solid Waste Management Authority, and the Water Corporation of Oyo State. SEMA and WATSAN are included in this sub-sector but have been excluded from this analysis due to unavailability of actual spending data. Both agencies are administratively located under the Office of the Executive Governor and disaggregated data on their actual expenditures was unavailable at the time of analysis.

[9] Actual spending data for the sub-sector excludes spending for SEMA and WATSAN for the reasons above. Based on planned budget, both MDAs represent an average of 6 percent of the total sub-sector from 2008-2013 which is not a significant portion of the subsector budget.

utilization can be attributed to the lack of capacity of relevant MDAs to prepare yearly work programs according to state guidelines in order to drawdown on budget funds.

The City of Ibadan:

13. **Ibadan is the third largest metropolitan area in Nigeria after Lagos and Kano.** With a population of 3.1 million[10] and a land area of 3,850 square kilometers (2013), Ibadan city is the largest metropolitan geographical area in West Africa, housing almost half of Oyo state's population (45 percent). From around 60,000 in the early 1800s Ibadan's population grew to 200,000 in 1890, and to a million by 1930, the population is projected to reach 5.6 million by 2033[11]. The city's urban footprint also grew considerably to its current extent of more than 3,850 square kilometers. This sprawl is primarily due to weak land use planning practices, leading to low population densities (800 people per square kilometer) especially when compared to other large cities (with densities reaching 30,000 to 40,000 people per square kilometer)[12]. This sprawl increases the cost of infrastructure development and operations, and maintenance, reduces the urban efficiency and potential quality of life, and accelerates the loss of agriculture lands.

14. **The rapid urban growth in Ibadan has led to both positive and negative externalities.** On the positive side, this growth attracted diverse industries, improved access to technologies, developed the socio-cultural infrastructure of the city, improved health standards, increased literacy and education rates, and boosted entrepreneurship, creativity, investments and wealth generation. On the negative side, this rapid growth weakened the prospect of good governance and effectiveness of government policies[13] mostly visible in (i) the proliferation of slums; (ii) increased health hazards due to poor solid waste and wastewater management, resulting for example in the 2013 cholera break-outs in parts of the city; (iii) deteriorated air quality due to energy over consumption; and (iv) the unplanned expansion of the city into high risk areas such as wetlands and flood plains.

Ibadan's Exposure to Flood Hazard:

15. **Ibadan is highly exposed to frequent flooding.** The city has been experiencing an increasing number of flood events during the last 50 years (16 major events recorded). The most recent floods of August 26, 2011 caused significant human and economic losses in the city, primarily in the housing, education, agriculture and transport sectors. Settlements located in unstable and risky locations such as along Ogunpa, Kudeti, Ogbere and Orogun floodplains and the hillsides of Oke-Are, Oke-Aremo, Sapati and Mokola were seriously affected with over 120 fatalities reported. Land use within the city is primarily residential and a majority of Ibadan's urban poor[14] live in crowded slums within the core residential areas of Ayeye, Agbeni, and Bere and are at increased risk from flood events due to their location in low lying areas. Ibadan city setting is characterized by rugged terrain with wide valley plains. The city is drained by three

[10] Oyo state Ministry of Budget and Planning, Macro-Statistics Department, 2013.
[11] Oyo state Ministry of Budget and Planning, Macro-Statistics Department, 2013 (cited in Agbola, 2013, p. 42).
[12] The satellite image of the city obtained from LandSAT 2013 in December 2013 shows that the city has expanded to 5,388.3 Km2 and with the current an estimated population of 3,234,884 (Taiwo, 2013), this give an urban density of 600 people /km2.
[13] Olokesusi, 2010, World Bank, 2001.
[14] In 1963, half of the Ibadan's core area consisted of slum dwellings, growing to 70percent of the city's total number of derelict housing in 1985. Fourchard (2003).

North-South flowing river systems, namely, Ona River (Western), Ogunpa River (Central) and Ogbere River (Eastern) that flow through the city. These rivers are main drainage channels that cause flooding when not properly regulated[15]. The network of rivers and streams is extensive throughout the city as a result of a combination of the geology of the area and the tropical monsoon climate.

16. **Recognizing the need for an integrated and long term solution to flooding in Ibadan, the Oyo State Government requested the World Bank's support to finance a flood management project.** So far, the responses to the past flooding events have been piecemeal mainly focusing on alleviating immediate and short-term needs such as rebuilding destroyed assets. However, both the Federal and the Oyo State Governments have shown strong commitment to flood risk management. This is reflected through a number of factors that include: (i) a clear policy shift from "reactive disaster response" to "preventive flood risk management"; (ii) actively participating in a South-South flood risk management exchange program sponsored by the Government of South Korea" and facilitated by the World Bank and; (iii) engaging with the Global Facility for Disaster Reduction and Recovery (GFDRR) on Strengthening Capacity for Disaster Risk Management in University of Ibadan. The above-mentioned policy shift is clearly demonstrated through the request for World Bank support for improved flood risk preparedness and reduction.

C. Higher Level Objectives to which the Project Contributes

17. **The project contributes to the growth and resilience goals of Nigeria's Vision 20:2020 and the country's Transformation Agenda.** The project reinforces disaster risk management capabilities, strengthens community-based resilience capacity, and provides support for risk assessment and early warning systems. The project is well aligned with the Hyogo Framework for Action (HFA) 2005 – 2015 as well as the Africa Regional Strategy for Disaster Risk Reduction adopted by the African Union in 2004. The project also supports Nigeria's National Disaster Management Framework (NDMF) and builds on the findings of the Government of Nigeria's "Post Disaster Needs Assessment" conducted after the 2012 floods.

18. **The project contributes to the World Bank's objective of reducing poverty and ensuring shared prosperity in Nigeria by focusing on disaster shocks in** Ibadan, one of the most important urban centers of Nigeria. Flooding is often portrayed as acts of nature, or of a natural order. Yet, the major factors influencing flooding in Ibadan are human and social vulnerability, matched with the overall capacity to respond to or reduce the impact of such hazards. Also, given that quality of growth matters for poverty reduction, the project recognizes the increasing vulnerability of Ibadan to floods, which tend to hit urban poor and vulnerable groups particularly hard. This reflects existing socio-economic inequality in terms of access to adequately located housing. With improved land use control, the establishment of an early flood forecasting system and the implementation of informed flood risk reduction investments in Ibadan, the appropriate tools are being deployed under the project in order to mitigate the above risks on the poor and vulnerable groups in Ibadan. Also, project investments will have

[15] There were 13 major flooding in Ibadan city since 1951 (Task Report table 3). The highest 24 hrs rainfall was on 31 August 1980 (in Ogunpa River Basin) of 274 mm and the lowest is on 20 April 1978 with 126 mm. Most recent flood of 26 August 2011 (in Ona River Basin) was by 187.5 mm rain mainly concentrated in about 4-5 hrs.

considerable long term benefits such as improved city functioning and less impacts of flooding on livelihoods and other socio-economic activities in the city. These will inevitably lead to enhanced competitiveness, and better educational outcomes for future citizens (reduced days of missing classes/school damages).

19. The project is fully aligned with Cluster 1 of the Nigeria Country Partnership Strategy (CPS) 2014-17. Within that cluster, the CPS supports agriculture and climate change (resilience) agenda and is open to provide support to improving resilience of urban centers to natural disasters. The project is also an integral part of the World Bank's efforts aimed at maximizing the demonstrational and catalytic interventions and leveraging additional resources from beneficiary states. Project activities will benefit from parallel World Bank projects being implemented in Oyo Sate and Nigeria (CSDP and NEWMAP). The project is consistent with the World Bank's Africa Strategy as it contributes to Pillar 2 (vulnerability and resilience) while also strengthening urban capacity to manage disasters.

D. Rationale for a Framework Design Approach

20. **Length, complexity and cost of flood risk management.** The formulation of an effective and sustainable urban flood risk management program for Ibadan is a long, complex and costly process. Similarly, promoting an integrated and effective urban flood risk management program, combining both structural and non-structural measures, requires a good understanding of available alternatives based on the future growth of the city and acceptable risk of the communities. Such measures must be based on transparent cost-benefit analyses to facilitate the prioritization of financing on the most urgent and effective of these measures. The framework design under this project allows for a phased approach combining the immediate implementation of priority investments within the city while the medium- to long-term investment program is being formulated.

21. **Learning from the city Masterplanning exercise and initial project investments.** The Development of Ibadan's Physical Masterplan and Ibadan's Integrated Flood Risk Management Masterplan is configured as part of project implementation rather than project preparation. It provides a unique platform to engage with various levels of government and communities to shape their long term risk management framework. Also, the amount of financing needed would be too large for the government to finance from the Project Preparation Advance (PPA) and/or own funds. Also, the project considers initial investments in priority sites[16], as well as community preparedness as a learning exercise. As such, the proposed project time period is 8 years so as to ensure that learning from short term measures can be reflected into the design of medium to long term measures. The project also focuses on developing a long-term risk management framework in the city building on the multi-sectoral nature of flood risk management, and ensuring long-term implementation, funding size, and planning horizons. Such a framework will also provide guidance to the Oyo State Government on means to phase capital investments in tandem with government efforts to increase revenues.

[16] Sites affected by 2011 floods and needing urgent infrastructure repairs and reconstruction to reconnect communities in high risk and majority poor neighborhoods of the city. The investments in these priority sites will start upon project effectiveness.

22. **Need for cost-effective investments in flood risk management.** The adoption of a framework design approach for the Ibadan Urban Flood Management Project (IUFMP) effectively sets the "rules of the game" and allows infrastructure investments to be selected on a dynamic basis following the adoption of strategic city Masterplans. The studies will provide much needed clarity on the future land use and urban development plans for Ibadan as well as the range of structural and non-structural measures that can be implemented in a cost-effective manner. They will also facilitate the necessary dialogue and buy-in of different government bodies and communities to ensure effective implementation and sustainability. An investment decision support filter will be used for selecting the structural measures to be financed under the project following the completion of the Masterplanning activities.

23. **Need for flexibility during project implementation.** The adoption of a framework design approach has a number of practical implications for project implementation. These were incorporated into the project design and include: (i) higher budget allocation for Services under the project; (ii) slower project disbursements during the first two years of implementation; (iii) resource-intensive World Bank implementation support during the first four years of implementation; and (iv) clear investment decision-support filter for non-identified investments.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

24. The project development objective is to *"improve the capacity of Oyo State to effectively manage flood risk in the city of Ibadan"*.

B. PDO Level Results Indicators

25. The progress in achieving the project development objective will be monitored by the following PDO level indicators:

a) Direct project beneficiaries (number), of which female (percentage);
b) Effective use of flood control assets management plan;
c) Land area protected from a 25 year return period flood event;
d) Improved institutional coordination on flood risk management in Ibadan

The above indicators will be measured using hydraulic and hydrological models to be developed under the Ibadan Integrated Flood Risk Management Masterplan.

C. Project Beneficiaries

26. **The direct beneficiaries from the project interventions will be the people settled in flood-prone areas within the eleven Local Government Areas (LGAs) in the city.** There are currently about 3.1 million people in the city, of which 40,200[17] people reside in flood prone areas. The total number of direct beneficiaries that will benefit from safety investment in Eleyele

[17] Ibid

dam alone (protection from potential dam breach) are 5,065[18]. At least half of the beneficiaries are expected to be female. The indirect project beneficiaries will be the citizens of the city of Ibadan who will benefit from rehabilitated, reconstructed or new priority infrastructures and other interventions. All citizens of Ibadan are considered as project beneficiaries given the inclusive and long term beneficial impacts of various flood risk management measures such as flood risk identification capacity, early warning, disaster preparedness and emergency response. In addition to the above, representatives of line ministries and local government agencies will also benefit from technical and institutional capacity building activities in planning and monitoring.

27. **Being located in flood-prone areas, poor and marginal community members in Ibadan including elderly, women and children are particularly vulnerable to floods.** The empowerment of women and the poor will be supported by the project design across all project components and the project implementation arrangements. Gender mainstreaming is addressed at all levels, from development and strengthening of local capacity to participate in urban planning and decision-making processes at local committee and municipal level to actual implementation, especially through the highly participatory community investments and inclusive awareness raising campaign.

III. PROJECT DESCRIPTION

28. **A joint preliminary assessment by the World Bank and the Oyo State Government teams has identified multiple and interconnected factors contributing to the growing challenge Ibadan has with flood management.** The assessment identified a number of issues contributing to flood risk in Ibadan. Out of these, five were retained under this project and include: (i) Eleyele dam safety (dam currently used for water supply storage), (ii) Ibadan city drainage, (iii) solid waste management (SWM); (iv) land use planning; and (v) flood control assets management. Given the limited project funds and weak absorptive capacity by the Oyo State Government, the above issues were prioritized and ranked by importance and urgency. While the project addresses deficits in sector knowledge and institutional capacity under all of the above issues, it only finances physical investments aimed at restoring the Eleyele dam safety and improving the Ibadan city drainage according to a clearly defined investment hierarchy.

29. **A rapid institutional assessment of flood risk management capacity in Ibadan, measured through the ability of city officials to prepare, respond, and manage risk reduction has revealed serious fragmentation and overlapping of responsibilities across the various MDAs.** In addition to the technical and financial challenges faced by the MDAs, limited inter-agency coordination was reported. Furthermore, state and local governments are ill-prepared to address flood incidents and attempts to control flood risk have generally been unsuccessful.

30. The proposed project aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design to make changes based on learning. The project also supports capacity building

[18] 1,000 properties, so 5,065 people directly at risk within their homes – does not include the thousands of people who could be out and about who would also be caught in the flood wave.

for flood risk management in the city of Ibadan. It reinforces Oyo State government's early warning and response capabilities and leverages existing World Bank projects (such as the Community and Social Development Project, CSDP) in Oyo State in support of the IUFMP.

A. Project Components

31. The project consists of three main components described in subsequent paragraphs: (i) Flood Risk Identification, Prevention and Preparedness Measures; (ii) Flood Risk Reduction; and (ii) Project Administration and Management Support. The detailed description of the project is provided in Annex 2.

32. **Component-1: Flood Risk Identification, Prevention and Preparedness Measures (Total Costs US$43.0 million equivalent, IDA US$43.0 million):** The objective of this component is to assess flood risk in the city of Ibadan, plan risk reduction measures, and finance preventive structural and non-structural measures to enhance flood preparedness. This will be achieved through a number of sector-specific and specialized Master Plan studies, and by designing and establishing an integrated flood early warning and response system. This component consists of the following four sub-components:

Sub-Component-1.1: Ibadan's Flood Risk Management Investment Program (Total US$22.0 million equivalent, IDA US$22.0 million equivalent) will finance: (a) the preparation of a flood risk management investment program building on three key city Masterplans namely: (i) Integrated Physical Master Plan, (ii) Solid Waste Management Master Plan, and (iii) Integrated Flood Risk Management Master Plan; (b) carrying out feasibility studies, detailed engineering designs and construction supervision services for works to be carried out under Component 2 of the Project; (c) preparation of emergency preparedness plan for Eleyele dam as well as Environment and Social Impact Assessments (ESIAs) and an Environmental and Social Management Plan (ESMP).

Sub-Component-1.2: Ibadan's Long-Term Flood Resilience Strategy (Total US$1.0 million equivalent, IDA US$1.0 million equivalent) will support the preparation of a long-term Flood Resilience Strategy for Oyo State, which will provide detailed recommendations on potential sources of investment financing and appropriate tools on the policy, regulatory and institutional reforms required so as to clarify the legal and institutional mandates of the various stakeholders and MDAs with regards to flood risk management in the city of Ibadan.

Sub-Component-1.3: Ibadan's Flood Early Warning and Response System: (Total US$7.0 million equivalent, IDA US$7.0 million equivalent) will finance: (i) the design of an Integrated Flood Early Warning and Response System for the city of Ibadan to improve flood forecasting to communities and government for response; (ii) the establishment of a flood forecasting and early warning weather forecast radar system[19], and software for development of hydraulic and hydrological modeling in strengthening collaboration between the National Emergency Management Agency (NEMA) and the

[19] Weather forecast Radar System may include Telemetry Rain gauges at key nodal stations (t.b.d) in addition to the Radar after final study.

Oyo State Emergency Management Agency (OSEMA); and (iii) community based contingency planning and awareness, by organizing training workshops in targeted communities and Community Development Associations (CDAs) living in high risk areas of Ibadan, using the community platforms of the World Bank-funded Community and Social Development Project (CSDP) in Oyo State. Support from the local media will be sought and will build on the communications strategy developed under project preparation.

Sub-Component-1.4: Contingency Component (US$13.0 million equivalent, IDA US$13.0 million equivalent): Following an adverse natural event that causes a major disaster, and after an official declaration of a State of Emergency by either the President of the Federal Republic of Nigeria or the Oyo State Governor, the state government may request the World Bank to approve access to project funds under this component to support mitigation, response, recovery and reconstruction. Disbursements would be made against a positive list of goods, works, and services that are required to support mitigation, response, recovery and reconstruction needs as described in the Emergency Response Operations Manual.

33. **Component-2: Flood Risk Reduction - (Total costs US$149.0 million equivalent, IDA US$149.0 million):** The objective of this component is to ensure flood risk mitigation through structural measures by financing public infrastructure investments for flood mitigation and drainage improvements. This component consists of the following two sub-components:

Sub-Component-2.1: Priority Infrastructure Improvement Program in "Priority Sites" (Total US$20.9 million, IDA US$20.9 million equivalent): This sub-component will finance both critical infrastructure improvements in priority secondary and tertiary sub-catchments involving 14 pre-identified priority sites for rehabilitation of drainage culverts, drains, roads, including the necessary works needed to restore the flood damaged Eleyele dam for safety. The "Priority Sites" selection criteria include areas in the city of Ibadan where reconstruction would offer a no-regret solution and that presented an opportunity to: (i) reduce localized flood risks; (ii) reconstruct flood-damaged infrastructure and (iii) re-establish or improve community connectivity.

Sub-Component-2.2: Long-term Integrated Flood Risk Mitigation Measures (Total US$128.1 million, IDA US$128.1 million equivalent): This sub-component will be based on the recommendations of the Integrated Flood Risk Management Master Plan (initiated under Sub-Component-1.1), and will finance the rehabilitation and construction of robust infrastructure in "Targeted Project Sites" (see Appendix 2 table 2.2) that are divided into:

(i) "**Critical Socio-Economic Sites**" will be identified by developing contingency plans and undertaking structural improvements to critical public assets such as hospitals, airport, public buildings, including ensuring access/egress and functionality. Both the nature and the location of the infrastructure works under this sub-component will be guided by the recommendations of the Integrated Flood Risk Management Master Plan and based upon clear technical,

environmental, social, economic and financial criteria. Investments under this sub-component will require the prior approval of the World Bank based on a joint program formulated by both the Oyo State Government and the respective LGAs.

(ii) "**Urban Drainage Sites**" are "Targeted Sites[20] " provided they comply with the criteria for the IUFMP investment decision support filter. These include: (i) strengthening flood resilience of key socio-economic assets within the city of Ibadan; (ii) cost-effectiveness; (iii) alignment with the recommendations of the Ibadan's Physical Masterplan and Ibadan's Integrated Flood Risk Management Masterplan; (iv) maximizing the level of risk mitigation to human lives and socio-economic economic assets; (v) prepared according to the Project Implementation Manual (PIM) with complete cost-benefit analysis, social and environmental assessments, etc.

34. **Component-3: Project Administration and Management Support (Total costs US$28.0 million equivalent, IDA US$8.0 million equivalent)** will finance incremental operational costs related to the implementation of the project for goods, equipment, staff, travel, and Project Management Unit's consultant services as described below:

Sub-component-3.1: Project Administration (Total US$24.0 million equivalent, IDA US$4.0 million equivalent) will finance the procurement of office supplies and furniture, Information and Communication Technology (ICT) equipment, transport vehicles for the Project Implementation Unit (PIU), and procuring a comprehensive set of Project maps (geospatial, soil, topography, etc.); (ii) office running costs (office rent, electricity, water, internet, telephone, fuel, stationary, ICT items, etc.); (iii) the hiring of external Financial and Technical Audits which will monitor the project execution periodically and reporting directly to PIU/Steering Committee; (iv) PIU and Independent Advisory Group yearly allowances as well as the preparation and implementation of Resettlement Action Plans paid from the counterpart funding, and; (v) Fiduciary and Safeguard Training.

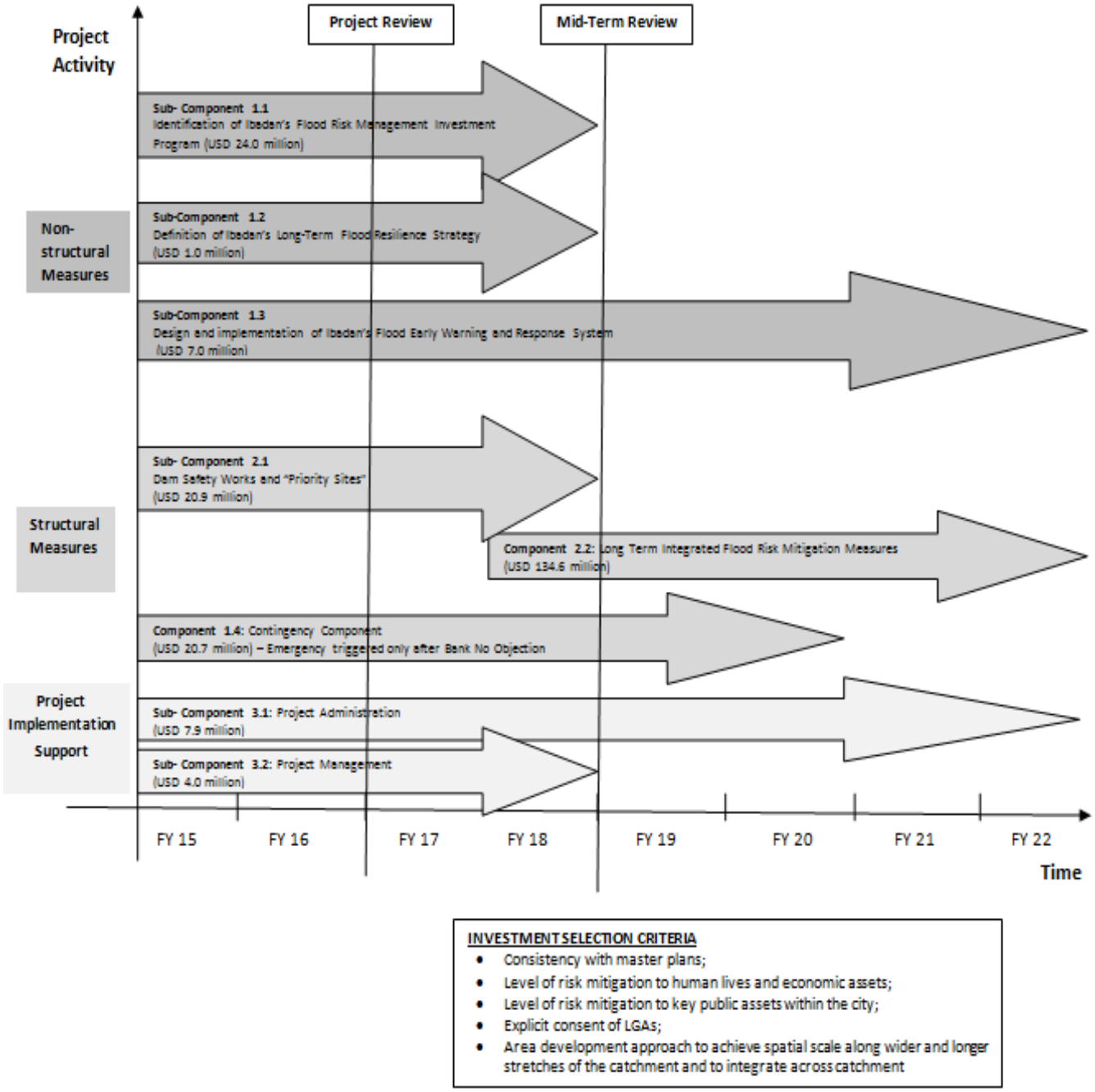
Sub-component-3.2: Project Management Support (Total US$4.0 million equivalent, IDA US$4.0 million equivalent): This subcomponent will finance the procurement of Project Management Consultancy for an initial period of two years renewable for an additional two years based on project implementation needs, PIU capacity building requirements, and consultant's performance. The scope of this activity involves supporting the PIU in project management activities and providing technical support for project implementation and advising on fiduciary and safeguards related matters.

Project Sequencing:

[20] Sites will be identified under Ibadan Integrated Flood Risk Management Masterplan (IIFRMM)) where targeted interventions will enhance the city's overall flood resilience in the long term. The investments in these targeted sites will start upon completion of IIFRMM. See also Table 2.2 Appendix 2.

35. Given the framework design nature of the project, the implementation of both structural and non-structural activities will follow a time-based logical sequence as shown below **(Figure 1):**

36. **Figure 1: Project Sequencing**



B. Project Financing

37. **The total estimated project cost is US$220 million equivalent, including counterpart funds (Table 1).** The overall share of the Borrower in the project is 9.0 percent or US$20.0 million (equivalent). An amount equal to US$200 million is financed through a credit provided by the International Development Association (IDA) under "Blend Terms" with a maturity of 25 years, grace period of 5 years, a 1.25 percent interest charge (plus 0.75 percent service charge), and principal repayable at 1.65 percent per annum for years 6-15 and 3.35 percent per annum for years 16-25. The above cost sharing will be subject to future revisions during the mid-term and periodic project reviews based on the potential use of the Contingency Sub-component. The implementation period is eight years and the detailed project cost sharing and financing tables are provided below.

Table 1: Project Cost and Financing (US$ million)

Component	Project Cost	IDA Financing	Percent Financing	Borrower's Financing	Percent Financing
Component-1: Flood Risk Identification, Prevention and Preparedness Measures	43.0	43.0	100	0	0
Component-2: Flood Risk Reduction	149.0	149.0	100	0	0
Component-3: Project Administration and Management	28.0	8.0	29	20	71
PROJECT TOTAL COSTS	**220**	**200**	**91**	**20**	**9**

C. Lessons Learned and Reflected in the Project Design

38. **The proposed project incorporates important lessons from both international and local projects in Nigeria, specifically in the areas of urban development, disaster risk management, integrated watershed management, and urban drainage improvements.** Both international and Nigerian experience suggests that long term strategic engagement of stakeholders is needed to bring policy, institutional and behavioral changes. Accordingly, the project supports the development of a long-term strategy for flood risk management involving all stakeholders. The project supports technical assistance to develop organizational, institutional and financial capacity for planning, implementation, and operation and maintenance. Such a capacity will help Oyo State better manage flood risk in the city of Ibadan. Also, urban flooding causes considerable damage and disruption, with serious social and economic impacts. It systematically affects the poorest (people living in un-planned and areas vulnerable to flooding). Flood risk reduction activities under the project identify those who are most vulnerable, and provide responses that demonstrate awareness of local social and cultural contexts. Furthermore, early flood risk warning has little relevance if people do not have the ability to respond to warnings in terms of taking decisions on preventive actions and evacuation. The project finances the participatory preparation of community contingency plans in relevant locations. Also, given the complex and multi-sectoral nature of flood risk management, coordination between various federal, state and local governments is paramount. As such, the project will develop Performance Contracts (PCs) between the Office of the Governor and the relevant MDAs stipulating their

roles and responsibilities under the project. Also, under the early warning and response activities, the project will develop Memoranda of Understandings (MoUs) between Oyo State on one hand, and the relevant Federal agencies on the other including NIMET, NEMA and NIHSA.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

39. **Being multi-sectoral in nature, the project requires close inter-ministerial coordination;** collaboration and information sharing among various stakeholders **(refer to Annex 3 and Figure 3.1)**. Each sub-component will be implemented in coordination with relevant state MDAs and in some cases will involve federal MDAs relying upon a robust annual joint work programing facilitated by the project implementation unit (PIU). The various state MDAs include those responsible for environment, urban development, water resources management, solid waste management, rainfall monitoring, river flow monitoring, urban infrastructure environment, emergency response as well as those focused on hydrological information or watershed/basin regulation.[21]

Project Implementation Oversight:

40. **The Office of the Governor will have the lead responsibility for project implementation and for ensuring that the project development objectives are met.** As such, the project political oversight will be entrusted to the Project Steering Committee (PSC), which already exists for flood management, chaired by the Governor of Oyo State and involving State Commissioners from relevant MDAs. The PSC will coordinate among MDAs at the state level, review project proposals, evaluate alternatives and approve the annual work plans. It will also ensure that the project is implemented in line with Oyo State Government's integrated flood management approach.

41. **Technical oversight and vertical coordination will be achieved through the Project Technical Committee (PTC).** The PTC will be chaired by a senior technical advisor with appropriate technical skills and background. The Committee will also include Director level members from partner state MDAs as well as representatives from relevant LGAs and Federal MDAs. The PTC will consult and involve relevant local governments, civil society organizations, and community representatives to ensure oversight and transparency. The PTC will also review identified infrastructure investments under Component 2 and advise the PSC on key decisions such as the annual work plans and establishing an early warning system, structural and non-structural flood management measures and allocation of contingency funding.

42. **External monitoring to strengthen stakeholder engagement will be achieved through the establishment of an Independent Advisory Group (IAG)**. The IAG is a third-party quality assurance group consisting of national experts meeting as frequently as needed (no less than four times a year) and convening at times at the request of the Project Implementation Unit (PIU).

[21]Such as the Nigerian Hydrological Services Agency (NIHSA), Nigeria Metrological Agency (NIMET), River Basin Development Authority (RBDAs).

The IAG members will perform quality project reviews with the full support of the PIU and relevant MDAs with responsibilities including *inter alia*: (i) provision of expert opinion and review of the timeliness, quality and cost-effectiveness of project activities, (ii) independently advising the Project Technical Committee and the Project Steering Committee. Membership to the IAG will be limited to a 4-year period, resulting in 2 IAGs participating in project monitoring during the 8-year project period.

Project Implementation Unit:

43. **The project will be implemented by a Project Implementation Unit (PIU) hosted at the Office of the Governor and reporting directly to the PTC.** The PIU will be responsible, inter alia, for project management and implementation, procurement and financial management, environmental and social safeguards due diligence, monitoring and evaluation of the project, as well as reporting on progress and implementation issues to the PSC. The PIU will work closely with relevant MDAs at both Federal and State levels and will seek their prior approval to both project inputs and outputs throughout the IUFMP implementation period. The PIU will be reinforced by a Project Management Consultancy (PMC) that will provide timely and quality support in areas related to technical, fiduciary and safeguards. The PIU was competitively selected based on merit, relevant experience, qualifications and years in service. PIU members are seconded from relevant Oyo state MDAs and will be employed on a full time basis throughout the project implementation period. Also, the PIU will be headed by the Project Coordinator and will comprise: (i) the Procurement Specialist, (ii) the Internal Auditor, (iii) the Project Accountant; (iv) the Social Safeguards and Social Impact Specialist, (v) the Environmental Safeguards Specialist, (vi) the Communications Specialist, (vii) the M&E Specialist; (viii) the Hydraulic Engineer and; (ix) the Infrastructure Engineer. The PIU will ensure that the PDOs of the Ibadan Urban Flood Management project are fully achieved in a timely manner and according to the Project Implementation Manual (PIM).

Coordinating Project Implementation:

44. **Performance Contracts (PCs) will be entered between the Office of the Oyo State Governor and relevant Ministries, Departments and Agencies (MDAs)[22] with the aim to improve horizontal coordination and maintain accountability throughout project implementation.** The objective of the PCs is to ensure a coordinated approach across the relevant Oyo State MDAs toward achieving a sustainable approach to flood management. This would facilitate coordinated actions in support of urban flood risk management in Ibadan. The PCs will stipulate clearly commitments and obligations by the MDAs such as ensuring technical staff participation in the PTC, sharing knowledge, timely review of ToRs and other technical documentation, supporting the supervision of civil works, acceptance of handover of assets, etc. These are measureable by key performance indicators annexed to the Contract per Component. In the case the performance of an MDA is judged to be inadequate by the PSC, financing to the specific activity related to the MDA will be withdrawn and reallocated to other performing project activities following prior-consultation and no-objection from the World Bank.

[22] Oyo State Ministry of Environment and Habitat, Oyo State Ministry of Water Resources, Oyo State Ministry of Works, Oyo State Emergency Management Agency, Oyo State Ministry of Physical Planning and Urban Development, Oyo State Waste Management Authority (OYOWMA), Oyo State Ministry of Lands and Housing and Survey.

45. **Similarly, Memorandum of Understandings (MoUs) will be entered between the Office of the Oyo State Governor and relevant Federal MDAs such as NIMET, NEMA and NIHSA.** These are aimed at promoting vertical integration and strategic coordination between Federal and State MDAs on flood risk management. These MoUs will indicate the roles and responsibilities of each party as well as clarify any overlap of mandates between State and Federal institutions on managing flood risk. The MoUs will also provide a replicable platform for information gathering, data sharing and networking between these relevant Federal and State MDAs on climatic and hydrological aspects of the proposed early warning system financed under the project.

Project Implementation Support:

46. **A Project Management Consultancy (PMC) will provide implementation support the IUFMP's Project Implementation Unit (PIU) during the first 4 years of project implementation.** The PMC contract will be initially for a period of 2 years, renewable upon satisfactory performance and justified demand. The PMC will ensure that the management of all aspects of IUFMP implementation including fiduciary, safeguards and technical is done in accordance with guidelines of the World Bank and within procedures of the Government of Oyo State without creating conflicts that could be adverse to the smooth implementation of the project. On technical aspects, the PMC will support the PIU in the definition of the design brief and consultant's terms of reference for feasibility studies and detailed design and advice on monitoring the project with emphasis on the quality, cost and progress of construction. On fiduciary matters, the PMC would support the PIU on preparation of the procurement plans, project Work Plans and Procurement Schedules for Goods and Works and bidding document for various packages contained in the procurement plan as per agreed timelines. As for Safeguards, the PMC will assist the PIU in ensuring that sub-projects are implemented in accordance to best practices and guidelines set out in the Resettlement Policy Framework (RPF) and ESMF and drafting consultant TORs for implementation of site specific ESMPs and/or EIAs and RAPs. The PMC will report to the Project Coordinator of the PIU and will have no direct contact with relevant MDAs or the World Bank. The PMC will be a multi skilled consulting firm with international experience on similar urban flood management projects. Also, preference will be given to those that have previous experience with World Bank funded projects. They will provide the PIU with intensive *"on the job"* training in anticipation of their phasing out at the end of year 4 of project implementation. This aspect will be clearly indicated in their contract and will be closely monitored by World Bank supervision missions. This consulting work is very critical to the success of the project and will be remunerated on performance basis.

B. Results Monitoring and Evaluation

47. **The Project Implementation Unit (PIU) will be in charge of implementing and running a robust monitoring and evaluation (M&E) system to track progress and results.** The PMC will support the PIU on M&E for the first 4 years of project implementation and will work closely with PIU staff on updating project indicators and build capacity via targeted capacity building activities. The results framework described in Annex 1 provides the key indicators, targets, and data collection arrangements. The project will use a web-enabled management information system to manage information and report progress. The database will

be available on an open-access basis, to support greater transparency, collaboration and improved project governance.

48. **Social and Environmental Monitoring will include:** (i) monitoring compliance with the environmental regulations; social and environmental safeguards and environmental and social assessment provisions; and (ii) overall monitoring and oversight of social and environmental issues at project levels.

49. **Regular Quality Supervision and Certification:** this will be carried out by the PIU. Detailed quality guidelines will be developed by the PIU and adopted by all implementing units during project implementation.

50. **Physical Progress Monitoring and Audits** - Physical progress monitoring will be carried out by the PIU on a monthly basis and reported to the PIU which, in turn will share the reports on a quarterly basis with the World Bank. Financial progress will be reported through the quarterly Interim Financial Reports (IFRs).

C. Sustainability

51. ***Overall sustainability*:** Overall sustainability of the project relies on the full commitment of the Oyo State Government in coordinating and providing guidance on various Masterplans, and various critical factors have been incorporated in the project design to ensure long term sustainability. This includes developing a long term risk management framework with flexibility to ensure learning from short term actions, measures for community and government ownership and capacity building, and ensuring discussion on policy and institutional reforms related to flood risk management.

52. ***Ownership:*** The Governor's office has the overall responsibility for the project, which is needed for a multi-sectoral project. The project design as well as implementation arrangements ensure that all relevant state MDAs such as Oyo State Ministry of Work, Oyo State Ministry of Environment and Habitat, Oyo State Ministry of Water Resources, Oyo State Emergency Management Agency (OSEMA), Oyo State Waste Management Agency as well as 11 Local Government Areas (LGAs) drive relevant project components and sub-components. Mainstreaming community participation throughout the project activities and instating the culture of Performance Contracts (PCs) between the Office of the Governor and the relevant MDAs will strengthen project ownership and oversight.

53. ***Technical sustainability*:** The technical sustainability of the project activities will be addressed by ensuring good technical design, construction and operational standards, and with adequate attention to safety, instrumentation, and operational decision support considerations. The project preparation supported preliminary assessments from various qualified international consulting firms, which have aided the design of the project. Similarly a number of technical studies and engineering design bids are underway to ensure robust site selection, technical specifications and operational considerations for the project activities.

54. **Sustainability of investments:** Sustainability of investments mostly depends on the provision of adequate funding for routine and periodic maintenance of flood control assets. The Oyo State Government has formally indicated to the World Bank[23] that, given the Ministry of Environment and Habitat statutory mandate to operate and maintain drainages assets in Oyo State, appropriate amounts will be allocated for this activity and will be increased based on the extended drainage network following the IUMP investments. Also, under Sub-Component 1.1, the project supports the establishment of an efficient and effective flood control assets management plan for Ibadan. The plan will provide an informed maintenance hierarchy and optimize maintenance expenditures so as to ensure that key assets located in areas of high risk of flooding are maintained effectively. Further, and under Sub-Component 1.2, a long term flood resilience strategy will be developed aimed at assessing appropriate financing options for flood risk management including the cost of operation and maintenance of flood control assets. Finally, the Oyo State Government has embarked on an action plan aimed at increasing its Internally Generated Revenues (IGRs). Improved revenues will contribute to increased allocations by relevant MDA to the operation and maintenance of assets built under the project. The Government is committed to make the necessary allocations as IGRs increase. The World Bank will support Oyo State efforts to improve its IGRs under its public financial management program.

***Institutional sustainability*:** Regarding institutional and capacity building activities, sustainability will strongly depend on the State Government and the stakeholders' ownership of the various programs supported by the project and other partners involved in the proper flood and urban management sectors. The project is building on existing line MDAs to strengthen and sustain urban flood management policies. The preparation of technical and strategic Masterplans will embed technical assistance and capacity building programs to strengthen institutional capacity to move forward with the implementation and operationalization of those plans. The long term flood resilience strategy, which will be initiated under this project, will recommend policy, legal and institutional reforms needed to ensure institutional sustainability of the project. The IUFMP, through the long-term Oyo State Flood Resilience Strategy, funded under the project (Sub-Component 1.2), will provide detailed recommendations on the policy, regulatory and required institutional reforms to clarify the legal and institutional mandates of the various stakeholders and MDAs with regard to flood risk management in the city of Ibadan. Moving forward, two institutional flood risk management models emerge. The first consists of improved inter-sector coordination through multi-year Performance Contracts (PCs). The success of such a management model will be demonstrated through the implementation of the IUFMP. A second model includes the establishment of a dedicated government agency for flood risk management in Ibadan reporting directly to the Governor of Oyo State. Such an agency will take on the role of inter-sector coordination, joint investment planning and implementation of appropriate policies and regulations across the city aimed at flood risk management. The recently established Oyo State Environment Protection Agency (OSEPA)[24] would be considered during the preparation of

[23] Letter dated March 27, 2014.

[24] The Oyo State House of Assembly recently passed the Oyo State Environmental Protection Agency Bill 2013 to create a new agency under the Ministry of Environment and Habitat. The agency is not yet operational but will have powers to arrest and prosecute individuals and corporate bodies, which engage in environmental pollution in the state. The agency has evolved from the Ministry of Environment and Habitat's pollution control unit and it will serve as an enforcement tool for the implementation of all environmental policies. The Agency will also create LGA environment protection committees although it is not clear currently who will be included in these committees and what their roles and responsibilities will be.

the long-term Oyo State Flood Resilience Strategy under the Sub-Component 1.2. Should an appropriate institutional flood risk management model be established by Oyo State during the project life, project implementation will be reviewed accordingly.

55. **Economic and financial sustainability:** The economic sustainability of the project was assessed through the cost benefit assessment. The project will provide multiple benefits from investments targeted for flood risk mitigation. Investments on technical capacity building and new/rehabilitated infrastructure to protect from floods are cost effective in the long run, and would generally improve the city's quality of life, living conditions, and social equity. Citizens will benefit from better resilience to shocks, and improved livelihoods. To address the issue of long-term sustainability of the project investments, the project would assist the state government in assessing legal, institutional, and financial and policy frameworks related to flood risk management. The benefits of the newly constructed and rehabilitated infrastructure (such as bridges) will be considerable leading to enhanced city competitiveness.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk	**Rating**
Stakeholder	M
Implementing Agency	
- Capacity (fiduciary)	S
- Governance	S
Project	
- Design	S
- Social and Environmental	M
Program and Donor	N/A
Delivery Monitoring and Sustainability	S
Overall Preparation and Implementation Risk	**S**

B. Overall Risk Rating Explanation

56. **The overall project risk rating is Substantial.** The multidisciplinary and complex nature of the project including the framework design approach contributes to a significant project risk. Necessary mitigation measures include: (i) ensuring compliance with World Bank policies and procedures through the PMC that will support the PIU in different aspects of project implementation (technical, fiduciary and safeguards); and (ii) close oversight on the World Bank side to ensure activities are properly prepared and delivered in a timely manner, including the preparation of the Project Implementation Manual. Finally, the use of MoUs and PCs will reinforce both vertical and horizontal coordination under flood risk management in Ibadan.

57. The following core risks have been identified during preparation and adequate mitigation measures built into the project design:

58. ***Governance*:** The absence of both an institutional anchor and an efficient inter-sectoral coordination mechanism for flood risk management could impact project sustainability. The project finances a long-term urban flood management resilience strategy for Ibadan that addresses both the institutional fragmentation and the overlap in legal mandates among different MDAs involved in flood risk management in Ibadan. Also, the strategic master planning activities under the project provide the Oyo State Government with the capacity to make evidence-based and cost-effective investments and policy decisions. Finally, the project supports the establishment of an effective flood control assets management plan that provides an informed maintenance hierarchy to ensure that assets located in an area at high risk of flooding are maintained on a regular basis.

59. ***Social and Environmental Risks*:** While the project is designed to have beneficial impacts on the population in terms of reduced vulnerability to flooding and improved living conditions, there are also potential adverse environmental and social impacts. All investments will take into account the existing settlements and will be designed/selected in order to minimize the resettlement of residents.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

60. **All the activities financed by the project support government's obligations to provide for a secure environment and to ensure the well-being of its citizens**. Nigeria also formally adopted the Hyogo Framework for Action (the international DRM framework 2005-2015), and all project investments are considered as public goods that fulfill the above commitments. The World Bank's valued added and contribution to this project is the institution's deep expertise and experience in urban resilience, DRM, integrated flood management, early warning and hydro-meteorological services in both low and middle-income countries.

61. **An economic cost-benefit analysis is being carried out to assess the economic viability of the project.** The analysis combines short term measures (FY15-FY17) as well as medium to long term measures (FY18-FY22). A conservative approach was used to build a cost-benefit analysis in an environment of limited data and information[25].

62. **The rapid flood risk assessment estimates, based on precipitation statistics, that the 2011 flood was approximately a 10-year event.** While the return periods for the rainfall, peak river flow and resultant flood damage of a single event are not necessarily the same, they are generally strongly correlated. Rainfall statistics are therefore used as a proxy to estimate damage probabilities. A rapid flood risk assessment model estimated the 2011 building damages at approximately US$32 million. However, the Oyo State Government estimated overall damage and losses of approximately NGN52.8 billion (US$321 million)[26]. The results from the rapid

[25] There are several complexities and uncertainties inherent in quantifying disaster risk management for weather-related hazards that are further compounded by climate change, and cost-benefit analysis is also challenged in handling intangibles and discounting of future impacts, which is particularly important for extreme events. For this analysis disaster risk is based on past experience to 2013 and therefore not adjusted for potential climate change impacts.

[26] World Bank (2013). *Nigeria: Flood Impact Scoping and Capacity Building for Disaster Preparedness*. Internal Draft, Washington.

assessment are therefore based on the 2011 event to develop estimates of potential flood losses which came to an annual average flood loss of US$105.3 million/year.

63. **The rapid flood risk assessment estimated the reduction in building damages due to infrastructure improvements in "Priority Sites" and "Targeted Sites".** As with the assessment of current flood risk, the modeled reductions in building damages are to represent reductions in full flood losses based on the 2011 event.

Table 2: Reduction in Average Annual Losses

Intervention		
	Percentage	**US$ million**
Phase 1: Early warning	5%	5.3
Phase 1: Priority/critical infrastructure improvements	18%	19.4
Phase 2: Reduced runoff from upper catchments	14%	15.3
Phase 2: Improved urban drainage	42%	44.6
Full project (Phases 1 and 2 combined)	**52%**	**55.0**

64. It should be noted that the full reductions in losses resulting from the project are not simply the cumulative sum of reductions of the different interventions, as there are overlaps of the losses reduced by the various interventions (for example the same currently at-risk building could be protected by a number of different interventions). As such and to avoid potential "double counting," the rapid assessment also modeled the combined impacts of the various interventions, except early warning which was not added to the total project reductions (again to avoid the risk of double counting). The loss-frequency curves of the full project are given below.

Table 3: Full Project CBA Results

	Discount Rate			
Metric	**0%**	**5%**	**10%**	**15%**
Present costs (project and O&M, US$ million)	660.5	395.9	279.2	217.4
Present benefits (US$ million)	2,174.7	959.3	502.4	301.9
Net present value (US$ million)	1,514.2	563.4	223.2	84.5
Benefit/cost ratio	3.3	2.4	1.8	1.4

65. The following broad conclusions can be drawn from the economic analysis:

- The short-term interventions, namely installation of an early warning and response system and critical infrastructure improvements at "Priority Sites" will certainly be economically efficient.
- The full project (short, medium and long term measures combined), including the short-term measures to improve urban drainage and attenuation through inundation of green spaces, is highly likely to be economically efficient.

- The full project would also include improvements at all bridge crossings, not just the 14 priority locations. The costs of this are included in the assessment, while the benefits are not. As such, the results under-estimate the overall economic efficiency.
- The full project would also include benefits from improved safety of the Eleyele Dam, this was however not included in the analysis due to the impossibility of assessing the current probability of a dam failure.
- The short-term measures outperform the full project in terms of economic efficiency, justifying their selection as priorities for implementation.
- Urban drainage makes the greatest contribution of all interventions to flood risk reduction.
- The damage and loss estimates from the 2011 flood, which were used to pro-rate the results of the risk assessment, are not considered complete. If the full damage and losses and therefore potential benefits were better known, the project's economic efficiency would be greater.
- As the climate change impact of increased flood frequency and magnitude[27] is not included in the analysis, benefits should be further considered to be underestimated. The planned project will help mitigate potential increases in losses due to climate change, leading to greater benefits.

66. These conclusions align with a recent global analysis that highlighted a few key flood risk management strategies that stand out in terms of economic efficiency[28], indicating that the overall project design has satisfactorily considered issues of cost effectiveness:

- Floodplain protection: Utilization of the natural dynamics of river pathways consistently provides positive return across contexts, potentially because it reduces the lack of catastrophic failure and has relatively few downsides or negative externalities.
- Early warning: One of the most cost efficient and socially equitable approaches to reduce risk[29], and most effective when events are frequent as is the case in Ibadan.
- Flood proofing of residential infrastructure: Overall, this is lower cost than most other strategies for flood risk reduction, however the cost of this exercise is usually borne by those owning the houses. It may be worth exploring under the community resilience component of this project.

[27] World Bank (2012). *Nigeria: Enhancing the Resilience of Development to Climate Change*. Report No. 69027, Washington, D.C.
[28] ISET (2012). *Understanding the Economics of Flood Risk Reduction – A Preliminary Analysis*. Institute for Social and Environmental Transition-International, Boulder, CO.
[29] World Bank, United Nations (2010). *Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention*. Washington, D.C.

B. Technical

67. **The project design is based on successful approaches and lessons learnt from past and/or ongoing projects.**

(i) ***Rapid flood risk diagnostic:*** The preliminary flood risk assessment was initiated in September 2013 to analyze the key elements of the flooding in Ibadan and to get a clear understanding of the mechanism and conditions which result in inundation of the floodplain. The study identified the following factors for flooding: unimpeded run-off from roofs and impervious areas, lack of infiltration compounds the rapid run-off, extensive river network resulting on short time for surface water drainage to reach the nearest river channel, frequent blockage, poor floodplain and river channel management, and tropical climate with relatively high probability of extreme rainfall. The study also assessed the scale and nature of the risk from flooding, and found that given the generally sloping landscape and rapid urban run-off, river flooding is the major flood risk source within the city. An integrated Flood Risk Management Masterplan is being launched to cover the following gaps identified in the preliminary diagnostic and to recommend long term flood risk mitigation measures.

(ii) ***Eleyele Dam safety assessment:*** The thorough visual safety assessment of the Eleyele dam has revealed that the overall condition of the dam is 'fair' but the structure does not conform to the required minimum factors of safety for sliding or overturning. The study therefore recommended that the missing section of spillway base slab be replaced with possible installation of vertical stressed anchors to the concrete structure, hydrological assessment for checking required spillway capacity, and other works for the embankment body, draw-off tower, and scour tunnel. A follow-up detailed dam assessment is planned under Component 1.1.

68. **Building on the findings of the above assessments, the technical options selected take into account the need to build long-term resilience in the city of Ibadan**. This will be gradually strengthened during project implementation so as to optimize on the available funding and to ensure that decisions are evidence-based and cost-effective. Given that the issues contributing to flood risk in Ibadan are multi-faceted and interlinked, various alternatives were considered during project preparation. These included: (i) focusing only on the rebuilding of the 2011 flood affected infrastructure, (ii) adopting a wholesale approach by addressing all the issues contributing to flood risk in Ibadan, and (iii) adopting a selective and retail approach addressing key flood risk issues, namely: the Eleyele dam safety; urban drainage; solid waste management (SWM); land use planning; and flood control assets management. While the project tackles the knowledge deficit across all of the above, it only supports select physical investments aimed at restoring the Eleyele dam safety and improving urban drainage in the city according to a clearly defined investment hierarchy. By doing so, the project assumes that improving Solid Waste Management systems in Ibadan coupled with the implementation of an informed flood control asset management will inevitably help reduce the risk of flooding in Ibadan.

C. Financial Management

69. **Responsibility for establishing and maintaining acceptable financial management (FM) arrangements will be handled by the existing Oyo State Project Financial Management Unit (PFMU).** The PFMU is a multi-donor and multi-project FM platform, established through the joint efforts of the World Bank and the government. This common FM platform features robust systems and controls. The PFMU is presently involved in the implementation of a number of World Bank-assisted projects in the state. The World Bank's recent review showed that the PFMU has been performing satisfactorily. The PFMU consists of Accounts and Internal Audit Sections. Qualified accountant and auditor with appropriate expertise have been designated for the project and will be accountable to the Project Coordinator. The Project Accountant and Internal Auditor will be supported by accounting technicians to ensure that internal controls through segregation of duties are not undermined. As work load necessitates, additional professionally qualified accountants and internal auditors will be recruited for the duration of the project. To further strengthen the financial management systems in the PFMU, implementation of some agreed action plans are required. Further to the recommended action plans being implemented as per the agreed time frame, the financial management arrangements will meet the minimum FM requirement in accordance with OP/BP 10.00. Taking into account the risk mitigation measures, the financial management risk for this financing is assessed as Moderate. Annex 3 provides additional information on financial management.

D. Procurement

70. **Procurement activities under the Ibadan Urban Flood Management Project will be implemented by the Project Implementation Unit (PIU) hosted in Oyo State Government's office of the Governor set up for this purpose.** All the activity implementing agencies; Oyo State Ministry of Water Resources, Oyo State Ministry of Environment and Habitat, Oyo State Ministry of Works and Transport, Oyo State Solid Waste Management Agency, Oyo State Emergency Management Agency will be actively involved in the procurement process. These MDAs will provide inputs into the work plan, technical specifications and terms of reference for the activities under their respective MDAs. They will participate actively in contract administration and management and will be responsible for the acceptance and the takeover of the goods, services and works for the contracts under the respective agencies.

71. ***Guidelines:*** Procurement under the proposed operation will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants" dated January 2011 and its "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants" dated January 2011 and with the provisions stipulated in the Legal Agreement. The various items under the different expenditure categories are described in general below. For each contract to be financed by the credit, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame will be agreed upon between the Borrower and the World Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. "Guidelines on Preventing and Combating Fraud and Corruption in

Projects Financed by IBRD Loans and IDA and Grants" dated October 15, 2006, updated in January 2011 (the Anti-Corruption Guidelines) shall apply to the project.

E. Social

72. ***Expected Social Impact****:* Flood engenders socio-economic and humanitarian crises (loss of lives, disruption of livelihoods and economic activities, loss of property and damage to critical public infrastructure – roads, utilities, and school buildings - displacement of whole families, and spread of diseases). All this negatively affects the standard of living, resulting in impoverishment, increased social vulnerability and, above all, threat to life. The project mitigates the effects of floods on 3.3 million residents of 11 LGAs within the city of Ibadan. Other anticipated benefits include enhanced dam safety, improved health, and general well-being of beneficiaries through improved hygiene occasioned by a better drainage system. Given the expected long-term benefits of the flood risk management measures such as early warning, flood risk identification capacity, risk mitigation and disaster preparedness, secondary stakeholders extend beyond the Ibadan area. Establishing improved operation and maintenance (O&M) is a critical step in creating viable interventions. A comprehensive stakeholder communication and participation strategy will be promoted combined with a strong capacity building program at city and local levels. The project will give specific attention to the inclusion of women and vulnerable groups, and these and other Social Safeguard issues, are discussed in the ESMF. Although the project will not be implementing community-driven structural flood mitigation activities, it recognizes citizens and communities as key stakeholders in flood risk management and their essential role in risk assessment, preparedness, response and recovery from flood disasters. As such, communities are not just beneficiaries but rather partners in the flood risk reduction process and the project promotes community participation as an integral part of project implementation.

73. OP 4.12 on Involuntary Resettlement is triggered because project interventions may result in land acquisition, temporary loss of livelihood and/or limited physical resettlement. The location of specific interventions related to flood management infrastructure such as small bridges and culverts will not be known in detail prior to appraisal and a Resettlement Policy Framework is therefore the most appropriate social safeguard instrument. This document outlines the key objectives and principles of the policy as well as gives guidance to the preparation of subsequent Resettlement Action Plans (RAPs). As soon as the details with regard to sub-projects become known during implementation, the Borrower will prepare site-specific RAPs acceptable to the World Bank. Specific attention will also be given to the development of a grievance redress mechanism at the community level that will be accessible to all stakeholders as well as arrangements for monitoring the implementation of the RAP.

F. Environment

74. ***Environmental Assessment category*****:** The project is categorized as environmental category A (full assessment) because of the potential adverse environmental and social impacts of the civil works activities related to the rehabilitation of the damaged spillway and stilling basin to improve dam safety (incl. removing vegetation to expose concrete surface, making access), major rehabilitation of bridges and Cross Drainage Structures (CDS), cleaning of river

channels on the three main rivers, and restoring or establishing natural flood retention ponds may have significant adverse impacts that are sensitive, diverse, cumulative, irreversible or unprecedented. Though a category A project, some of the environmental and social impacts associated with immediate repairs and restoration of bridges and CDS on critical secondary and tertiary sub-catchment areas across the city of Ibadan and undertaking flood plain management activities are expected to have site-specific and moderate impacts.

Safeguards policies triggered

75. The following five safeguard policies are triggered, namely Environmental Assessment (OP 4.01), Involuntary Resettlement (OP 4.12), Natural Habitats (OP/BP 4.04), Physical and Cultural Resources (OP/BP 4.11), and Safety of Dams (OP/BP 4.37).

76. ***Environmental Assessment (OP/BP 4.01):*** Safeguards policy OP 4.01 is triggered, in Component 2 and the potential civil work activities include rehabilitation of the damaged spillway and stilling basin to improve dam safety (incl. removing vegetation to expose concrete surface, making access), immediate repairs and restoration of bridges and CDS on critical secondary and tertiary sub-catchment areas across the city of Ibadan and major rehabilitation of bridges and CDS, cleaning of river channel on main three rivers, restoring or establishing natural flood retention ponds, and undertaking flood plain management activities.

77. ***Involuntary Resettlement (OP/BP 4.12):*** This policy is triggered because most of the sub-projects will involve minimal or moderate land acquisition, physical resettlement or restriction of access to usual means of livelihood. Impacts in this regard are expected to be limited as the sub-projects will largely be rehabilitation of existing infrastructure.

78. ***Natural Habitats (OP/PB 4.04):*** This policy is triggered because some project activities may take place close to critical natural habitats (forests, wetlands, mangroves, etc.) or environmentally sensitive areas and some mitigation measures may be necessary to minimize any adverse environmental and social impacts. The project is not being implemented in any area with critical natural habitats, nor does it involve the significant conversion or degradation of natural habitats.

79. ***Physical Cultural Resources (OP/BP 4.11*****):** Some activities in Components 2 may include civil works that could expose chance finds. These chance find sites may include sacred shrines and burial sites. The Environmental and Social Screening Checklist and the Generic Environmental and Social Mitigation Measures Checklist that are annexed to the ESMF will address the Physical Cultural Resource (PCR), and the Environmental and Social Management Framework (ESMF) includes provisions for addressing such cultural heritage chance finds.

80. ***Safety of Dams (OP/BP 4.37):*** The IUFMP will not be directly involved in the construction of new dams. However, component 2 may include rehabilitation of damaged spillway and stilling basin to improve dam safety. For this reason the safety of dam's policy (OP 4.37) is triggered, even though the project is not supporting the construction of large dams. The ESMF and RPF checklists would also be used to screen such sub-projects for their potential

environmental and social impacts. Dam Safety Reports (DSRs) and Environmental and Social audits of the associated facilities would be carried as required.

81. ***Cumulative and Induced Impacts:*** No long term or cumulative adverse impacts were identified in the ESMF and the RPF. However, the combination of multiple impacts from existing projects, the proposed project, and/or anticipated future projects may result in significant adverse and/or beneficial impacts that would not be expected in case of a standalone project. The ESMF's baseline study identifies relevant existing environmental and social conditions in Nigeria.

82. ***Alternatives considered:*** The ESMF of IUFMP contain sections on "Analysis of Alternatives". They conclude that the "do nothing" scenario would worsen the present situation of the proposed urban infrastructure. This would imply that the Eleyele dam site, downstream catchment areas and other targeted flood risk sites would be left in their present states with a real potential for worsening. Specifically, if the flood prone sites are left unimproved, more houses and farmlands will suffer from the recurrent flooding situation, which occurs quite frequently in Ibadan. Damage and loss rates may increase as unimproved flood prone sites will serve as death traps.

83. ***Screening Process:*** A review process will be put in place to ensure screening of all potential civil work activities for environmental and social impacts prior to sub-project approval by the PIU. The screening can be carried out by a designated officer of the PIU (Environmental and Social Safeguards Specialists) or the relevant MDA (Ministry of Environment and Habitat in accordance with the laid down procedure. This will include an Environmental Screening Sheet (EES) showing the estimated impact category of each sub-project destined for rehabilitation and/or up-grading. The screening process will involve an assessment of the project to determine: (a) the appropriate sub-project categorization for the EA; (b) applicable World Bank environmental and social safeguards instruments (ESIA/EMP and/or EAP/RAP); (c) potential for environmental and social impacts and (d) cultural or other sensitivities. In addition, each project will be screened to identify relevant stakeholders and, the nature and extent of engagement for each stakeholder category.

84. In the project, there may be sub-projects financed by the World Bank classified as Category A and Nigeria Category 1, requiring full ESIAs. In cases where the categorization is split, e.g., Category B under OP 4.01 and Category I under the Nigerian EIA Act, the more stringent category will apply. The ESMF and RPF provide guidance for screening based on the scale and type of project and the potential impacts that can be envisioned. The project screening reports will be reviewed by the environment and social safeguards specialist and the staff of State Ministry of Environment and Habitat to confirm that all project-financed activities fall within the appropriate Environmental Category and that the recommended action plan is appropriate. The safeguards specialists will then submit the report of the screening exercise with its recommendations for clearance to the World Bank to proceed with the detailed ESMPs, ESIAs, and/or RAP, and any other safeguards instruments. The executive summaries of the Category A safeguards instruments will be circulated to the World Bank's Board of Executive Directors.

85. ***Environmental and Social Management Plans (ESMPs):*** The IUFMP and all sub-projects will involve the preparation of ESMPs to address safety and environmental regulatory compliance objectives, institutional responsibilities (e.g., World Bank), and other related commitments. An ESMP is an important element of the IUFMP overall Environmental and Social Management strategy to ensure environmental, social, and health performance of the entire project.

86. **The project stakeholders were consulted during the preparation of the ESMF.** Stakeholders consulted included Permanent Secretaries, IUFMP PIU, Directors, Heads of departments of MDAs, Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs), representatives/ of at flood risk communities, and heads of households. The discussions provided insight to the state legislations and laws on the environment and urban planning, flood plains management, state government methods for engaging local communities and achieving participation in implementation of projects. The exact locations and impacts of the sub-projects have not been identified; thus, the ESMF and RPF were prepared and disclosed in country and in the World Bank Infoshop on January 24th and 28th 2014 respectively.

Annex 1: Results Framework and Monitoring

NIGERIA: IBADAN URBAN FLOOD MANAGEMENT PROJECT

Results Framework

Project Development Objectives

PDO Statement

The project development objective is to improve the capacity of Oyo State to effectively manage flood risk in the city of Ibadan.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	End Target			
Effective use of flood control assets management plan	☐	Text	0			Yes	Yes	Yes	Annual	Annual reports on the effective use of flood control assets management plan	PIU and MDAs
Direct project beneficiaries	☒	Number	0.00	0.00	0.00	5000.00	7000.00	36600.00	Annual	Project reports and surveys	Project Implementation Unit
Female beneficiaries	☒	Percentage Sub-Type Supplemental	0.00	0.00	0.00	50	50	50	Annual	Project reports and surveys	PIU
Land area protected from a 25 year return period flood event	☐	Hectare(Ha)	0.00		200.00	500.00	1000.00	3500.00	Annual	Hydraulic flood simulations as part of the Ibadan's Integrated flood risk	PIU and MDAs

										management Masterplan	
Improved institutional coordination on flood risk management in Ibadan	☐	Text	Not Satisfactory (No)	Yes	Yes	Yes	Yes	Satisfactory (Yes)	Annual	Annual project reports and evaluations	PIU and MDAs

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	End Target			
Adoption of flood control assets management plan for Ibadan	☐	Text	None	0	0	Yes	Yes	Yes	Once	Project reports and digital database adopted by the Governor's office and all Oyo State MDAs	PIU and MDAs
Ibadan's long term Flood Resilience Strategy developed and validated	☐	Text	0	0	0	0	Yes	Yes	Once	Availability of project report, validated by the Project's Steering Committee	PIU and MDAs
Improved capacity for flood forecasting and	☐	Text	None				Yes	Yes	Quarterly	Flood hazard monitoring and forecasting	PIU and MDAs

warning										reports including information on duration, intensity and location of rainfall	
Population protected by restoring the safety of the Eleyele dam	☐	Number	0.00	0.00	0.00	4000.00	4500.00	5065.00	Annual	Hydraulic flood simulations and dam break analysis will be undertaken to assess potential submergence of area population by concerned LGA statistics	PIU and MDAs
Flood-prone sites made flood resilient in Ibadan	☐	Number	0.00	5.00	12.00	14.00		14.00	Annual	Reports and surveys	PIU and MDA
Flood risk management capital investment program adopted for targeted sites	☐	Text	None	0	Yes	Yes	Yes	Yes	Once	Project report, validated and adopted by the Governor's office and all Oyo State MDAs	PIU and MDAs

Project Development Objective Indicators	
Indicator Name	Description (indicator definition etc.)
Effective use of flood control assets management plan	Benchmark for effective use will be: 1. Timely maintenance of flood management structures; 2. Responsibilities of different stakeholders are clarified; and 3. The plan is consulted during budget planning and allocation
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.
Land area protected from a 25 year return period flood event	Assesses the reduction in the land area within Ibadan city prone to flooding as a result of project investment in flood risk mitigation
Improved institutional coordination on flood risk management in Ibadan	Assesses improved coordination between relevant MDAs on flood risk management. Benchmark for improved institutional coordination will be: 1. Successful adherence to performance contracts 2. Adoption of institutional reforms recommendations from the Ibadan's long-term Flood Resilience Strategy (For the first four years, this indicator will only measure first benchmark on performance contract. Second benchmark will be clarified and monitored after Project's Second Review planned in the 5th year of the project)

Intermediate Results Indicators	
Indicator Name	Description (indicator definition etc.)
Adoption of flood control assets management plan for Ibadan	Assesses the adoption of a digitized asset data inventory mapping including location, condition, operations and management needs
Ibadan's long term Flood Resilience Strategy developed and validated	Ibadan's long term Flood Resilience Strategy will provide recommendations on the appropriate policy, financial sources, regulatory and institutional reforms needed to

	ensure sustainability of flood risk management investments
Improved capacity for flood forecasting and warning	This indicator measures availability and use of accurate rainfall and river flow data for early warning. Benchmark for assessing improved capacity for rainfall forecasting and flood warning will be: 1. Rainfall data reports are certified by NIMET and issued timely; and 2. Flood warning is disseminated in a timely manner
Population protected by restoring the safety of the Eleyele dam	Assesses the impact of project investments in dam safety, which will protect both lives and properties downstream of the Eleyele dam
Flood-prone sites made flood resilient in Ibadan	Assesses whether culverts, drains and roads in project sites are made resilient to 25 year design flood event
Flood risk management capital investment program adopted for targeted sites	Assesses whether investment plans are developed and adopted based on recommendations from Integrated Flood Risk Management Plan

Annex 2: Detailed Project Description

NIGERIA: IBADAN URBAN FLOOD MANAGEMENT PROJECT

Background Rationale of the Project

1. With an estimated population of 168 million in 2011, Nigeria has experienced more than a decade of rapid average GDP growth close to 8 percent p.a., concentrated in sectors driven by trade, agriculture, telecommunications, and other services. This makes Nigeria, which has already attained lower middle-income country (MIC) status since 2010, leap forward to one of Africa's economic potential powerhouses and one of the 20 largest economies by 2020[30]. However, a number of challenges exist and pose a threat to Nigeria's development goals. Natural disasters, such as frequent flooding events, negatively affect GDP growth and can reverse hard-earned development gains and affect the most vulnerable and the poor. Over the last 30 years, some 40 flood events have been recorded in Nigeria, affect over ten million people, and resulting in the loss of close to 1,400 lives. The 2012 flood alone affected four million people and caused an estimated US$16.9 billion in damages and losses[31] in key sectors of the economy.

2. On the other hand, the country's population is expected to reach 200 million by 2020 and nearly 300 million around 2050, thereby increasing exposure to natural disasters exacerbated by the climate and environmental impacts. The recent analysis[32] undertaken by the World Bank shows that climate and disaster shocks that are likely to affect water induced flooding disaster will remain stable only in 20 percent of the country while about 80 percent will face very different water cycles than those experienced historically over the coming decades. Many areas may be subject to increased risk of floods and it is expected to exacerbate Nigeria's vulnerability to weather swings and limit its ability to attain its 20-2020 vision.

3. This rapid urbanization, especially for densely populated cities, if unplanned and uncoordinated, will further deepen tremendous challenges in the solid waste and waste water management system, access to basic infrastructure and preparedness to potential natural disasters and climate change[33]. The likely impacts include reduced crop yields, declining productivity of livestock, and variability of water availability. Climate-related challenges will be compounded by increasing population pressure on land and water resources and rapid urbanization.

4. One of the states facing such challenges in the country, Oyo State, the capital city of which is Ibadan city, which is the subject and area of the proposed project. Since its creation in 1976, Oyo state had been playing leading roles in many facets/sectors of national development including being the (i) hub of socio-cultural heritage in south-west Nigeria, particularly the Yoruba region; (ii) educational cradle of the nation and a human resources hub with multiplicity of universities and higher research institutions (local as well as international in Ibadan city); and (iii) a gateway to the coastal mega city of Lagos from the northern part of Nigeria by rail, road, and air. The state had a total GDP of US$16 billion, with a US$2,666 per capita income in 2010.[34]

[30] Nigeria Vision 20: 2020.
[31] Nigeria Post Disaster Needs Assessment 2012 Floods, May 2013, Government of Nigeria. A weighted exchange rate for the year of 160 Naira per US Dollar was adopted.
[32] Enhancing the Climate Resilience of Growth. World Bank, 2013.
[33] Nigerian cities are witnessing high rate of environmental deterioration and are rated among urban areas with the lowest livability index in the world. It is estimated that only between 20 percent and 30 percent of the urban population enjoy decent urban life in the country.
[34] NPC 2013, Oyo State Government 2013.

5. ***Physiographic Setting of the Project Area:*** The city of Ibadan has been experiencing an increasing number of flood events during the last 50 years (16 major events recorded). The most recent floods of August 2011 caused significant human and economic losses in the city, primarily in the housing, education, agriculture and transport sectors. Settlements located in unstable and risky locations such as along Ogunpa, Kudeti, Ogbere and Orogun floodplains and the hillsides of Oke-Are, Oke-Aremo, Sapati and Mokola were seriously affected with over 120 fatalities reported. Land use within the city is primarily residential and a majority of Ibadan's urban poor[35] live in crowded slums within the core residential areas of Ayeye, Agbeni, and Bere and are at increased risk from flood events due to their location in low lying areas. Ibadan city setting is characterized by rugged terrain with wide valley plains. The city is drained by three North-South flowing river systems, namely, Ona River (Western), Ogunpa River (Central) and Ogbere River (Eastern) that flow through the city. These rivers are main drainage channels that cause flooding when not properly regulated[36]. The network of rivers and streams is extensive throughout the city as a result of a combination of the geology of the area and the tropical monsoon climate.

6. Although surface water drainage into rivers happens relatively quickly, it increases the likelihood of watercourses overflowing their banks and inundating the floodplain and backwater zones. The Ona River basin has the longest river and the biggest catchment (more than 400 sq.km.). It drains a large rural area to the north of the city with two large reservoirs, the largest being Eleyele reservoir located on the northern outskirts of the city. Still further upstream, there is a smaller reservoir (Moniya) approximately one third the size of Eleyele reservoir. The discharge capacity of the Ona River downstream channel has been greatly reduced due to in-stream obstacles formed by unruly waste disposal and siltation. Most bridges and culverts create bottlenecks for flow passage due to their inadequate design openings (shorter width/span and small box culverts) and a lack of regular maintenance.

7. The Eleyele Dam, built in 1942 on the outskirts of the city, is now located right at the center of the peri-urban area. The dam has a reservoir capacity of about 7.04 Million Cubic Meters (MCM) (see below for details). However, the reservoir is 70 percent silted and suffers from damages sustained during 1980 and 2011 floods (primarily destroying a part of the spillway downstream section during the 2011 flooding) imposing a severe safety risk to the downstream settlements. Deforestation and rapid urbanization in the upper catchment of the Ona River catchment have resulted in increased soil erosion that accumulated in both the reservoir and the lower reaches of the river systems. This phenomenon coupled with unregulated solid waste disposal and lack of regular rivers cleaning and maintenance has increased the frequency of flash flood events within the city.

8. The Ogunpa River basin drains the central area of the city and joins to the Ona River in the south of the city. This river is the smallest of the three, with a catchment size of approximately 50 sq.km. Although its tributaries consist of natural river channels within an active floodplain, the main Ogunpa river channel is largely canalized through the centre of the city. The condition of the channel, however, is poor, with evidence of large sediment deposits building up and small trees taking root along the grasses and scrub. The Ogebe River basin draining the eastern side of the city, joins the Ona river approximately nine kilometers to the south of the city and has a total catchment area of around 70 sq.km with 40 sq.km located within the city itself. All three rivers have CDSs like culverts, sluices and bridges that are meant for safe passage of torrential floods when coming down from surrounding watersheds through the city. In some cases unsized CDSs become obstructions with heavy deposits of solid waste up front.

[35] In 1963, half of the Ibadan's core area consisted of slum dwellings, growing to 70 percent of the city's total number of derelict housing in 1985. Fourchard (2003).

[36] There were 13 major floods in Ibadan city since 1951 (Task Report table 3). The highest 24 hrs rainfall was on 31 August 1980 (in Ogunpa River Basin) of 274 mm and the lowest is on 20 April 1978 with 126 mm. Most recent flood of 26 August 2011 (in Ona River Basin) was by 187.5 mm rain mainly concentrated in about 4-5 hrs.

9. During the August 2011 floods, substantial damages of CDS occurred in Ona River basin and in others. It is also reported that only about 20 percent of the city has a functioning storm water drainage network[37] and investments have been limited since the closure of the World Bank-financed Oyo State Urban Project in the late 1990s. A preliminary assessment by the World Bank and Oyo State Government team identified multiple and interconnected reasons, which contribute to the growing challenge of flooding in Ibadan City. A flood risk assessment was carried out which included an initial broad scale hydrological and hydraulic analysis to develop various cost-effective flood risk mitigation measures.

10. The flood risk assessment has identified a complex combination of different factors which contributes to the city's vulnerability to flooding: (a) non-structural factors related with citizen behavior, weak planning, and preparedness during floods; (b) structural factors related with the resilience of current and planned infrastructure and buildings, as well as their location, operations and maintenance, and (c) institutional factors which underpin both non-structural and structural factors. Torrential rainfall coupled with landscape typified by small rounded hills and relatively flat bottomed valleys also contribute to flooding risk in the city. While weather and landscape features of the city cannot be changed, vulnerability related factors can be better managed to reduce impacts of flooding on citizen.

(a) Non-structural factors: Rapid and un-managed population growth in the city is exposing more people and property to flooding. It was estimated that more than 2,000 properties were flooded during the 2011 flood event in the Ona River catchment. The broad-scale hydraulic modeling carried out as a part of rapid risk assessment suggests more than 9,000 properties across the city are now at risk during a 1:100 year flood event. With increases in city population, this figure will keep on increasing in a "business as usual scenario". The following non-structural reasons have been identified:

ii. *Limited understanding and awareness of flood risk in the city:* There is general lack of awareness about environmental laws and factors contributing to floods including the risks associated with building on flood plains.

iii. *Lack of integrated watershed management approach:* Deforestation and rapid settlement growth in the upper catchments of the Ona and other urban development along the rivers, result in erosion at upper and rain-runoff flow acceleration in the city that accumulates in the lower reaches of the river systems (together with unregulated solid waste disposal) which in turn reduces the river in-stream capacity.

iv. *Lack of risk sensitive urban planning and management:* Absence of an integrated urban planning and management framework[38], which ensures flood zoning (and notified drainage zone) and regular monitoring and management, has resulted in the growth of settlements in high flood prone river channel areas. A number of houses in the city are in floodplains because of limited awareness and the challenges of inadequate planning laws (which have not been updated with changes in floodplains and land use), enforcement personnel and equipment.

v. *Absence of adequate flood preparedness and response capacity:* Although the city has a functioning State Emergency Management Agency (OSEMA) the agency has a limited budget and technical resources to carry out effective early warning, emergency preparedness and response programs. Investments are needed in following areas: (i) development of a flood forecasting and early warning system; (ii) preparation of the city and community contingency plans, along with adequate budget and response mechanisms, and (iii) development of a community awareness and preparedness program including media based communication strategy, public alert and emergency

[37] The network was under-designed to cope with the flood type of August 26 in which several bridges, culverts and other transport infrastructure collapsed as a consequence of the floods.

[38] 11 LGAs focus on their own needs without considering the entire city dimension in developing and implementing urban management decisions.

drills in schools and hospitals, and protocols during emergency situations. Quick access to funding is needed in case of emergency to ensure prompt response and recovery.

(b) Structural factors: Three North-South flowing river systems of Ona River (Western), Ogunpa River (Central) and Ogbere River (Eastern) are the main drainages as well as main sources of flooding if flood flows are not properly regulated[39]. The water supply dam, Eleyele, is built on the Ona River, and the dam was damaged during a major flood in 2011. All three rivers flowing through the city have cross drainage structures like culverts, sluices and bridges that are meant for safe passage of torrential rain floods coming down from surrounding watersheds through the city.

i. *Eleiyele Dam*: Built in 1942 at the outskirt of the city, the dam is now right in the center of the peri-urban area. The dam is a roll-filled earthen dam having a reservoir capacity of about 7.04 MCM. It is mainly for the city water supply. The dam is facilitated with an automated Ogee shaped side-channel spillway with a designed capacity of 368 m^3/sec. However the reservoir is 70 percent silted up in the span of 70 of years operation, which, along with the massive damages that it sustained during the 1980 and 2011 floods, imposes a severe safety risk to the downstream settlements. Immediate remedial measures are needed to ensure dam safety.

ii. *Downstream Ona river channel and urban drainage system*: The discharge capacity of Ona River downstream channel is greatly reduced due to in-stream obstacles formed by unruly waste disposal and siltation. Most bridges create bottlenecks for flow passage due to their inadequate design openings (shorter width/span and small box culverts) and a lack of regular maintenance. It is also reported that only about 20 percent of the municipality has a functioning storm water drainage network[40] and investments have been limited since the closure of the World Bank-financed Oyo State Urban Project in the late 1990s. The existing storm water drainage infrastructure is blocked and poorly maintained.

iii. *Limited infrastructure planning, monitoring, operations and management abilities*: Poor operations and maintenance of urban drainage affects surface water run-off and stream capacity. In particular, mats of vegetation dislodged and carried downstream by the flood water become lodged in undersized or inadequate bridges and culverts. Other debris (both natural and man-made) carried by the floodwater quickly adds to this initial blockage resulting in significant backing up and overtopping of roads. This causes significant damage to infrastructure, and increases the likelihood of inundation of local properties. Municipal services such as solid waste and waste water management also suffer from inadequate budget, lack of technical skills, and uncoordinated management (amongst 11 Local Government Authority-LGAs).

(c) Institutional factors: Underpinning both non-structural and structural challenges is the fact that institutional capacities need to be strengthened. Flood risk management capacity, as measured through the ability to prepare, respond to, and manage risk reduction (HFA pillars) is fragmented across various MDAs in the city. Apart from technical and financial challenges faced by these individual agencies, there is limited coordination. Responses to address flood management in Ibadan are also fragmented and inadequate. State and local governments are ill-prepared to address flood incidents and attempts to control flood risk have generally been unsuccessful. Many measures are needed to enhance institutional capacity. Planning and preparedness need to be carried out with good coordination and participation vertically (federal, state, local) and horizontally (across sectors and MDAs). Clear responsibilities and mandates need to be identified and various actors empowered to participate in multi-sector, multi-scale work, especially on long-term planning, policy and public expenditure management. Regulatory development and enforcement requires strengthening at all

[39] There were 13 major flooding in Ibadan city since 1951 (Task Report table 3). See above Footnote 7 of these floods in the three river basins.

[40] The network was under-designed to cope with the flood type of August 26 in which several bridges, culverts and consequently transport infrastructure collapsed as a consequence of the floods.

levels to transform planning processes into tools that can deliver public goods and protect private benefits. The flood risk assessment has guided both the scope and the preparation of project components.

Project Description

11. **A joint preliminary assessment by the World Bank and the Oyo State Government teams has identified multiple and interconnected factors contributing to the growing challenge Ibadan has with flood management.** The assessment identified a number of issues contributing to flood risk in Ibadan. Out of these, five were retained under this project and include: (i) Eleyele dam safety (dam currently used for water supply storage), (ii) Ibadan city drainage, (iii) solid waste management (SWM); (iv) land use planning; and (v) flood control assets management. Given the limited project funds and weak absorptive capacity by the Oyo State Government, the above issues were prioritized and ranked by importance and urgency. While the project addresses deficits in sector knowledge and institutional capacity under all of the above issues, it only finances physical investments aimed at restoring the Eleyele dam safety and improving the Ibadan city drainage according to a clearly defined investment hierarchy.

12. **A rapid institutional assessment of flood risk management capacity in Ibadan, measured through the ability of city officials to prepare, respond, and manage risk reduction has revealed serious fragmentation and overlapping of responsibilities across the various MDAs.** In addition to the technical and financial challenges faced by the MDAs, limited inter-agency coordination was reported. Furthermore, state and local governments are ill-prepared to address flood incidents and attempts to control flood risk have generally been unsuccessful.

13. The proposed project aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design to make changes based on learning. The project also supports capacity building for flood risk management in the city of Ibadan. It reinforces Oyo State government's early warning and response capabilities and leverages existing World Bank projects (such as the Community and Social Development Project, CSDP) in Oyo State in support of the IUFMP.

Project Components

14. The project consists of three main components described in subsequent paragraphs: (i) Flood Risk Identification, Prevention and Preparedness Measures; (ii) Flood Risk Reduction; and (iii) Project Administration and Management Support. The detailed description of the project is provided in Annex 2.

15. **Component-1: Flood Risk Identification, Prevention and Preparedness Measures (Total Costs US$43.0 million equivalent, IDA US$43.0 million):** The objective of this component is to assess flood risk in the city of Ibadan, plan risk reduction measures, and finance preventive structural and non-structural measures to enhance flood preparedness. This will be achieved through a number of sector-specific and specialized Master Plan studies, and by designing and establishing an integrated flood early warning and response system. This component consists of the following four sub-components:

Sub-Component-1.1: Ibadan's Flood Risk Management Investment Program (Total US$22.0 million equivalent, IDA US$22.0 million equivalent) will finance: (a) the preparation of a flood risk management investment program building on three key city Masterplans namely: (i) Integrated Physical Master Plan, (ii) Solid Waste Management Master Plan, and (iii) Integrated Flood Risk Management Master Plan; (b) carrying out feasibility studies, detailed engineering designs and construction supervision services for works to be carried out under Component 2 of

the Project; (c) preparation of emergency preparedness plan for Eleyele dam as well as ESIAs and ESMP.

Sub-Component-1.2: Ibadan's Long-Term Flood Resilience Strategy (Total US$1.0 million equivalent, IDA US$1.0 million equivalent) will support the preparation of a long-term Flood Resilience Strategy for Oyo State, which will provide detailed recommendations on potential sources of investment financing and appropriate tools on the policy, regulatory and institutional reforms required so as to clarify the legal and institutional mandates of the various stakeholders and MDAs with regards to flood risk management in the city of Ibadan.

Sub-Component-1.3: Ibadan's Flood Early Warning and Response System: (Total US$7.0 million equivalent, IDA US$7.0 million equivalent) will finance: (i) the design of an Integrated Flood Early Warning and Response System for the city of Ibadan to improve flood forecasting to communities and government for response; (ii) the establishment of a flood forecasting and early warning weather forecast radar system[41], and software for development of hydraulic and hydrological modeling in strengthening collaboration between the National Emergency Management Agency (NEMA) and the Oyo State Emergency Management Agency (OSEMA); and (iii) community based contingency planning and awareness, by organizing training workshops in targeted communities and Community Development Associations (CDAs) living in high risk areas of Ibadan, using the community platforms of the World Bank-funded Community and Social Development Project (CSDP) in Oyo State. Support from the local media will be sought and will build on the communications strategy developed under project preparation.

Sub-Component-1.4: Contingency Component (US$13.0 million equivalent, IDA US$13.0 million equivalent): Following an adverse natural event that causes a major disaster, and after an official declaration of a State of Emergency by either the President of the Federal Republic of Nigeria or the Oyo State Governor, the state government may request the Bank to approve access to project funds under this component to support mitigation, response, recovery and reconstruction. Disbursements would be made against a positive list of goods, works, and services that are required to support mitigation, response, recovery and reconstruction needs as described in the Emergency Response Operations Manual.

16. **Component-2: Flood Risk Reduction - (Total costs US$149.0 million equivalent, IDA US$149.0 million):** The objective of this component is to ensure flood risk mitigation through structural measures by financing public infrastructure investments for flood mitigation and drainage improvements. This component consists of the following two sub-components:

Sub-Component-2.1: Priority Infrastructure Improvement Program in "Priority Sites" (Total US$20.9 million, IDA US$20.9 million equivalent): This sub-component will finance both critical infrastructure improvements in priority secondary and tertiary sub-catchments involving 14 pre-identified priority sites for rehabilitation of drainage culverts, drains, roads, including the necessary works needed to restore the flood damaged Eleyele dam for safety. The "Priority Sites" selection criteria include areas in the city of Ibadan where reconstruction would offer a no-regret solution and that presented an opportunity to: (i) reduce localized flood risks; (ii) reconstruct flood-damaged infrastructure and (iii) re-establish or improve community connectivity.

Sub-Component-2.2: Long-term Integrated Flood Risk Mitigation Measures (Total US$128.1 million, IDA US$128.1 million equivalent): This sub-component will be based on the

[41] Weather forecast Radar System may include Telemetry Rain gauges at key nodal stations (t.b.d) in addition to the Radar after final study.

recommendations of the Integrated Flood Risk Management Master Plan (initiated under Sub-Component-1.1), and will finance the rehabilitation and construction of robust infrastructure in "Targeted Project Sites" (see Appendix 2 table 2.2) that are divided into:

(i) "**Critical Socio-Economic Sites**" will be identified by developing contingency plans and undertaking structural improvements to critical public assets such as hospitals, airport, public buildings, including ensuring access/egress and functionality. Both the nature and the location of the infrastructure works under this sub-component will be guided by the recommendations of the Integrated Flood Risk Management Master Plan and based upon clear technical, environmental, social, economic and financial criteria. Investments under this sub-component will require the prior approval of the World Bank based on a joint program formulated by both the Oyo State Government and the respective LGAs.

(ii) "**Urban Drainage Sites**" are "Targeted Sites[42] " provided they comply with the criteria for the IUFMP investment decision support filter. These include: (i) strengthening flood resilience of key socio-economic assets within the city of Ibadan; (ii) cost-effectiveness; (iii) alignment with the recommendations of the Ibadan's Physical Masterplan and Ibadan's Integrated Flood Risk Management Masterplan; (iv) maximizing the level of risk mitigation to human lives and socio-economic economic assets; (v) prepared according to the Project Implementation Manual (PIM) with complete cost-benefit analysis, social and environmental assessments, etc.

17. **Component-3: Project Administration and Management Support (Total costs US$28.0 million equivalent, IDA US$8.0 million equivalent)** will finance incremental operational costs related to the implementation of the project for goods, equipment, staff, travel, and Project Management Unit's consultant services as described below:

Sub-component-3.1: Project Administration (Total US$24.0 million equivalent, IDA US$4.0 million equivalent) will finance the procurement of office supplies and furniture, ICT equipment, transport vehicles for the Project Implementation Unit (PIU), and procuring a comprehensive set of Project maps (geospatial, soil, topography, etc.); (ii) office running costs (office rent, electricity, water, internet, telephone, fuel, stationary, ICT items, etc.); (iii) the hiring of external Financial and Technical Audits which will monitor the project execution periodically and reporting directly to PIU/Steering Committee; (iv) PIU and Independent Advisory Group yearly allowances as well as the preparation and implementation of Resettlement Action Plans paid from the counterpart funding, and; (v) Fiduciary and Safeguard Training.

Sub-component-3.2: Project Management Support (Total US$4.0 million equivalent IDA US$4.0 million equivalent): This subcomponent will finance the procurement of Project Management Consultancy for an initial period of two years renewable for an additional two years based on project implementation needs, PIU capacity building requirements, and consultant's performance. The scope of this activity involves supporting the PIU in project management activities and providing technical support for project implementation and advising on fiduciary and safeguards related matters.

[42] Sites will be identified under Ibadan Integrated Flood Risk Management Masterplan (IIFRMM)) where targeted interventions will enhance the city's overall flood resilience in the long term. The investments in these targeted sites will start upon completion of IIFRMM. See also Table 2.2 Appendix 2.

Project Cost and Financing

18. ***Project Cost.*** The total project cost is estimated at about US$220.0 million. The proposed lending instrument is an Investment Project Financing of US$200 million through a credit provided by the International Development Association (IDA) under "Blend Terms" with a maturity of 25 years, grace period of 5 years, a 1.25 percent interest charge (plus 0.75 percent service charge), and principal repayable at 1.65 percent per annum for years 6-15 and 3.35 percent per annum for years 16-25. The implementation period is eight years. Project cost by components is provided in Table 2.1 and cost by expenditure category is provided in Table 2.2. The total project cost includes US$4.875 million advanced to the Borrower as a Project Preparation Advance (PPA). The taxes and duties are estimated around US$30.0 million equivalent.

19. ***Project Financing.*** The total estimated project cost is US$220, including counterpart funds. The overall share of the Borrower in the project is 9 percent or US$20.0 million (equivalent). The cost sharing will be subject to future revisions during the mid-term and periodical project reviews based on the potential use of the Contingency Sub-component.

Table 2.1 Tentative Financing Plan by Component in US$ million
(Including Price and physical contingencies and Project Preparation Advance)

S/N	Component	Project Cost	IDA Financing	Percent Financing	Borrower's Financing	Percent Financing
I	**COMPONENT-1: FLOOD RISK IDENTIFICATION, PREVENTION AND PREPAREDNESS MEASURES**					
1.1	***Sub-Component-1.1 - Preparation of Ibadan Flood Risk Management Investment Program***					
1.1.1	Engineering designs and construction supervision for works at Priority Sites	2.0	2.0	100	0	0
1.1.2	Engineering design and construction supervision for Eleyele Dam Safety Works	0.5	0.5	100	0	0
1.1.3	Engineering designs and construction supervision for works at Targeted Sites	12.0	12.0	100	0	0
1.1.4	Ibadan Integrated Flood Risk Management Master Plan	3.5	3.5	100	0	0
1.1.5	Ibadan Integrated Physical Master Plan	1.5	1.5	100	0	0
1.1.6	Ibadan Solid Waste Management Master Plan	1.5	1.5	100	0	0
1.1.7	Preparation of Environmental and Social Safeguards Measures (EPP, ESIAs, ESMPs)	1.0	1.0	100	0	0
	Sub-total of Sub-component 1.1	***22.0***	***22.0***	***100***	***0***	***0***
1.2	***Sub-Component-1.2 Development of Ibadan Long-Term Flood Resilience Strategy***					
1.2.1	Formulation of a Long-Term Flood Resilience Strategy for the city of Ibadan	1.0	1.0	100	0	0
	Sub-total of Sub-component 1.2	***1.0***	***1.0***	***100***	***0***	***0***
1.3	***Sub-Component-1.3 Ibadan's Flood Early Warning and Response System***					
1.3.1	Design and Capacity Building for an Early Flood Warning and Response System including design of Community Contingency Plans and Flood Awareness Programs	0.5	0.5	100	0	0
1.3.2	Installation of a weather forecast radar (system) and river flow gauges including a forecasting software (including configuration, testing, implementation and 5 years post procurement support &	4.5	4.5	100	0	0

	maintenance)					
1.3.3	Implementation of community flood awareness programs at participating LGAs and CDAs (using CSDP community platforms)	2.0	2.0	100	0	0
	Sub-total of Sub-component 1.3	***7.0***	***7.0***	***100***	***0***	***0***
1.4	***Sub-Component-1.4 -Contingency Component:***					
1.4.1	Emergency-triggered response and recovery financing facility (not covered under project items)	13.0[43]	13.0	100	0	0
	Sub-total of Sub-component 1.4	***13.0***	***13.0***	***100***	***0***	***0***
	COMPONENT I SUB-TOTAL	**43.0**	**43.0**	**100**	**0**	**0**
II	**COMPONENT-2: FLOOD RISK REDUCTION**					
2.1	***Sub-Component 2.1: Phase-I Priority Infrastructure Improvement Program***					
2.1.1	Urban Drainage Infrastructure Improvements at Priority Sites	17.4	17.4	100	0	0
2.1.2	Eleyele Dam Safety Works	3.5	3.5	100	0	0
	Sub-total of Sub-component 2.1	***20.9***	***20.9***	***100***	***0***	***0***
2.2	***Sub-Component 2.2 Phase-II Long-term Integrated Flood Risk Mitigation Program***					
2.2.1	Flood-proofing of Socio-Economic Assets at Targeted Sites	4.0	4.0	100	0	**0**
2.2.2	Urban Drainage Infrastructure Improvements at Targeted Sites	124.1	124.1	100	0	0
	Sub-total of Sub-component 2.2	***128.1***	***128.1***	***100***	***0***	***0***
	COMPONENT II SUB-TOTAL	**149.0**	**149.0**	**100**	**0**	**0**
III	**COMPONENT-III PROJECT ADMINISTRATION AND MANAGEMENT SUPPORT**					
3.1	***Sub-Component 3.1-Project Administration:***					
3.1.1	PIU Office and IT Equipment and Supplies (such as furniture, photocopiers, scanners, cameras, telephones, vehicles, ICT, software, Ibadan geospatial, soil, topographic maps etc.)	2.0	2.0	100	0	0
3.1.2	Fiduciary and Safeguards Training; External Technical and Financial Audits; Borrower's contribution to one Project Review (End of Year-2); one MTR (End of Year 4) and Project ICR, etc.	2.0	2.0	100	0	0
3.1.3	PIU Office Running Cost (office rent, electricity, water, internet, telephone, fuel, stationary, etc.)	0	0	0	4.0	100
3.1.4	PIU Performance-based Yearly Allowances (40% time-based & 60% disbursement-based)	0	0	0	0.5	100
3.1.5	Independent Advisory Group (IAG) Allowances	0	0	0	0.5	100
3.1.6	Preparation and Implementation of ARAPs and RAPs	0	0	0	15.0	100
	Sub-total of Sub-component 3.1	***24.0***	***4.0***	***17***	***20.0***	***83***
3.2	***Sub-Component 3.2-Project Management Support***					
3.2.1	Project Management Services Consultancy in support of PIU in areas related to fiduciary, safeguards and technical	4.0	4.0	100	0	0
	Sub-total of Sub-component 3.2	***4.0***	***4.0***	***100***	***0***	***0***
	COMPONENT III SUB-TOTAL	**28.0**	**8.0**	**29**	**20.0**	**71**
	PROJECT TOTAL COSTS *(Including PPA Advance)*	**220.0**	**200.0**	**91**	**20.0**	**9**
	Project Preparation Advance (PPA)	***4.9***	***4.9***	***100***		

[43] The contingency component will draw from unallocated IDA funds under the project.

Table: 2.2 Project Cost by Expenditure (Disbursement) Category in US$ million

(Excluding Price and Physical Contingencies and Project Preparation Advance)

Sr. No	Component	Project Cost	Works	Equipment and Goods	Services (Consultant, Train, Study)	Increment Operation Cost
I	**COMPONENT-1: FLOOD RISK IDENTIFICATION, PREVENTION AND PREPAREDNESS MEASURES**					
1.1	***Sub-Component-1.1 - Preparation of the Flood Risk Management Investment Program***					
1.1.1	Engineering designs and construction supervision for works at Priority Sites	2.0			2.0	
1.1.2	Engineering design and construction supervision for Eleyele Dam Safety Works	0.5			0.5	
1.1.3	Engineering designs and construction supervision for works at Targeted Sites	12.0			12.0	
1.1.4	Ibadan Integrated Flood Risk Management Master Plan	3.5			3.5	
1.1.5	Ibadan Integrated Physical Master Plan	1.5			1.5	
1.1.6	Ibadan Solid Waste Management Master Plan	1.5			1.5	
1.1.7	Preparation of Environmental and Social Safeguards Measures (EPP, ESIAs, ESMPs)	1.0			1.0	
	Sub-total of Sub-component 1.1	***22.0***			***22.0***	
1.2	***Sub-Component-1.2 Development of an Ibadan Long-Term Flood Resilience Strategy***					
1.2.1	Formulation of a Long-Term Flood Resilience Strategy for the city of Ibadan	1.0			1.0	
	Sub-total of Sub-component 1.2	***1.0***			***1.0***	
1.3	***Sub-Component-1.3 Ibadan's Flood Early Warning and Response System***					
1.3.1	Design and Capacity Building for an Early Flood Warning and Response System including design of Community Contingency Plans and Flood Awareness Programs	0.5			0.5	
1.3.2	Installation of a weather forecast radar (system)[a/] and river flow gauges including a forecasting software (including configuration, testing, implementation and 5 yrs post procurement support & maintenance)	4.5		4.5		
1.3.3	Implementation of community flood awareness programs at participating LGAs and CDAs (using CSDP community platforms)	2.0			2.0	
	Sub-total of Sub-component 1.3	***7.0***		***4.5***	***2.5***	
1.4	***Sub-Component-1.4 -Contingency Component[/]***					
1.4.1	Emergency-triggered response and recovery financing facility (not covered under project items)(in unallocated)					
	Sub-total of Sub-component 1.4	***0.0***				
	COMPONENT I SUB-TOTAL	**30.0**		**4.5**	**25.5**	
II	**COMPONENT-2: FLOOD RISK REDUCTION**					
2.1	***Sub-Component 2.1: Phase-I Priority Infrastructure Improvement Program***					
2.1.1	Urban Drainage Infrastructure Improvements at Priority Sites	15.0	15.0			
2.1.2	Eleyele Dam Safety Works	3.0	3.0			
	Sub-total of Sub-component 2.1	***18.0***	***18.0***			
2.2	***Sub-Component 2.2 Phase-II Long-term Integrated Flood Risk Mitigation Program***					
2.2.1	Flood-proofing of Socio-Economic Assets at Targeted Sites	3.5	3.5			
2.2.2	Urban Drainage Infrastructure Improvements at Targeted Sites	107.0	107.0			
	Sub-total of Sub-component 2.2	***110.5***	***110.5***			
	COMPONENT II SUB-TOTAL	**128.5**	**128.5**			

III	**COMPONENT-III PROJECT ADMINISTRATION AND MANAGEMENT SUPPORT**					
3.1	***Sub-Component 3.1-Project Administration:***					
3.1.1	PIU Office and IT Equipment and Supplies (such as furniture, photocopiers, scanners, cameras, telephones, vehicles, ICT, software, Ibadan geospatial, soil, topographic maps etc.)	2.0		2.0		
3.1.2	Fiduciary and Safeguards Training; Consultants for Communications, Individual Technical, Safeguard, Fiduciary External Technical and Financial Audits; Borrower's contribution to one Project Review (End of Year-2); one MTR (End of Year 4) and Project ICR, etc.	2.0			2.0	
3.1.3	PIU Office Running Cost (office rent, electricity, water, internet, telephone, fuel, stationary, etc.)	4.0				4.0
3.1.4	PIU Performance-based Yearly Allowances (40% time-based & 60% project disbursement-based)	0.5				0.5
3.1.5	Independent Advisory Group (IAG) Allowances	0.5				0.5
3.1.6	Preparation and Implementation of ARAPs and RAPs	15.0				15.0
	Sub-total of Sub-component 3.1	***24.0***		***2.0***	***2.0***	***20.0***
3.2	***Sub-Component 3.2-Project Management Support***					
3.2.1	Project Management Services Consultancy in support of PIU in areas related to fiduciary, safeguards and technical	4.0			4.0	
	Sub-total of Sub-component 3.2	***4.0***			***4.0***	
	COMPONENT III SUB-TOTAL	**28.0**		**2.0**	**6.0**	**20.0**
	TOTAL OF COMPONENTS I, II and III	**186.5**	**128.5**	**6.5**	**31.5**	**20.0**
	Unallocated *Price and Physical contingencies as well as Contingency Sub-Component)*	**28.6**				
	Project Preparation Advance (PPA)	**4.9**				
	PROJECT TOTAL COSTS	**220.0**				

a/ Weather forecast Radar System may include Telemetry Rain gauges at key nodal stations (tbd) in addition to Radar after final study.

b/ Contingency sub-component costs is provided under unallocated until its requirement is determined.

Appendix 1 to Annex 2

i. ***Contingency Component under Ibadan Urban Flood Management Project****:* This subcomponent will be activated only following: (i) a major flooding event in the 11 LGAs of Ibadan and; (ii) after an official public declaration of a State of Emergency is made by the President of the Federal Republic of Nigeria and/or the Governor of Oyo State. An official request along with a flood assessment report detailing the level of funding needed will be sent to the World Bank to trigger the contingency component. The World Bank will review the funding needs based on the disaster needs assessment and will confirm compliance with safeguards procedures and procurement readiness (please see below). Safeguard compliance procedures, readiness of implementation modalities including simplified procurement procedures along with the list of eligible expenditures will be detailed in the PIM.

ii. ***Official Public Declaration of State of Emergency:*** As mentioned above, the contingency component will only become active when triggered by a declaration of State Emergency following floods by the State Governor or President of Nigeria. As per the Supplement to Oyo State Of Nigeria Gazette, No. 4, Vol. 34 of 19th February 2009-Part A, the Governor after consultation with the Governing Council of the Agency, may, by notice in the State gazette, declare a state of disaster if (a) existing legislation and contingency arrangements do not adequately provide for the State Executive to deal effectively with the disaster, or (b) other special circumstances warrant the declaration of a natural disaster.

iii. ***Safeguards compliance****:* The safeguards arrangements for the Contingent component will be detailed in the PIM, and will include a brief screening form to cover anticipated environmental and social impacts during the response period. Environmental and social safeguards for post floods reconstruction may require development of ESMP and RAPs, and will be developed after post floods reconstruction planning is finalized by the PIU in consultation with the Bank team.

iv. ***Readiness of implementation modalities*****:** Simplified procurement procedures for the Contingent component will be developed in the PIM to ensure timely procurement of emergency supplies, goods and services. All eligible activities that can be financed through the contingency fund will be developed in the PIM.

v. ***Indicative list of eligible expenditure for emergency response:*** Food and water, Medicines, Temporary shelter, Makeshift latrines as well as water supply facilities, School and medical supplies and equipment, Food and water containers , and any other item agreed to between the World Bank and the counterpart (as documented in an Aide-Memoire or other appropriate Project document).

vi. ***Potential emergency recovery and reconstruction activities*****:** An investment activity shall qualify as an Emergency Recovery and Reconstruction only if it aims to: repair or reconstruct streets, roads, bridges, transportation and other infrastructure damaged by the event in question; re-establish telecommunications infrastructure damaged by the event; reestablish urban and rural solid waste, water supply and sanitation (including urban drainage) damaged by the event; repair, re-equip, construct or reconstruct homes, schools, clinics, hospitals or works of cultural significance or other communal structures damaged by the event, and remove and dispose of debris resulting from the emergency event.

Appendix 2 to Annex2

Priority and Targeted Sites: The identification of the 14 priority sites was based on extensive consultations with city engineers and community leaders and follows a review of initial flood modelling results. The selection criteria used for investments in the "Priority Sites" and the critieria for selecting "Targeted Sites" are presented below **(Table 2.2.1 and 2.2.2).**

Table 2.2.1: Selection Criteria for Priority Sites

Criteria	**Description**
Opportunity to reduce local flood risk	In some areas flooding responds to catchment or sub-catchment wide processes and would be difficult to reduce without a catchment / sub-catchment wide solution. In others, local features (such as blocked or undersized culverts) drive local flooding. In identified priority sites, opportunities to reduce local flooding through local measures have been sought.
Need to reconstruct flood-damaged infrastructure	A number of bridges and culverts collapsed during the 2011 flood event. A number of others sustained significant damage (scour and partial collapse) and are no longer safe to cross. Where reconstruction would offer a *no-regret* solution (i.e. it is both achievable and would be unlikely to compromise a longer term strategy), these sites have been considered for prioritization.
Need to re-establish or improve community connectivity	In some cases communities have been isolated by the loss of a particular river crossing. Where reconnection would offer a *no-regret* solution (i.e. it is both achievable and would be unlikely to compromise a longer term strategy), these sites have been considered for prioritization.

Table 2.2.2: Selection Criteria for Targeted Sites

Criteria	**Description**
Investment Types	Limited to urban drainage works only and to strengthening flood resilience of key socio-economic assets within the city of Ibadan;
Consistency with Strategic Masterplans	Limited to investments that are aligned with the cost-effective recommendations of the Ibadan's Physical Masterplan and Ibadan's Integrated Flood Risk Management Masterplan;
Socio-Economic Impact	Limited to investments that maximize the level of risk mitigation to human lives and socio-economic economic assets;
Compliance with PIM	Limited to investments that are prepared according to the Project Implementation Manual (PIM) such as cost-benefit analysis, social and environmental safeguards, etc.

Appendix 3 to Annex2

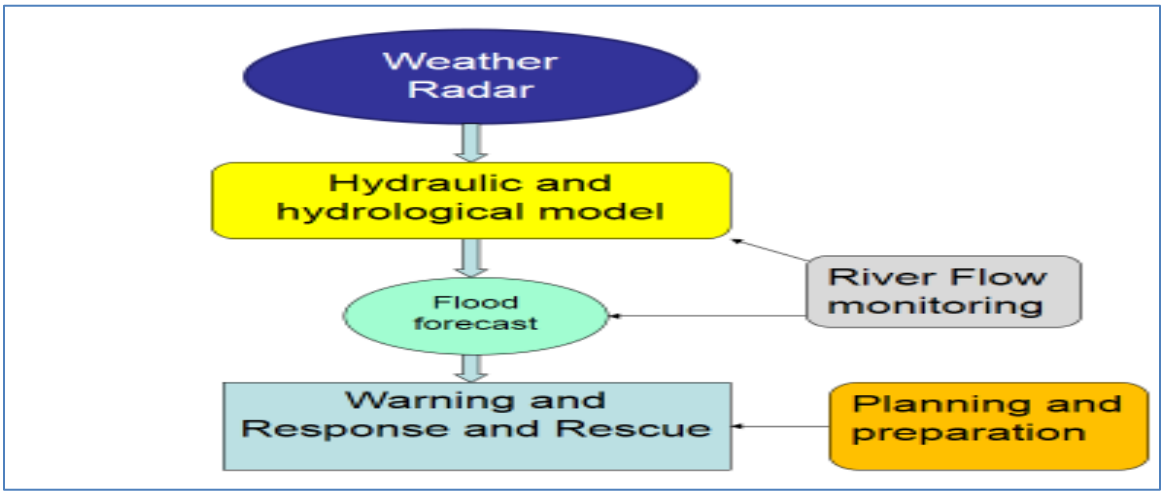
Details of Ibadan Integrated Flood Early Warning and Response System (Sub-component 1.3)

Investing in an early warning and response system is the most cost efficient and socially equitable approach to reduce flood risk[44], especially when events are frequent as is the case of Ibadan. Given the devestating consequenses of flooding in Ibadan, the potential negative impact of climate change which can increase the frequency of flooding and the speed at which it can unfold, an efficient flood early warning and response capability can save lives and assets. Early warning empowers people, including the most vulnerable ones, to make decisions to avoid the hazard and reduce their risk. As a part of the Ibadan Urban Flood Management Project, investments are proposed for (i) flood forecasting and early warning system, (ii) flood response capacity development including community awareness.

1. Flood forecasting and early warning system

At the simplest level, all that is required for a flood forecasting solution is a means of monitoring the rainfall and an appropriate model that describes where the ensuing flooding will develop. Alongside this, an automated process is needed which continuously runs the system and keeps track of the build-up of flood levels anywhere in the city, and raises an appropriate alarm to the appropriate people. Figure 2.1 shows schematically what is required and how it links together, showing the simple data flow from each element of the system. The schematic also includes the links to river flow measurement, which can be beneficial for improving or verifying the forecasts. For flash flood scenarios, they are not specifically useful in real-time, as by the time the river levels have started to respond, it can be too late to issue an effective warning. They are however, particularly useful to calibrate and verify the models at design stage, and as more data is collected over time, will assist model improvements in the future.

Figure 2.1: Flood forecasting system schematic



In practice, the requirements for this type of system for Ibadan are as follows:

Weather radar – Although rain gauges tend to be the traditional means of collecting rainfall data, the localized nature of the heavy rainfall that can cause flooding means that to be sure of capturing the variability in rainfall across the city, there would need to be a large number of rain gauges in a dense network. Automatic rain gauges may be relatively inexpensive to purchase, but their maintenance (the

[44] World Bank, United Nations (2010). *Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention*. Washington, D.C.

rain gauge, the compound and the data collection telemetry) is a considerable undertaking – with no guarantee that several of the gauges won't fill up with leaves and stop working during a storm. A far more effective way of monitoring rainfall in real-time is the use of weather radar. This approach provides spatially distributed rainfall measurements across the entire city and beyond, ideally out to a distance of 70 to 100 kms. The radar needs to be located outside the city on a high point with a good clear view of the horizon in all directions. The radar produces a snapshot of the rain that is falling usually at 5 minute intervals or less. The data will be processed into a grid format with resolution (i.e. cell size) set by the user. There is clearly a trade-off between capturing the highest possible resolution, and the size of the data file for transmission and handling. It is normal to use a grid size of typically 100m, which captures the variation of the rainfall across the city, but is still small enough to transmit across the internet or by cell phone. Figure 2.1. compares available radar types. The balance between simplicity with low cost of ownership and good local accuracy, against limited range and the problems of attenuation means that a compromise must be accepted. The recommendation therefore is that an X-Band radar is used for Ibadan.

Modelling system and forecasting system – In order to capture the hydrological response of the catchment and to ensure the correct antecedent conditions apply at the start of any flood event, the modelling needs to be continuous. The system will contain hydrological and hydraulic model components which converts the rainfall measurements from the radar into flow conditions on the ground, into the drainage network and then into the rivers. The computer running the modelling software can be located anywhere. The main requirement is that it is secure, robust, and has sufficient processing power to run the model simulations quickly enough, and has access to the outside world either by modem or the internet to receive the radar data file at least every five minutes, and to connect to the alarm handling element of the system (potentially running on the same computer as part of the overall system – but not essential). The models will need to run continuously predicting the river and surface water flooding conditions into the future, providing output data that can be viewed through animated maps of the developing flooding in a Geographic Information System (GIS) environment - supporting decision making and helping to plan the emergency response.

With modern cloud technology, hosting this system could be done anywhere, with secure login facilities for the flood duty officers to access the system by laptop wherever they might be located. This flexibility provides additional security and reliability, and avoids the need to support additional computers and complex software within the government buildings.

River level monitoring gauges - The models should if possible be linked to a small number of water level sensors in some key rivers, to ensure the forecasts are on track, and will be particularly useful in helping track antecedent conditions. A small simple telemetry system would be required to poll the outstations to download this data, with live data feeds connection to the modelling system. This will allow continual monitoring of river conditions at all times, providing a direct measure of catchment wetness conditions, as well as providing real-time error correction capability within the modelling software. The proposed locations of the gauges are on the main river channels within the city, where it is likely that there will be flow during much of the year, Installation of river level gauges have been included as part of the remediation works under the 'Priority Works' program at five bridges where major engineering work is proposed. The detail of these sites will be confirmed once detailed design has been carried out. However – the cost of the river level monitoring installation will be minimal in comparison to the engineering works on the crossings. Routine polling of the gauges is expected to be daily, however it may be necessary to increase polling rates during a flood event.

Warning and alarm management system - Warnings need to be triggered automatically by the flood levels reaching pre-defined thresholds at pre-defined locations anywhere across the city. Automated messages, texts, e-mails should be used to send warnings to pre-planned individuals or organizations to initiate actions. Different levels of warnings should relate to different levels of seriousness depending on

how severe the flooding is predicted to be. Low level alerts, e.g. 'flood watch' may be issued automatically. Intermediate warnings, e.g. 'flood warning' should be issued by a duty officer with some training and understanding of the situation. Severe flood warnings will be issued rarely, and should only normally be issued by someone in authority.

Incident room –A permanent incident room will be set up (checking first to make sure the location itself or the access routes or essential infrastructure are not at risk from flooding). The incident room will be hosted by OSEMA in the Governor's office. It will only become active once a flood watch level has been forecast – usually based simply on a weather forecast of heavy rainfall, although the modelling system will be capable of automatically raising a 'flood watch' alert if unexpected heavy rainfall is encountered. The incident room need not be particularly large, and could simply consist of a room with a small number of desks, computers and screens, good internet connection. It must however provide comfortable and secure conditions for long periods of work, both in and out of office hours. The room should be kept securely locked when not in use, although it could be used as the main computer room for the modelling and incident management software (although it doesn't have to be). This may require additional access for maintenance and back-ups etc., but most of these activities could be carried out remotely.

The choice of radar technology – It is proposed that an X-Band radar is used for Ibadan to ensure the balance between simplicity with low cost of ownership and good local accuracy. A study for design of an early warning and response system will be launched. The selected consultants will optimize radar selection in consultation with the federal and state agencies to ensure "co-benefits" of the radar (such as the data used for aviation and agriculture), which could also help secure more reliable financing for operations.

Organizational Arrangements – An MOU between federal and state agencies (NIMET, NHISA) regarding the radar is being developed to ensure clarity on operations, maintenance and use of the weather radar. Similarly, at a local level, a technical committee will be formed comprised of the State Ministry of Water Resources, the State Ministry of Environment, NIMET and NIHSA representatives, the University of Ibadan, the Airport, and OSEMA will be formed under the Governor to advise him about the severity of flooding and the need for warning. A special Early Warning and Response Unit will be hosted within OSEMA, which has the official mandate for disaster warning and response in the state (as per Gazette No. 4, Vol. 34 February 2009 Part A). This unit will have four staff; one each seconded by NIMET, Ministry of Water Resources, Ministry of Environment, and OSEMA, and will be in charge of monitoring radar, related equipment, coordinating with relevant MDAs, and issue technical warning in time. A dedicated budget will be provided by the Oyo State to run this unit.

2. Flood response capacity development including community awareness

(a) OSEMA's flood response capacity will be developed through capacity building:

National, State and Local Government Contingency Plans: The State Contingency Plan is ready, but it needs to be disseminated and regularly updated. Operationalization of the Contingency Plan is needed to ensure that safe places (during flooding), relief items, as well as contingency financing are in place. As a part of the project, contingency plans will be developed for 11 Local Government Agencies, along with targeted plans for at-risk communities:

Communities at risk of Eleyele Dam breach – An Emergency Protection Plan will be developed to identify actions during a potential dam breach situation. Similar plans will be prepared for communities settled around riverine floodplains and for slums/informal shops and settlements in floodplains or those prone to frequent flooding. The plans will identify the role of communities and government, identify safe

shelter, and will also identify priority investment needed to structurally retrofit shelters (schools and public buildings), relief supplies and emergency vehicles.

Trainings and workshops: To ensure early warning and response capacity, OSEMA staff needs to be trained in operating an early warning center and disaster information systems. Preliminary consultations show the need for training in risk assessment, search and rescue operations, relief intervention management and carrying our public emergency drill exercises. The training program is to be further developed in collaboration with National Emergency Management Agency (NEMA) and University of Ibadan.

(b) Community awareness and participation

In collaboration with OSEMA, State Ministry of Women Affairs and World Bank's Community and Social Development Project (CSDP) in Oyo State, a community based flood risk awareness and risk mitigation program will be developed and implemented. The program will work with existing community development platforms to strengthen awareness, capacity and knowledge of communities to understand and participate in the project, to provide for feed-back mechanisms, promote behavioral change including on waste management practices and resilience to be better prepared for dealing with recurrent flood situations.

Appendix 4 to Annex2

Institutional Assessment:

An institutional assessment was prepared during preparation for IUFMP in order to identify project risks and guide the capacity building and institutional strengthening activities to be included as part of the project design.

1. ***Current institutional arrangements for flood risk management in Ibadan:*** Flood risk management capacity, as measured through key capacities to prepare, respond to, and manage risk reduction (HFA pillars) is fragmented across various MDAs in the city. Apart from technical and financial challenges faced by these individual agencies, there is limited coordination (see Table 4.2.1). Particularly all stakeholders in the community such as private sector, non-governmental agencies, private non-profit organizations and communities themselves are not involved in understanding flood risk in the city, and acting accordingly.

2. A number of key institutional challenges were identified that would hinder the effective implementation of the IUFMP. These include the following:

- *Multiplicity of actors and lack of coordination* among Oyo State actors involved in planning, management, assessment, enforcement, responding and monitoring of flood management activities such as: Oyo State Ministry of Environment and Habitat; Oyo State Ministry of Water Resources, Oyo State Ministry of Physical Planning and Urban Development; Oyo State Ministry of Works; and Oyo State Emergency Management Agency.
- *Lack of institutional clarity* given that the Oyo State Ministry of Physical Planning and Urban Development (MPP&UD) and Oyo State Ministry of Water Resources are former departments of the former Ministry of Environment and Water Resources (now called Ministry of Environment and Habitat) and were established as ministries in 2011. Therefore, most departments under the Ministry of PP&UD and Water Resources are not yet fully operational and if operational, they are inadequately staffed with those that have relevant technical knowledge on flood management, hydrology, dam engineering and urban spatial planning. The above-mentioned separation of ministries has not resulted in the Ministry of Environment and Habitat having a revised mandate, but it continues to operate based on its previous mandate. This has contributed to overlap of mandates between Oyo State Ministry of Environment and Ministry of Water Resources on issues related to dredging, drainage etc.
- *Lack of policy framework for flood management* at State level that clarifies roles and responsibilities of the relevant MDAs.
- *Lack of development plans* that guide urbanization in Ibadan coupled with limited monitoring and enforcement of building regulations resulting in structures been built on flood prone areas.
- *Absence of river/stream management policies*, with particular regard to the maintenance of the river/stream channels and the waste disposal behavior of the city residents, may be largely responsible for the blockage and constriction of drainage channels and stream/river beds.
- *Outdated regulations* on setbacks to rivers/steams. River/streams react to human intervention in their flow area and adjust their flow boundary adversely. These adverse effects are exacerbated by climate change.
- *Limited resources and capacity* of the 11 Local Government Authorities to manage flood risk and organize adequate flood responses.
- *Oyo State Emergency Management (OSEMA)* focuses mainly on disaster response. Although it does have the mandate to focus on Disaster Risk Reduction (DRR). Only limited resources are allocated to DRR and OSEMA has limited technical capacity in DRR.
- *Lack of coordinated emergency response* between OSEMA and Federal level National Emergency Management Agency (NEMA).

- *Lack of river flow monitoring* by the Federal level Ogun-Oshun River Basin Development Authority (OORBDA).
- *Lack of rainfall data monitoring* by the Oyo State coupled with limited access to rainfall data through the Nigerian Meteorological Agency's (NIMET). NIMET only provides rainfall alerts for the South West region in Nigeria; however, this is insufficient for early flood warning purposes.

Table 4.2.1: Federal agencies, MDAs and non-state actors involved in Oyo State flood risk management

Capacity	***Flood Risk Assessment***	***Flood Awareness and Preparedness***	***Flood Response***	***Flood Risk Reduction***	***Flood Risk Management Coordination***
Agencies	Oyo State Ministry of Physical Planning and Urban Development	Oyo State Ministry of Water Resources Nigerian Meteorological Agency's (NIMET) zonal office Ogun-Oshun River Basin Development Authority (OORBDA) Oyo State Emergency Management Agency, Oyo State Ministry of Environment and Habitat, LGAs	National Emergency management Agency Oyo State Emergency Management Agency, LGAs	Sectoral ministries - Oyo State Ministry of Physical Planning and Urban Development; Oyo State Ministry of Works and Transport; LGAs	Higher level flood committee established under the Governor for 2011 floods (not functional now)
Functions	Develop and implement master plan to guide future development	Flood early warning, and response	Functional after floods	Take coordinated actions based on a clear risk reduction plan	Multi-sectoral coordination during different phases of floods
Status	No risk assessment or masterplan for the city is ever done	No credible flood warning is available to the city Contingency plan exist at state level but no resources to operationalize it, communities are not involved	Limited technical and financial capacity (only 2 staff, with no dedicated budget)	No risk reduction planning and implementation, limited monitoring and enforcement of existing building regulations, absence of river/stream management policies,	No committee functional yet, limited coordination for planning, and implementation

3. Building on the above assessment, and in order to strengthen institutional capacities at both state and local government levels, the following actions are incorporated into the design of the IUFMP project:

- *Strengthening multi-sector coordination among relevant state MDAs on urban flood management*: Under the IUFMP, it is proposed that the project will establish a Project Steering Committee (PSC) which will be chaired by the Governor of Oyo State and provide a much needed forum to

coordinate activities on flood management especially regarding access to hydromet data, construction and maintenance of urban infrastructure, enforcement of sanitation measures, land use and development control activities.

- *Joint review of the current mandate* of the Ministry of Environment and Habitat and clarify any overlap between newly established ministries and agencies. In order to avoid any further overlap a joint review should be conducted together with the state Ministry of Justice, Ministry of Water Resources and Ministry of PP&UD. In addition, roles and responsibilities between the Ministry of Environment and Habitat and the State Environment Protection Agency needs to be clarified regarding enforcement matters concerning waste management.
- *Developing a flood management policy and an action plan;* Currently, Oyo State has no flood management policy framework in place and it is necessary that such a framework is available to guide decision makers and technical specialists on the policy direction needed to provide an integrated approach for urban flood risk.
- *Joint review of existing building codes and land use regulations and regulations related to set backs;* Regulations concerning the use of open space for development in the city must be enforced. One of the most efficient means to mitigate damage to lives and properties is discouraging inappropriate land use in or near floodplains, as inappropriate land use is often associated with impenetrable surfaces that exacerbate flooding. There is a need for the government and other stakeholders to review existing regulations concerning setbacks to rivers and streams with a view to accommodate the effects and impacts of climate change and increasing floodwater on the new setbacks. This would include a comprehensive review of existing legal and regulatory frameworks such as building codes, setbacks taking into account the current trend of urbanization in Ibadan.
- *Strengthening technical capacity of Ministry of Physical Planning and Urban Development*; this newly established ministry's capacity will be strengthened by training on monitoring urban growth using Remote Sensing and GIS techniques, on developing plans that incorporate risk reduction, safe construction techniques, siting and building maintenance that integrated DRR into housing and settlement designs and maintenance. In addition, training will be provided on risk mapping tools such as risk analysis and land suitability assessment.
- *Strengthening capacity of selected LGAs on urban drainage and waste management;* Ibadan's 11 LGAs have significant capacity constraints due to lack of resources and technical knowledge. However, these LGAs need to be included in decision making at State level if an integrated approach to urban flood risk is developed. In addition, LGAs have the mandate to maintain select urban infrastructure as well as provide waste collection in their selected areas.

Annex 3: Implementation Arrangements
NIGERIA: IBADAN URBAN FLOOD MANAGEMENT PROJECT

Project Institutional and Implementation Arrangements

1. The IUFMP will be a multi-sectoral initiative involving multiple dimensions of urban flood management including early warning and response, climate risk mitigation, water resources management, solid waste management, urban land use management and infrastructure development. Both the planning and implementation of investments would therefore require working across ministerial/ departmental boundaries and also across levels of government at Federal, State and LGA levels (refer to Table 3.1). As such, the project will have a single point accountability reporting directly to the State Governor's office.

2. ***Political Support and Policy Guidance***: The Office of the Governor will have the lead responsibility for project implementation and ensuring that the project development objectives are met.

3. ***Project Steering Committee (PSC)***: The PSC, which already exists for flood management, will be chaired by the Governor of Oyo State and will consist of commissioner level representation from partner Ministries, Departments and Agencies (MDAs) of Oyo state including, inter alia, Oyo State Ministry of Environment and Habitat, Oyo State Ministry of Works, Oyo State Ministry of Physical Planning and Urban Development, Oyo State Ministry of Water Resources, Oyo State Waste Management Authority and Oyo State Emergency Management Agency (OSEMA). The PSC will meet twice a year and can be convened when necessary especially before and after flood emergencies to assess the damage and/or to decide on the allocation of contingency funds based on recommendations from Project Technical Committee (PTC) and Project Implementation Unit (PIU).

4. ***Project Steering Committee Role and Responsibilities***: The PSC will be the apex decision-making body for the project. It will be responsible for overseeing project implementation, deciding on key Project issues and coordinate amongst MDAs at the state level to ensure that the project is implemented in line with Oyo State Government's wider integrated flood management approach. This will include (i) approval of annual implementation plans (ii) nurturing multi sector dialogue (iii) decisions on recommendations forwarded to by the Project Coordinator and the Project Technical Committee (PTC) and (iv) review of implementation progress reports submitted by the Project Coordinator.

5. ***Project Technical Committee (PTC)***: The PTC will be chaired by a Senior Technical Advisor with relevant technical competencies. Such a coordination body already exists. Therefore the PTC will strengthen the existing technical body formed by Director level representatives from partner state MDAs with additional representatives from relevant Federal MDAs, academic institutions, private sector, and relevant civil society groups. The Project Coordinator will act as the secretary for the Committee. The Committee will meet quarterly and will comprise Director level representatives from partner state MDAs (Table 3.1). The PTC will consult and involve relevant local governments, civil society organizations, and community representatives to ensure oversight and transparency.

6. ***Project Technical Committee Role and Responsibilities***: Given that the project is adopting a framework approach, a number of keys decisions will need to be taken during project implementation. This includes establishing an early warning system, State based and Community based long-term investments and allocation of contingency funding. Given this, the PTC will review and recommend for approval to the PSC key decisions that need to be taken for effective project implementation. More specifically, PTC's responsibility will include (i) review of identified infrastructure investments under Component 2 (ii) inform and advise the PSC on decisions that need to be taken by PSC (iii) undertake

review of plans for managing flood risks across the catchment areas and (iv) develop inter sectoral MOUs if needed.

Table 3.1: Federal and State MDAs

MDA	Role
Oyo State Office of the Governor	Project host and focal point
Oyo State Ministry of Environment and Habitat	Advisory services on flood mapping and maintenance of urban infrastructure
Oyo State Ministry of Physical Planning and Urban Development	Urban planning
Oyo State Ministry of Works	Urban infrastructure rehabilitation and construction and Fire services
Oyo State Emergency Management Agency	Flood early warning and response
Oyo State Ministry of Water Resources	Dam and hydrology
Oyo State Ministry of Lands and Housing	Grievances redressed system
Oyo State Planning Commission	Assists in monitoring and evaluation
Oyo State office of the Accountant General	Project financial management
NIMET	Rain fall data and flood risk analysis
NIHSA	River flow data
NEMA	National floor response and early warning
Ogun Osun River Basin Development Authority	River flow data
Relevant Local Government Authorities	Provides approval and necessary community level coordination

7. ***Performance Contracts (PC):*** In order to improve coordination between various state MDAs and maintain accountability throughout project implementation, Performance Contracts (PCs) will be signed between the Office of the Governor and the various MDAs benefiting from the project proceeds. The PCs will clearly specify the mutual performance obligations between the two parties involved and will specify success indicators and their relative priorities. Continued access to project proceeds by the beneficiary institution will be conditional on satisfactory performance evaluated on a yearly basis throughout the project implementation period

8. ***Independent Advisory Group (IAG):*** External monitoring to strengthen stakeholder engagement will be achieved through the establishment of an Independent Advisory Group (IAG). The IAG is a third-party quality assurance group consisting of national experts meeting as frequently as needed (no less than four times a year) and convening at times at the request of the Project Implementation Unit (PIU). The IAG members will perform quality project reviews with the full support of the PIU and relevant MDAs with responsibilities including *inter alia*: (i) provision of expert opinion and review of the timeliness, quality and cost-effectiveness of project activities, (ii) independently advising the Project Technical Committee (PTC) and the Project Steering Committee (PSC). Membership to the IAG will be limited to a 4-year period, resulting in 2 IAGs participating in project monitoring during the 8-year project period.

9. ***IAG Role and Responsibilities***: (i) provide expert input to project efforts as needed, review proposed activities, (ii) review Terms of reference and designs as needed, (iii) independently advise Project Technical Committee (PTC) and the Project Steering Committee (PSC) and (iv) strengthen capacities of the PIU and relevant MDAs.

10. ***The Project Implementation Unit (PIU)***:Under the leadership of its Project Coordinator, the PIU will be responsible, inter alia, for Project management and implementation, procurement and financial management, safeguard due diligence, monitoring and evaluation of the Project, as well as reporting on progress and implementation issues to the PSC. The PIU will work closely with relevant MDAs at both Federal and State levels and will seek their prior approval throughout the project implementation period.

11. ***PIU Structure and Staffing***: The PIU include competitively selected and seconded staff members from relevant Oyo state MDAs who will be employed on a full time basis throughout the project's implementation period. This includes the Project Coordinator, Project Accountant, Internal Auditor, Procurement specialist, Environment Safeguard specialist, M&E, Communications Specialist, Social Safeguards and Social Impact Specialist, Hydraulic Engineer, and Infrastructure Engineer. The staff seconded from relevant MDAs will be on the understanding that they will return to their positions once their duties within the PIU have been accomplished.

12. ***PIU Role and Responsibilities***: The PIU will have the exclusive mandate of management of the project. The PIU will ensure that the PDOs of the Ibadan Urban Flood Management project are fully achieved in a timely manner.

- ***The Project Coordinator*** will be a full-time senior official vested with the financial and administrative powers equivalent to those of a Managing Director/CEO in a private company. He will ensure general oversight and effective coordination among the MDAs involved with the project. The Project Coordinator's responsibilities will include (a) overall implementation of Project (b) to oversee and coordinate PIU staff and activities ensuring timely implementation, compliance with fiduciary requirements and adherence to agreed results (c) liaise with other relevant projects and technical departments (d) monitor costs and financing (e) serve as a single point of tracking progress of implementation and outcomes and (f) provide reports and information to the Project Steering Committee, the Oyo State Government and the World Bank.

- ***Procurement Specialist*** will (a) maintain close fiduciary control over the procurement process and will prepare the procurement documentation to be issued for works, goods and services contracts in close collaboration and consultation with the relevant technical departments; (b) will evaluate all bids for contracts financed by the loan; (c) recommend contract awards and prepare and sign contract agreements with contractors, suppliers and consultants; and (d) ensure compliance with the agreed procurement policies procedures.

- ***Project Accountant*** will (a) ensure compliance with agreed financial management policies and procedures including management of project funds, produces timely and reliable financial reports as specified in the Financial Guidelines of the Project; (b) monitor compliance with budget ceilings in financial operations of the PIU; and review fund withdrawals from Project accounts to the State.

- ***Internal Auditor*** will (a) conduct external audits for all project components and ensuing compliance with audit observations, and (b) submit to the World Bank a consolidated annual statutory audit report for the project, and seeking reimbursements from the World Bank.

- ***Environment Safeguards Specialist*** will (a) collate baseline data on relevant environmental characteristics of the selected project sites; (b) analyze potential community/individual sub-projects and their environmental impacts; (c) ensure that project activities that are implemented will in accordance to best practices and guidelines set out in the ESMF, and site specific ESIAs; (d) identify and liaise with all the stakeholders involved in environment related issues in the Project and (e) be responsible for the overall monitoring of mitigating measures and the impacts

of the Project during implementation.

- ***Social Safeguard and Social Impact specialist*** will (a) develop, coordinate and ensure the implementation of the RAP; (b) identify and liaise with all the stakeholders involved in social related issues in the Project; (c) conduct impact evaluation and beneficiaries' assessment; and (d) establish partnerships and liaise with organizations, Community Based Organizations (CBOs) and civil Society Organizations (CSOs).

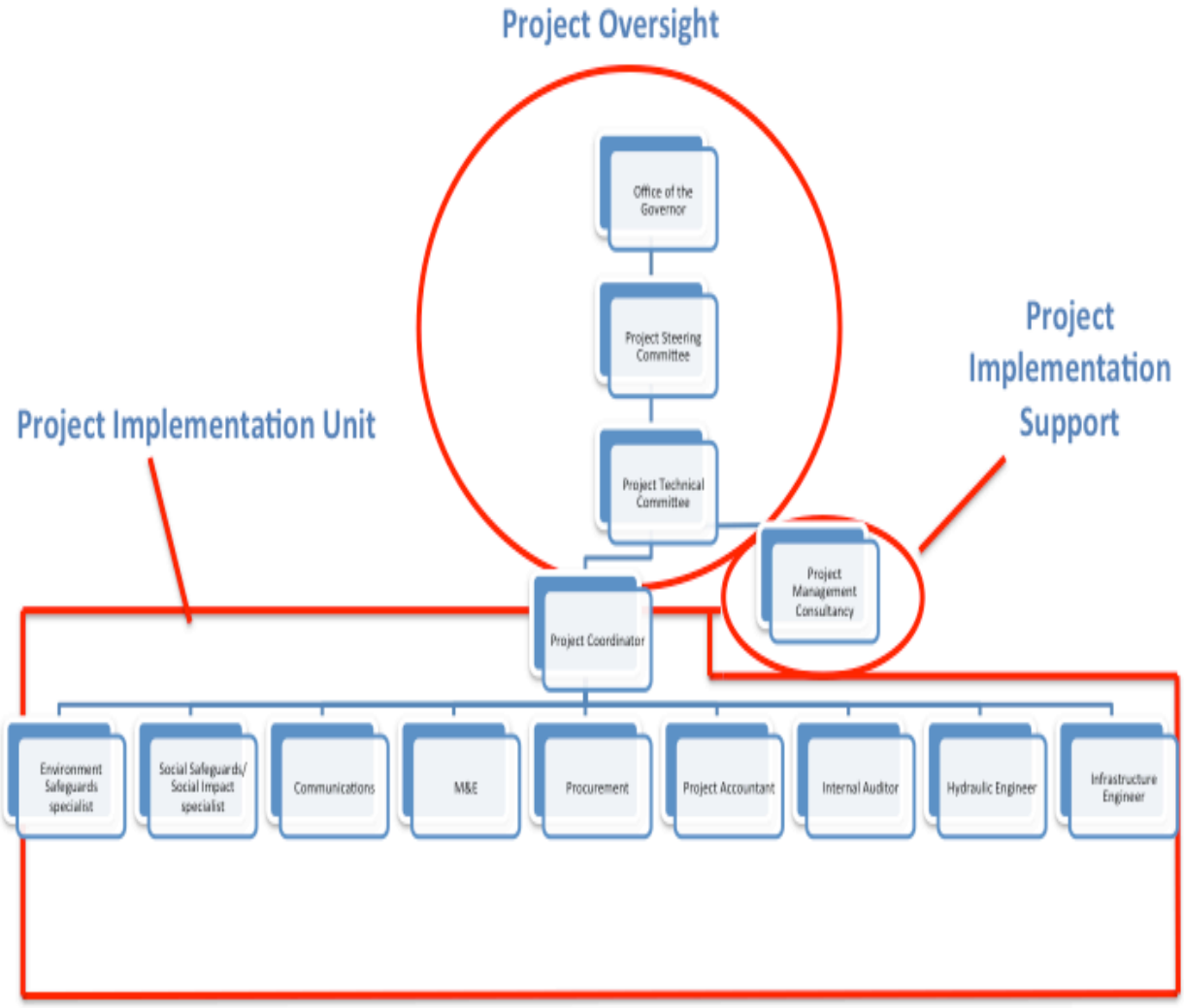
- ***Communications Specialist*** will (a) implement the communications strategy and advocacy at state level; (b) produce and disseminate periodic progress reports; and (c) identify modern and traditional channels of communication at community levels.

- ***M&E specialist*** will (a) conduct regular monitoring and evaluation of project performance; (b) develop a Management Information System (MIS) for the Project; (c) update the monitoring and evaluation indicators; and (d) implement the M&E plan

- ***Hydraulic Engineer*** will (a) prepare a realistic plan of action for undertaking various activities for developing the Early Warning System strategy; (b) provide oversight and monitor the sub component on early warning system; (c) coordinate early warning response with relevant stakeholders including communities and relevant State and Federal MDAs; and (d) prepare community early warning response plans.

- ***Infrastructure Engineer*** will (a) ensure quality assurance of physical infrastructure investments; (b) provide oversight on the execution of civil and installation works for the project; (c) review technical specification in bidding documents and (d) review progress reports and contract execution.

Figure 3.1: Proposed Implementation Arrangements



13. In addition to the above staff remembers, various consultants will be engaged when the need arises to support any of the PIU functions for effective and efficient performance and achievement of the objectives. In particular the PIU will be supported by a professional consultancy firm at the highest standards, covering the project management.

14. ***The Project Management Consultancy (PMC)*** firm with relevant experience will be recruited for an initial period of two years renewable for an additional period of two years based on project implementation and PIU capacity building needs as well as the consultant's performance. The PMC is expected to provide technical assistance to the PIU in all aspects of project management required for the effective implementation of all components of IUFMP. The PMC team comprises a Team Leader/Disaster Management Specialist, a Procurement Specialist, a Social Safeguards Specialist, an Environment safeguard specialist, an Infrastructure engineer, urban development specialist and Dam safety specialist. In addition to desk reviews and maintaining the project M&E system at the PIU, the PMC will carry out site visits to verify project information provided by PIUs, inspect quality of project implementation, and provide on-site capacity building support. To achieve the core objectives of this assignment, the consultancy firm will develop a work plan and provide qualified and skilled personnel in sufficient numbers to ensure the completion of project tasks in a satisfactory manner.

15. ***Key Elements of the Project Approval Process*** Procedures for technical and administrative approvals of investments, for award of contracts for works/goods and services, and for making payments have all been well defined for PIU and documented in the Project Implementation Manual. The annual work plan to be prepared by the PIU and reviewed by the PTC for PSC's approval will further specify implementation responsibilities and costs for activities proposed for the implementation under Component 2. For each activity the work plan will indicate the lead state MDA responsible for the technical overview of the implementation process and will include a letter from the relevant senior staff (such as Permanent secretary of the relevant ministry) confirming the commitment of the MDA to provide necessary supervision.

Table 3.2: Relevant MDAs and their responsibilities in the project

Project activities	**Responsible MDA**	**Key Responsibilities**
Component 1 - Flood Risk Identification, Prevention and Preparedness Measures		
1.1 Ibadan's Flood Risk management Investment Program (i) Ibadan Integrated Flood Risk Management Masterplan (ii) Ibadan Physical Masterplan (iii) Ibadan Integrated Solid Waste Management Masterplan	Oyo State Ministry of Environment and Habitat, Ministry of Water Resources Oyo State Ministry of Physical Planning and Urban Development Oyo State Solid Waste Management Authority	• Develop, review and approve TOR for the masterplan • Identify capacity gaps, propose capacity building measures in the masterplan TOR • Review study outputs and send comments in time • Prioritize investments and make sure they integrate with sectoral plans • Ensure the masterplan recommendations are used for budget planning and allocations
1.2 Ibadan's Long-Term Flood Resilience Strategy	Governor's office, Oyo State Ministry of Environment and Habitat, Ministry of Water Resources, Oyo State Ministry of Physical Planning and Urban Development	• Develop, review and approve TOR • Review study outputs and send comments in time • Prioritize investments and make sure they integrate with sectoral plans • Ensure the outputs are used for budget planning and allocations
1.3 Ibadan Flood Early Warning and Response System	Oyo State Emergency Management Agency Ministry of Water Resources NIMET, NHISA, NEMA	• Develop, review and clear TOR for the masterplan • Identify capacity gaps, propose capacity building measures in the TOR • Review study outputs and send comments in time • Prioritize investments and make sure they integrate with sectoral plans • Ensure the masterplan outputs are used for budget planning and allocations
1.4 Contingency Component	Oyo State Emergency Management Agency	This will be identified in PIM in case this component is triggered
2 – Flood Risk Reduction		
Component 2.1 Priority Infrastructure Improvement Program in "Priority Sites"	Oyo State Ministry of Works, Ministry of Water Resources	• Review TOR for the engineering design and supervision and approve it • Supervise the construction on priority sites • Dedicate budget and people for maintenance of new and rehabilitated budget
2.2 Long-term Integrated Flood Risk Mitigation Measures	Oyo State Ministry of Works, Ministry of Water Resources, Oyo State Ministry of Environment and Habitat	• Review TOR for the engineering design and approve it • Supervise the construction / rehabilitation • Dedicate budget and people for maintenance of new and rehabilitated infrastructure

Financial Management, Disbursements and Procurement

Financial Management

16. A financial management assessment of the PIU in line with the Financial Management Manual (March 1, 2010) and Financial Management Assessment and Risk Rating Principles (October 2010) was conducted to determine whether the PIU has acceptable financial management arrangements, which will ensure: (i) that all transactions and balances relating to the project are correctly and completely recorded; (ii) the preparation of regular, timely, and reliable financial statements; (iii) safeguarding of the entity's assets; and (iv) existence of auditing arrangements acceptable to the World Bank.

17. The overall FM risk for the Project is assessed as "Moderate". The identified FM risks are well mitigated by the use of the Project Financial Management Unit (PFMU), which features robust controls (internal and external). The mitigation measures include: (i) use of Supreme Audit oversight in the implementation, (ii) computerized accounting system, (iii) professionally qualified FM staff with appropriate expertise and; (iv) independent and effective internal audit that will adopt risk based internal audit methodology. The Financial Procedures Manual (FPM) in use at the PFMU will apply to the Project with some modifications. Regular reporting arrangements and a supervision plan (in PIM) will also ensure that the implementation of the Project is closely monitored and that appropriate remedial actions are taken. The FM risks will be reviewed during project implementation and updated as appropriate.

18. The PFMU is established through the joint efforts of the World Bank and government. This unit is presently involved in the implementation of a number of World Bank-assisted projects. The PFMU features among other things the following: (i) all the key elements of FM, including: budgeting, funds flow, accounting, internal control, reporting and audit; (ii) computerized system and robust FM procedures manual; (iii) qualified staff that are well-trained in relevant World Bank procedures and requirements, including procurement; (iv) robust segregation of functions/duties; (v) a strong control environment, which is required to mitigate fiduciary risks; (vi) highly independent and well-trained internal auditors (vii) full alignment with the government's own FM system but with some important enhancements and controls.

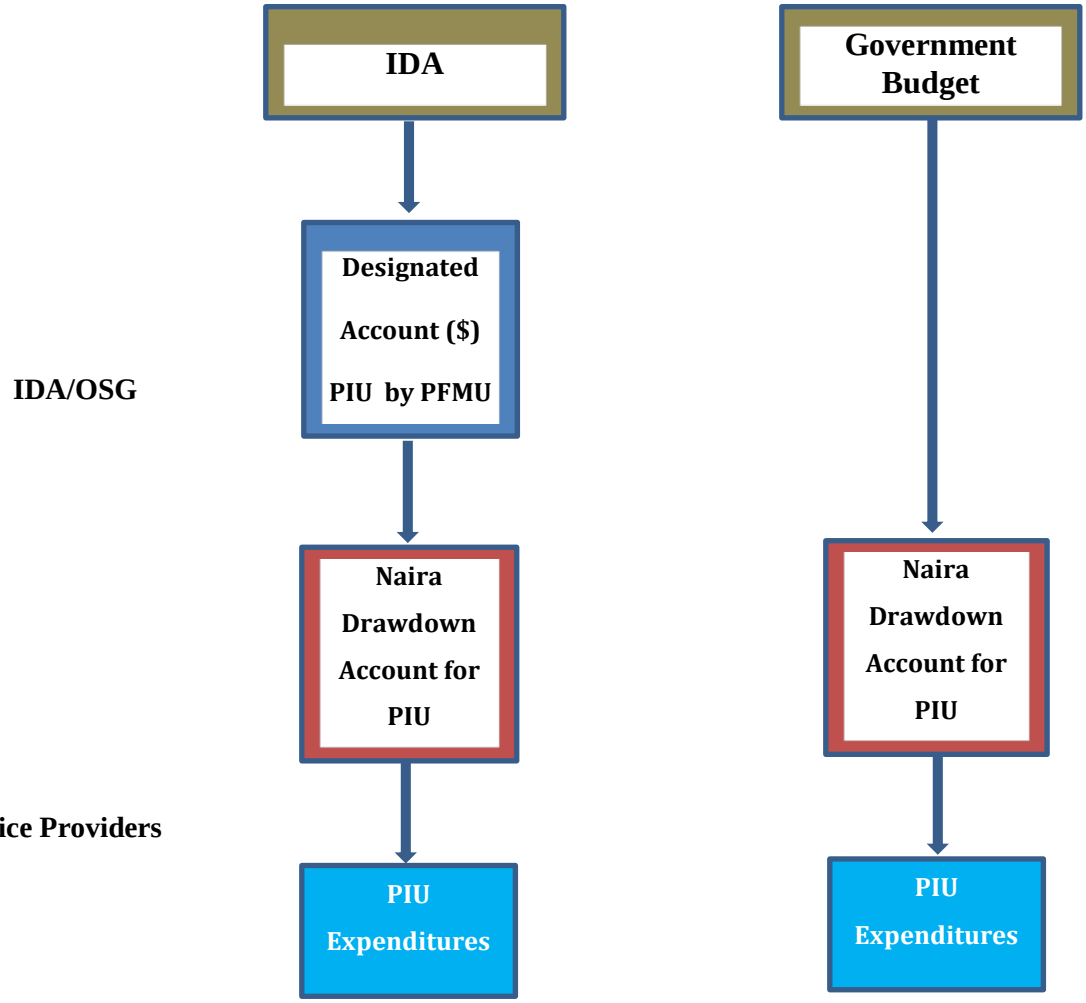
19. The World Bank's recent reviews showed that the PFMU is performing satisfactorily. Key issues noted within the PFMU are those of unretired advances and inadequate documentation for incurred eligible expenditures. These are mainly the result of inadequate understanding of World Bank FM requirements. To mitigate the risk arising from these issues, adequate procedures for the handling of advances including remedial actions in the event of default will be elaborated in the Financial Procedures Manual (FPM), develop indicative check list of appropriate supporting documents for incurred eligible expenditures for inclusion in the FPM and will build capacity of the project FM staff in World Bank FM procedures. IFRs though submitted timely are not of appropriate quality.

20. ***Planning and Budgeting****:* Budget preparation will follow the state governments' procedures as appropriate. Accordingly, timeline for preparation of state budget and project budget will be synchronized. A budget committee will be established to coordinate budget preparation and tracking of financial performance. On an annual basis, the Project Accountant (in consultation with key members of the implementing unit) will prepare the budget for the fiscal year based on the work program. Detailed procedures for planning and budgeting will be documented in the FPM.

21. ***Funds Flow****:* Project funding will consist mainly of IDA credit and Government contribution. To assure availability of government contribution, this shall be a first line charge against the Consolidated Revenue Fund accruing to the state and the same will be documented in the annual state appropriation bill. IDA will disburse the credit through Designated Account (DA) opened with reputable commercial

banks acceptable to IDA, which will be managed by PIU/PFMU. The specific banking arrangements are as follows:

- A US$ DA to which initial deposit and replenishments from IDA funds will be lodged
- One current (Draw-down) account in Naira to which drawdowns from the DA will be credited in respect of incurred eligible expenditures, maintaining balances on this account as close to zero as possible after payments.
- One current (Project) account in Naira to which Government contribution will be deposited.



22. ***Accounting:*** IDA funds will be accounted for by the Project on a cash basis. A computerized accounting system will be used, utilizing flexible accounting software currently in use at the PFMU. The software will be expanded to include the project activities. The software will be configured in line with the agreed reporting formats for financial reports (i.e. Unaudited Interim Financial Reports and Annual Financial Statements). Annual financial statements will be prepared in accordance with relevant International Public Sector Accounting Standards (IPSAS) by using a Comprehensive Chart of Accounts suitable to the Project that encompass the total project as described in Financing Agreement, and reflect all project activities, financing, and expenditures, including government contribution. All accounting and control procedures will be documented in the FPM, a living document which will be subject to review as appropriate.

23. ***Financial Reporting****:* Calendar semester Interim Financial Reports (IFRs) will be prepared by the PIU. The PIU will submit IFRs to IDA not later than 45 days after the semester. Annual project financial statements will be prepared and submitted to IDA within 6 months of the end of the government fiscal year by the PIU.

24. The project will be audited by an independent external auditor appointed based on Terms of Reference acceptable to IDA to audit the project and certify the financial statements for the project. The auditor will express an opinion on the Annual Financial Statements in compliance with International Standards on Auditing (ISA). In addition to the audit report; the external auditors will prepare a Management Letter (ML). Copy of the audited financial statements along with the ML will be submitted to IDA not later than six months after the end of each financial year.

25. ***Internal Control*****:** Adequate internal controls are in place at the PFMU. The control features include a robust FM procedures manual, relevantly qualified staff that are well trained in World Bank procedures and requirements, including procurement; robust segregation of functions/duties and highly independent and well-trained internal auditors – the FM staff are appointed by the State Accountant-General. To further strengthen the internal controls, capacity of the Internal Auditors will be built to adopt Risk Based Internal Audit methodology involving risk mapping etc.

26. ***Additional Oversight Arrangement:*** The Supreme Audit Institution (SAI) and the Project Implementation Unit (PIU) in the Governor's Office will provide oversight. SAI and PIU will undertake routine monitoring of the project.

Disbursements

27. Issues of inadequate documentation for incurred expenditures and poor quality IFRs are flagged in the FM and external audit reports of some on-going projects at PFMU. Accordingly, the project will use the transaction-based disbursement procedures and not report-based disbursements at effectiveness. When project implementation begins, the calendar semester IFRs produced by the project will be reviewed. Where the reports are found adequate and produced on a timely basis and the borrower requests conversion to report-based disbursements, a review will be undertaken by the IDA project team to determine if the project is eligible for report-based disbursement. Details of the disbursement arrangement are provided in the Disbursement Letter.

Financial Management Action Plan

28. Actions to be taken for the project to further strengthen its financial management system are listed in table (Table 3.3) below.

Table 3.3 FM Action Plan

No	Action	Date due by	Responsible
1	Train staff in World Bank FM procedures and Disbursement Guidelines.	By effectiveness	PIU/PFMU
2	Appoint external auditor	Within 90 days after effectiveness	PIU/PFMU
3	Train Internal Auditor on Risk Based Internal Auditing	Within 90 days after effectiveness	PIU/PFMU
4	Update existing computerized accounting system at PFMU	Within 90 days after effectiveness	PIU/PFMU

Financial Management Implementation Support Plan

29. FM supervision will be consistent with a risk-based approach, and will involve collaboration with the World Bank's project team, the loan department and procurement. The supervision intensity will be based initially on the PAD FM risk rating and subsequently on the updated FM risk rating during implementation. On-site review will cover all aspects of FM, including internal control systems, the overall fiduciary control environment, and tracing transactions from the bidding process to disbursements as well as Statement of Expenditure (SOE) review. Additional supervision activities will include desk review of semester IFRs, quarterly internal audit reports, audited Annual Financial Statements and management letters as well as timely follow up of issues that arise, and updating the FM rating in the Implementation Status and Results Report (ISR) and the Portfolio and Risk Management (PRIMA) system. The World Bank's project team will support in monitoring the timely implementation of the action plan.

Disbursements

Disbursement Categories

30. The table (Table 3.4) below sets out the expenditure categories and percentages to be financed out of the credit proceeds.

Table 3.4: Allocation of credit proceeds to be financed for eligible expenditures (goods, works, services, training and operating costs) in each category (IDA)

Category	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, Training, non-consulting services, and consultants' services for Parts 1.1, 1.2, 1.3 (c), 2.1, 2.2, 3.1(a) and 3.2 of the Project	114,300,000	100%
(2) Refund of Preparation Advance	3,100,000	Amount payable pursuant to Section 2.07 of the General Conditions
(3) Emergency Expenditures under Part 1.4 of the Project	8,400,000	100% of amounts disbursed
(4) Goods, Training, non-consulting services and consultants' services for Part1.3(a) and 1.3(b) of the Project	3,300,000	100%
TOTAL AMOUNT	**129,100,000**	

31. The project has met the minimum FM requirement in accordance with OP/BP 10.00. Further, this objective will be sustained by ensuring that strong and robust financial management arrangements are maintained for the project throughout its duration. Detailed financial management reviews will also be carried out regularly, either within the regular proposed supervision plan or a more frequent schedule if needed, to ensure that expenditures incurred by the project remain eligible.

Procurement

32. Considerable progress has been made on procurement reform in Nigeria. A procurement act has been passed, a cadre of procurement staff has been established in the federal civil service, and national bidding documents, acceptable to the World Bank are also now available though they are not yet being widely used. Oyo State has enacted the public procurement laws. The state law is modeled on the federal law, and therefore the weaknesses in the current federal law which includes the involvement of the regulatory agency in the implementation of procurement activities have been passed down to the state law. As a result, there is a need to amend some of the provisions of the laws in order for them to be compliant with the tenets of sound public procurement.

33. Procurement activities under the Ibadan Urban Flood Management Project will be implemented by the Project Implementation Unit. All the activity implementing agencies: Ministry of Water Resources, Ministry of Environment, Ministry of Works, Oyo State Solid Waste Management Agency, and Oyo State Emergency Management Agency will be actively involved in the procurement process. These agencies will provide inputs into the work plan, technical specifications and terms of reference for the activities under their respective MDAs. They will participate actively in contract administration and management and will be responsible for the acceptance and the takeover of the goods, services and works for the contracts under the respective agencies.

Guidelines

34. Procurement under the proposed operation will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants" dated January 2011 and its "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants" dated January 2011 and with the provisions stipulated in the Legal Agreement. Also, all procuring entities as well as bidders, contractors, suppliers, and consultants must observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraphs 1.16 & 1.17 of the Procurement Guidelines and paragraph 1.23 & 1.24 of the Consultants' Guidelines. The various items under the different expenditure categories are described in general below. For each contract to be financed by the credit, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame would be agreed upon between the Borrower and the World Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

35. ***Procurement of Works****:* Works to be procured under the project will include; Rehabilitation of the damaged spillway and stilling basin of Eleyele Dam, flood mitigation works on the three main rivers including rehabilitation of roads, bridges, culverts, cleaning and channelization of rivers, groundwater recharge, upstream water retention, etc. Procurement of works will be carried out using the World Bank's Standard Bidding for all International Competitive Bidding (ICB). National Competitive Bidding (NCB) procurement will be carried out using the national SBDs already in use at the federal level and which the World Bank has accepted for NCBs in World Bank financed projects in Nigeria. Minor civil works estimated to cost US$200,000 or less per contract, which are labor intensive, spread over time and which do not lend themselves to grouping and, therefore unlikely to attract major construction firms and/or

foreign bidders, may be procured under shopping procedures as detailed in paragraph 3.5 of the "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants" dated January 2011 and the “Guidance on Shopping Memorandum" issued by IDA on June 9, 2000.

36. ***Procurement of Goods***. The goods to be procured under the project will include vehicles, office equipment, and computers for the PIU. Procurement of goods will be carried out using the Bank’s Standard Bidding Document (SBD) for all International Competitive Bidding (ICB). National Competitive Bidding (NCB) procurement will be carried out using the national SBDs already in use at the federal level. Readily available off-the-shelf goods that cannot be grouped or standard specification commodities for individual contracts of less than US$100,000 equivalent and up to US$500,000 equivalent for vehicles, provided the vehicles are procured from reputable first line dealers, may be procured under shopping procedures as detailed in paragraph 3.5 of the "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants" dated January 2011 and the “Guidance on Shopping Memorandum" issued by IDA on June 9, 2000. The procurement procedures and SBDs to be used for each procurement method as well as model contracts for works and goods procured are presented in the project implementation manual.

37. ***Procurement of Information Technology*.** Procurement of information technology under the project will include the supply and installation of an integrated flood early warning system for the city of Ibadan. This will be carried out using the World Bank’s SBD for Supply and Installation of Information Systems: Single-Stage Bidding is envisaged, as it will be possible to use off-the-shelf application software packages after making the appropriate reconfigurations.

38. ***Selection of Consultants***. Consultancy services will be provided under the project in the following categories: structural, geotechnical and hydraulic assessment of Eleyele Dam, strategic environmental assessment of Eleyele Dam, preparation of three master plans (urban, drainage and waste management) for Ibadan, engineering design and construction supervision of flood mitigation investments, project management services to support the PIU and social and environmental safeguards. Consultancy firms and individuals will be selected from shortlists put together after the implementing units have solicited a request for expressions of interest using the World Bank’s Standard Request for Proposals (SRFP) where required by the World Bank Guidelines. Shortlists of consultants for services estimated to cost less than US$300,000 equivalent per contract and US$500,000 per contract for engineering design and supervision may consist entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. The appropriate selection method for each consulting contract has been set out in the Procurement Plan.

39. ***Operating Costs***. The operating costs will include the staff’s travel expenditures and other travel-related allowances with prior clearance from IDA; equipment rental and maintenance; vehicle operation, maintenance, and repair; office rental and maintenance; materials and supplies; utilities and communication expenses; and bank charges. The operating costs financed by the project will be procured using the Oyo State government administrative procedures that are acceptable to the World Bank. The operating expenses will be subject SOE review by the World Bank.

40. ***Training, Capacity Building, and Workshop*s**. The project coordinating and implementing unit will submit their annual training plans to IDA for clearance. The plans will include, but not be limited to, the names of the officers to be trained, the training institutions and/or facilitators, the cost contents, the justification for the training, and the estimated cost of the training.

Assessment of the Agency's Capacity to Implement Procurement

41. The Project Implementation Unit is new and has no experience in implementing WB funded project. Until Project Management Consultancy (PMC) is hired to assist the PIU in procurement, an experienced procurement consultant with experience in the procurement of large and complex works packages will be hired to support and train the procurement officers in PIU. The procurement officers should also be trained in WB accredited institution in procurement of large and complex civil works after project effectiveness.

42. The procurement decision making process will be clearly spelt out in the procurement manual that will be prepared as part of the project implementation manual before project effectiveness. The World Bank will assist the PIU to set up a proper procurement record keeping and procurement document management system immediately after effectiveness. The PIU procurement officer will also be trained in the procurement record keeping and procurement document management system immediately after effectiveness.

43. Given that a standard bidding document with relevant commercial and technical sections is not available in the State, a standard bidding document already in use at the Federal level and which has also been accepted by the World Bank for all NCBs in Bank funded project will be used by the PIU for its NCBs. To ensure proper capacity in preparation of designs and technical specifications of large works contracts to be included in the bidding documents, consultants will be engaged to assist the PIU to design and prepare the technical specifications for the large works packages and other complex procurement that are included in the project. The Project Management Consulting firm that will be engaged during implementation will include experts in its team that will assist in preparing the technical specification and design and also assist in contract administration during implementation.

44. The overall risk rating is "Substantial".

45. The complete procurement risk assessment has been filed in Procurement Risk Assessment and Management System (PRAMS).

Table 3.5: Procurement Risk Assessment and Mitigation Action Plan

S/N	Risk	Mitigation Action	Responsibility	Due Date	Remarks
a	Limited experience of the procurement officer in large and procurement packages	(i) A procurement consultant with experience in large and complex packages will be engaged during project preparation. (ii) A project management consulting firm will be engaged during implementation to assist in project management including procurement.	PIU	(i) after effectiveness (ii) after project effectiveness	
b	Poor record keeping System	Establish a procurement records management system and train staff in records management	PIU/WB	Within three months of effectiveness	Training will be continuous
c	Low capacity in the preparation of technical specifications and design of large works contracts	Consultants with experience in the preparation of technical specification and design of large works contracts will be engaged	PIU	During implementation	Consultants will be engaged to design and super-vise the large work contracts.
e	Lack of contract administration skills	Organize contract administration training for staff	PIU	Not later than three months into project implementation	To improve the contract administration skills of project staff
f	Lack of knowledge of the World Bank's procurement tracking system	Train procurement staff in procurement tracking system	WB/PIU	By effectiveness	

Procurement Plan

46. The government, at appraisal, finalized an 18-month procurement plan for project implementation that outlined the procurement methods to be used. The plan will also be made available in the project's database and on the World Bank's external website. The Procurement plan will be updated with the project team annually or as required, reflecting actual project implementation needs and improvements in institutional capacity.

47. ***Publication of Results and Debriefing***. Publication of contract awards would be required for all ICB, NCB, Direct Contracting and Selection of Consultants for contracts exceeding a value of US$300,000. In addition, where prequalification has taken place, the list of prequalified bidders will be published. With regard to ICB, and large value consulting contracts, the implementing agencies would be required to assure publication of contract awards as soon as the World Bank has issued its "no objection"

notice to the recommended award. With regard to Direct Contracting and NCB, publication of contract awards could be in aggregate form on a quarterly basis and in local newspapers. All consultants competing for an assignment involving the submission of separate technical and financial proposals, irrespective of its estimated contract value, should be informed of the result of the technical evaluation (number of points that each firm received), before the opening of the financial proposals. The implementing agencies shall specify that any bidder or consultant who wishes to ascertain the grounds, on which its bid was not selected, should request an explanation from the implementing agencies. The Project team shall promptly provide an explanation of why such bid was not selected, either in writing and/or in a debriefing meeting, at their option. The requesting bidder shall bear all the costs of attending such a debriefing.

Procurement Reviews and Thresholds

Table 3.6: Procurement of Goods and Works and Non-consulting Services

	Procurement Method	**Method Threshold US$**	**Prior Review Threshold**
1.	ICB (Goods and Non-consulting services)	Equal to and above 5,000,000	All
2.	NCB (Goods and Non-Consulting Services)	Below 5,000,000	Equal to or above USD700,000
3.	Shopping (Goods)	Below 100,000	None
	Shopping (Vehicles) - Quotations shall be from 1st line vehicle distributors	Below 500,000	None
4.	ICB (Works)	Above 20,000,000	All
5.	NCB (Works)	Below 20,000,000	Equal to or above US$5,000,000
6.	Shopping (Works)	Below 200,000	None

48. Summary of the Procurement Packages planned during the first 18 months after project effectiveness.

Table 3.7: 18-month Procurement Plan for Works and Goods

No.	Description	Estimated Cost US$ million	Procurement Method	Domestic Preference (yes/no)	Review by World Bank (Prior / Post)	Comments
001	Urban Drainage Infrastructure Improvement at priority sites	17.40	ICB	No	Prior	
002	Eleyele Dam Safety Works	3.31	NCB	No	Prior	This will be prior reviewed because of the sensitive nature of the package.
003	Emergency Repairs of Eleyele Dam	0.19	Shopping	No	Post	

Selection of Consultants

49. **Prior Review Threshold**. Selection decisions subject to prior review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants are as shown in Table 3.8.

Table 3.8: Selections Subject to Prior Review by the World Bank

	Selection Method	Method Threshold (US$)	Prior Review Threshold (US$)
1.	Competitive Methods (Firms); QCBS, QBS, LCS, FCS	Equal to or above 300,000	All
2.	Consultant Qualification	Below 300,000	None
3.	Single Source (Firms)	All	All
4.	Individual	All	Above 100,000

50. ***Shortlist consisting entirely of national consultants***. A shortlist of consultants for services estimated to cost less than US$300,000 equivalent per contract and US$500,000 for engineering design and supervision may consist entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Consultancy Assignments with Selection Methods and Time Schedule

Table 3.9 18-month Procurement Plan for Consultancy

Ref. No.	Description of Assignment	Estimated Cost US$	Selection Method	Review by World Bank (Prior / Post)	Comments
001	Engineering designs and construction supervision for works at priority sites	2.0	QCBS	Prior	
002	Engineering design and construction supervision for Eleyele dam safety works	0.5	SSS	Prior	Due to the unsafe condition of the dam, single source selection will be used to fast track the design and the bidding process for the works.
003	Ibadan integrated flood risk management master plan	3.5	QCBS	Prior	
004	Ibadan integrated physical master plan	1.5	QCBS	Prior	
005	Ibadan solid waste management master plan	1.5	QCBS	Prior	
006	Project management consultancy in support of PIU in areas of fiduciary, safeguards and technical	4.0	QCBS	Prior	
007	Preparation of ESIA	0.15	CQS	Post	
008	Preparation of RAP	0.15	CQS	Post	

Frequency of Procurement Implementation Support

51. In addition to the prior review supervision to be carried out by the World Bank, the capacity assessment of the implementing agency has recommended that the World Bank should carry out supervision missions at least twice a year to review procurement actions. These post-procurement reviews should cover at least 15 percent of the contracts subject to post-review.

Environmental and Social (including safeguards)

52. Because the full extent of the environmental and social impacts of the project is not known in advance, the Borrower has prepared an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF). The ESMF ensures that the principles and procedures for the development of in-country capacity and compliance with local regulations are established and it serves as the basis for environmental assessment of all future subs-project activities to be carried out. This document provides guidance for the preparation of ESMPs, integrity studies, and environmental audits. It includes a screening process that is consistent with both World Bank operational policies and Federal Government of Nigeria regulations, and a chapter on project processing that describes the responsibilities

of each organization involved in the project. Most of the activities are not expected to result in major losses or acquisition of land, resettlement or restriction of access to sources of livelihoods. However, since some interventions are likely to result in land acquisition and/or limited involuntary resettlement, an RPF – which gives guidance to the preparation of subsequent Resettlement Action Plans - has also been prepared. The ESMF and RPF were both prepared by the Borrower according to National and World Bank policies and were disclosed in-country in Nigeria and through the World Bank's Infoshop on January 24 and 28 2014 respectively.

53. The project design has strong sustainability underpinnings both from the point of view of institutional arrangements envisaged and physical interventions considered. For instance environmental sustainability will be ensured through the representation in the Project Implementation Unit (PIU) and through the preparation of appropriate environmental and social safeguards instruments aimed at mitigating the environmental and social impacts of the project. In addition, a Strategic Environment and Social Safeguards Assessment will be prepared early during project implementation in order to inform local, state and national authorities about the meso scale environmental and social implications of the proposed operation with a medium to long term horizon. The participatory approach with concerned stakeholders and in particular with locally affected people through extensive information, awareness and participation will further increase the likelihood of sustainable outcomes.

54. ***Environmental Assessment Category.*** The project has been categorized as A (Full Assessment) given that some of the planned activities may have significant adverse impacts that are sensitive, diverse, cumulative, irreversible or unprecedented. In addition, some of these potential impacts may affect areas broader than the sites or facilities subject to civil works. In most cases, however, the activities will involve limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

55. ***Environmental and Social Impacts***. As seen in the Table 3.10 below, the project triggers several environmental and social safeguards policies including Environmental Assessment (OP 4.01), Involuntary Resettlement (OP 4.12), Natural Habitats (OP/BP 4.04), Physical and Cultural Resources (OP/BP 4.11), and Safety of Dams (OP/BP 4.37).

Table 3.10: Safeguard Policies Triggered

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

Potential Positive Impacts

56. The ESMF lists the following impacts for IUFMP:

Positive Environmental Impacts

- Prevention of surface and ground water pollution along the flood plains;
- Improved soil quality and quantity through improved drainage and flood protection systems;
- Improved management of storm water in Ibadan city;
- Minimization and control of flooding;
- Sustained environmental performance and governance after project implementation; and
- Increased efficiency in the ESIA/ESMP process.

Positive Social Impacts

- Increased capacity in knowledge, technology and skill through flood early warning system, preparedness and response program;
- Improved drainage system will mitigate against avoidable flooding conditions and related morbidity;
- Improved livelihoods by solving the problem of flooding in urban areas;
- Preventive management of consistent floods and mitigation through proper drainage as well as integrated development plans;
- Culverts and bridges will allow improved health conditions, health and safety of people, effective sanitation, reducing the mortality and morbidity associated with floods; increasing the resilience of communities at risk of flooding, and the preservation of assets of households and businesses against flood risk;
- Improved safety conditions in flood of projects plains;
- Implementation of project activities will have a positive impact on the local economy, particularly with regard to job creation (labor for construction works, maintenance and monitoring); and
- Use of local SMEs whose project will lead to a high use of labor.

Positive Health Impacts

- Improved hygiene and public health of populations living in flood prone areas, stagnation of water and solid waste runoff;
- Solid waste management and disposal in Ibadan city.

57. Potential adverse environmental and social impacts that could be associated with various IUFMP interventions are grouped in the ESMF by project phase – preconstruction, construction, and operations and maintenance. The ESMF includes recommendations for typical mitigation measures for each type of impact.

58. ***Screening***: The ESMF includes an Environmental and Social Screening Checklist (ESSC) that has been designed using the World Bank environmental and social safeguards guidelines and the Nigeria EIA guidelines as checklist benchmarks to assist in the evaluation of proposed interventions under IUFMP. The screening is designed to place interventions in the hands of the reviewers so that mitigation measures can be identified and/or requirements for further environmental analysis and safeguards instruments (i.e. ESMPs, ESIAs) can be determined. The ESSC also identifies potential socioeconomic impacts that will require mitigation measures.

Social

59. The impact of floods is often as dramatic as it is negative on individuals, families, communities and governments. Flood engenders socio-economic and humanitarian crises (loss of lives, disruption of livelihoods and economic activities, loss of property and damage to critical public infrastructure – roads, utilities, and school buildings –, displacement of whole families, and spread of diseases). All this negatively affects the standard of living, resulting in impoverishment, increased social vulnerability and, above all, threat to life. Other anticipated benefits – which are further discussed in the ESMF - include enhanced safety, improved health, and general well-being of beneficiaries through improved sanitation and hygiene occasioned by better drainage system.

60. The above population will benefit from rehabilitated or new priority infrastructure and other DRM interventions. Given the expected long-term benefits of the different flood risk management measures such as early warning, flood risk identification capacity, risk mitigation and disaster preparedness, secondary stakeholders extend beyond the Ibadan area. Project stakeholders include the population of 11 LGAs within the city of Ibadan and communities settled around the 3 main watersheds. Given the expected long-term beneficial impacts of the different flood risk management measures as discussed above, secondary stakeholders will include the entire population of Ibadan.

61. Establishing improved Operation and Maintenance (O&M) is a critical step in creating viable interventions; it is also recognized that long-term sustainability will only be ensured with the generation of increased participation and ownership. However, any negative impacts resulting from failure to achieve viable change will be mitigated through a comprehensive stakeholder communication and participation strategy combined with a strong capacity building program at local and city levels.

62. Although the project will not be implementing community-driven structural flood mitigation activities, it recognizes citizens and communities as key stakeholders in flood risk management**.** As discussed below, interventions will build upon lessons learned from the World Bank-financed Community and Social Development Project (CSDP) and will use the CSDP platform for community participation. Local stakeholders play an essential role in risk assessment, preparedness, response and recovery from flood disasters. As such, communities are not just beneficiaries but rather partners in the flood risk reduction process and the project promotes community participation as an integral part of project implementation. It finances community participation at the level of both the structural and non-structural measures as described below:

(iii) Community participation at the level of the non-structural measures: Community participation is mainstreamed throughout the project activities. This is in line with the Hyogo Declaration (2005) that promotes strengthening community level capacities to reduce disaster risk at the local level. Community based awareness and disaster risk reduction and preparedness activities will be implemented in a number of CDAs[45] across the city of Ibadan. These will be selected in close coordination with the CSDP project that has robust knowledge and experience in community-led activity across Ibadan. World Bank support under the IUFMP will aim at influencing community behavior and promoting a culture of prevention and preparedness across the city. This will be achieved with the strong support from the local media building on the communications strategy developed during project preparation. Also, and as part of the formulation of the Ibadan Integrated

[45] Community Development Associations (CDAs) have been in existence in Oyo State as far back 1979. CDAs are community-based organizations established for the purpose of finding solutions to common problems through self-help schemes. All CDAs in a Local Government Area (LGA) are coordinated by a Local Government Community Development Council (CDC). At the State level, the Directorate of Community Development in the Oyo State Ministry of Women Affairs oversees all the CDCs in the State.

Flood Risk Management Masterplan under Sub-Component 1.1, flood risk assessment will be carried-out in close consultation with communities and LGAs located in floodplains. Flood hazard mapping based on historical flood data by community will be prepared and disseminated.

(iv) *Community participation at the level of the structural measures:* Aside from raising awareness on flood exposure and its consequences and the appropriate preparedness and mitigation measures to undertake, the project under Component-2 will focus on informing disseminating and gaining consensus and feedback on activities to be funded under the IUFMP in the respective LGAs. For that, opportunities offered by traditional and special community events and gatherings will be used. The above will be implemented in partnerships with traditional organizational structures (including formal and informal community leaders), community based organizations, community leaders and LGAs.

(v) *Vulnerable groups (including women*): Special attention will be paid to these groups by identifying their needs from the socio-economic and baseline study so that (i) they are individually consulted and given the opportunity to fully participate in the project activities, (ii) that their resettlement and compensation is designed to improve their pre-project livelihood (iii) special attention is paid to monitor them to ensure that their pre-project livelihood is indeed improved upon (iv) they are given technical and financial assistance if they wish to make use of the grievance mechanisms of the project and (v) decisions concerning members of vulnerable groups are made in the shortest possible time. The different categories of vulnerable groups have been captured by the Resettlement Policy Framework.

63. ***Gender:*** In order to ensure community resilience and long term sustainability of the project, gender aspects are mainstreamed in project activities. The community activities will specifically target women leaders and representatives of the community (ensuring at least 50 percent guards are women). Women leaders and representatives are closely connected with children and the elderly, and thus their involvement in floodplain management, flood preparedness and response is crucial to the program's success. In the 2011 floods, many children and elderly lost their lives due to lack of knowledge on how to respond. Women flood guards can play a vital role in future floods by guiding weaker segments of the society. Apart from the training and capacity building in the floods guard program, the project's M&E framework will track the impact on women through surveys and well-defined targets.

64. ***Community outreach, engagement and sustainability:*** Informal consultations with stakeholders, including potential project beneficiaries was carried out during project preparation. Across all flood risk communities visited in the city of Ibadan, community members expressed willingness to sustain investments through community level management of infrastructure such as regular de-silting of drains. In order to promote the much needed community ownership, consultation that has started during project preparation would continue throughout the project phases. The project will leverage the existing highly successful community engagement platforms already established by the World Bank supported Community and Social Safeguards Project in Oyo State to mobilize stakeholders for increased community consultation, involvement and participation. This will enable the project to take advantage of the high energy in community associations to create, and build commitment to long-term conservation and maintenance of constructed facilities so that the investments do not need to be repeated every few years. The community outreach and engagement will be coordinated by the Social Safeguard Specialist in the PIU in close collaboration with the Communications Specialist.

65. Given the focus of the project, the positive project impacts for the primary stakeholders are expected to be far more important than the negative ones. During construction some local stakeholders are

likely to be negatively affected, but these impacts are expected to be manageable. The project will seek to mitigate such impacts through a comprehensive stakeholder communication and participation strategy combined with a strong capacity building program at local and city levels. If land will be acquired, compliance with national legislation and OP 4.12 will be critical to ensure that all affected persons are compensated in a timely manner.

Resettlement:

66. OP 4.12 on Involuntary Resettlement is triggered because project interventions may result in land acquisition, temporary loss of livelihood and/or limited physical resettlement. The location of specific interventions related to flood management infrastructure such as small bridges and culverts will not be known in detail prior to appraisal and a Resettlement Policy Framework is therefore the most appropriate social safeguards instrument. This document spells out the key objectives and principles of the policy and gives guidance to the preparation of subsequent Resettlement Action Plans (RAPs). As soon as the details with regard to sub-projects become known during implementation, the Borrower will prepare site-specific RAPs acceptable to the World Bank. As highlighted in the policy framework and summarized below, specific attention will be given to the development of a grievance redress mechanism at the community level that will be accessible to all stakeholders as well as arrangements for monitoring the implementation of the RAP.

67. Gaps between Nigerian legislation and OP 4.12: There are several differences between OP 4.12 and the Nigeria Land Use Act (LUA) of 1978 which is the country's central piece of legislation relating to land acquisition and resettlement. The LUA outlines the various steps in the process of acquiring land including the method of compensation, and differences of relevance to the IUFMP have been identified in the RPF. As specified in the policy framework, measures must then be taken to ensure that particular gaps are bridged during the implementation of the project.

68. ***Grievance Redress Mechanism (GRM):*** In cases where rural land is the subject of disputes such cases are generally handled by a Land Use Allocation Committee (LUAC) established at LGA level. However the committee is likely to be outside the reach of many affected persons, and CDAs or traditional authorities must be involved in resolving disputes before they reach the LUAC. World Bank policy puts considerable emphasis on the need to identify a systematic approach to addressing grievances at the community level in order to ensure a fair grievance redress process which will be accessible to all stakeholders. Location-specific grievance redress mechanisms will be developed as a critical part of the Resettlement Action Plans to be prepared during implementation. It is recognized that a well-functioning grievance redress mechanism provides an important way to reduce potential social risks associated with the project. At the community level, the project will leverage and strengthen existing community grievance redress structures available at the Baale[46] in council and within the CDAs. This will serve as the first point for registering and addressing grievances, however, cases unresolved at the community level will be escalated to the next level of the GRM.

69. The approach may vary depending upon local conditions, but certain key principles must be adhered to and these have been detailed in the project's resettlement policy framework. Also, the grievance redress mechanism will provide project staff with practical suggestions/feedback and creating a sense of ownership.

70. Information on specific measures taken by the borrower/implementing agencies to address safeguard policy issues, such as mitigation measures and compensation to be paid cannot be addressed until the implementation stage when specific interventions are known and Resettlement Action Plans have

[46] Baale is the traditional ruler and head of the community.

been prepared. This will require close monitoring during project implementation by the PIU as well as the World Bank.

71. **Disclosure:** The ESMF and RPF were prepared by the Oyo State Government, reviewed by the World Bank and disclosed in-country and at the InfoShop on January 24 and 28, 2014 respectively.

Monitoring & Evaluation

72. The project will use a results-based monitoring approach to assess progress and support project implementation in accordance with international best practice. Quarterly monitoring by the PIU will ensure that partners take timely corrective measures when required and will enable joint accountability for achieving the project objectives. Broad thematic areas that will be supervised and monitored by the PIU and will include: (i) social and environmental monitoring; (ii) regular project supervision; (iii) periodic physical progress monitoring and third party quality audits; and (iv) monitoring and evaluation of results achieved. The project will use a web-enabled, management information system to manage information and report progress. Particularly, hydraulic flood simulations coupled with satellite imaging and aerial photography as part of the Ibadan's Integrated Flood Risk Management Masterplan will be used.

Annex 4: Operational Risk Assessment Framework (ORAF)

Nigeria: Ibadan Urban Flood Management Project (P130840)

<table>
<tr><td colspan="7">Project Stakeholder Risks</td></tr>
<tr><td>Stakeholder Risk</td><td>Rating</td><td colspan="5">Moderate</td></tr>
<tr><td rowspan="3">Risk Description:

Stakeholder engagement and ownership: Inadequate or ineffective stakeholder participation and ownership could undermine the sustainability of project activities.</td><td colspan="6">Risk Management:

Stakeholders at all levels, including Federal, State, Local Governments, and communities will be engaged and involved in project planning, decision making, implementation and monitoring. A high level project steering committee and project technical committee will be put in place to ensure political and technical ownership of all key stakeholders. Performance Contracts along with Key Performance Indicators (KPI) by all relevant MDAs-will be developed to ensure timely and effective implementation.</td></tr>
<tr><td>Resp:</td><td>Status:</td><td>Stage:</td><td>Recurrent:</td><td>Due Date:</td><td>Frequency:</td></tr>
<tr><td>Both</td><td>In Progress</td><td>Implementation</td><td>☑</td><td></td><td>Continuous</td></tr>
<tr><td colspan="7">Implementing Agency (IA) Risks (including Fiduciary Risks)</td></tr>
<tr><td>Capacity</td><td>Rating</td><td colspan="5">Substantial</td></tr>
<tr><td>Risk Description:

Technical capacity: Relevant MDAs do not have adequate technical capacity for flood risk management.

Financial management and procurement capacity: Lack of familiarity with IDA procurement and financial management guidelines and procedures remain a challenge</td><td colspan="6">Risk Management:

Establishment of the Project Implementation Unit (PIU) is being finalized (while most of the members of the PIU - including project coordinator, project accountant and procurement specialist - have already been recruited or designated, recruitment of hydraulic engineer and a monitoring and evaluation specialist is expected to be completed by credit effectiveness) and PIU members are competitively selected to ensure adequate technical expertise for the project. Besides having internationally experienced consultants helping the PIU in scoping the technical studies, including masterplans, well-qualified engineering firms will provide overall project supervision and technical designs. Additionally, masterplan studies will be anchored in relevant MDAs and will include “on the job” training to ensure capacity building on flood risk management.

The PIU members will receive all the basic procurement, financial management and project management training prior to project effectiveness. The identified financial management risks are well mitigated by the use of Supreme Audit Institution (SAI) to provide oversight in the implementation, computerized accounting system, professionally qualified financial management staff with appropriate expertise, and independent and effective internal audit that will adopt risk based internal audit methodology. To ensure proper procurement capacity, individual consultants and a Project Management Consulting (PMC) firm will be engaged to assist in contract preparation and administration during implementation. Regular reporting arrangements and a supervision plan (in PIM) will also ensure that the implementation of the Project is closely monitored and that appropriate remedial actions are taken.</td></tr>
</table>

	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Implementation	☐	17-Dec-2014	
Governance	**Rating**	**Substantial**				
Risk Description: Project continuity: Upcoming State elections planned for February 2015 can impact project continuity.	**Risk Management:** The World Bank team will put in place three measures to mitigate the risk. First, conscious efforts will be undertaken to identify and establish a critical mass of reform champions at technical level who can continue to focus on implementing those elements of the reform program that are critical but not politically sensitive. Second, to help maintain the momentum, the team will intensify implementation support visits and missions to the state. Finally, the team will support social accountability work in Oyo for greater participation of civil society and other non-state actors in monitoring reform programs					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Preparation	☐	28-May-2014	
	Risk Management:					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
				☐		

Project Risks

Design	**Rating**	**Substantial**			
Risk Description: Implementation Uncertainty: Project's framework design includes uncertainty beyond identified priority investments.	**Risk Management:** Ibadan Integrated Flood Risk Management Masterplan (IIFRMM) recommendations along with an investment decision support filter will be used for identifying investments beyond priority works. A project review is planned in the third year of the project, after the completion of IIFRMM, to evaluate the masterplan recommendations with the stakeholders, learn from the first phase of project activities, and accordingly develop targeted project investments. Moreover, the team will provide close follow-up on the progress during implementation					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Implementation	☑		Yearly
Social and Environmental	**Rating**	**Moderate**				
Risk Description:	**Risk Management:**					
Weak enforcement and compliance capacity: There is a risk of	An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF)					

<table>
<tr><td>weak enforcement and compliance of environmental and social impact assessments including dam safety plans.

Resettlement: The resettlement expenditures will be 100 percent funded through counterpart funding made available by Oyo State Government.</td><td colspan="6">have been completed and publicly disclosed. An Emergency Preparedness Plan for Eleyele dam is being developed. In particular, the findings and recommendations of the ESMF and RPF have been internalized into the project design. World Bank safeguard experts and project team will closely supervise the proper implementation of World Bank policies regarding all triggered safeguards.

With regard to the risk of government not providing timely resettlement benefits, this will be mitigated in part by requesting the Oyo Government to budget on a yearly basis the estimates required for upcoming compensation. The PIU, project's Steering and Technical committees will proactively follow-up on budget execution.

<table><tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr><tr><td>Both</td><td>In Progress</td><td>Both</td><td>☑</td><td></td><td>Quarterly</td></tr></table></td></tr>
<tr><td>Program and Donor</td><td>Rating</td><td colspan="5"></td></tr>
<tr><td>Risk Description:</td><td colspan="6">Risk Management:

<table><tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr><tr><td></td><td></td><td></td><td>☐</td><td></td><td></td></tr></table></td></tr>
<tr><td>Delivery Monitoring and Sustainability</td><td>Rating</td><td colspan="5">Substantial</td></tr>
<tr><td>Risk Description:

Monitoring and Evaluation (M&E) capacity: Relevant MDAs do not have adequate M&E capacity to monitor project progress.

Sustainability: Project investments may not be effectively maintained after Project close. Inadequate attention to operations and maintenance of project investments may result in their premature deterioration and failure.

Timely availability of counterpart funding: Counterpart fund commitment over project duration might not be available in time.</td><td colspan="6">Risk Management:

M&E capacity will be embedded in the PIU. A dedicated staff has been designated and suitable training is built into project design.

A long term flood risk management strategy is being developed to support the government in developing a long term financing strategy, as well as institutional reform related to flood risk management. A Flood Control Assets Management Plan will be developed to ensure that annual work plans budget for and use funds for O&M of assets developed/reconstructed from project activities. The project is designed to last for 8 year to allow for the gains and results to take deep roots.

<table><tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr><tr><td>Both</td><td>In Progress</td><td>Both</td><td>☑</td><td></td><td>Quarterly</td></tr></table>
Risk Management:

It has been agreed that as a condition of effectiveness of the credit, the Oyo State Governor will send a letter to the Federal Minister responsible for finance communicating his approval of deduction at source - of agreed sum of Counterpart Funds required in the respective Fiscal Year and set forth in the corresponding Annual Work Plan and Budget - and transfer of the deducted sums to the Project Account. Further, the project will span over 8 years, thus the yearly commitment will not be a major burden on the Oyo state budget.</td></tr>
</table>

	Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
	Client	In Progress	Preparation	☐	18-Jun-2014	

Overall Risk		
Overall Implementation Risk:	**Rating**	**Substantial**

Risk Description:

The overall project risk rating is Substantial. The multidisciplinary and complex nature of the project including the framework design approach contributes to a significant project risk. Necessary mitigation measures include: (i) ensuring compliance with World Bank policies and procedures through the PMC that will support the PIU in different aspects of project implementation (technical, fiduciary and safeguards); and (ii) close oversight on the World Bank side to ensure activities are properly prepared and delivered in a timely manner, including the preparation of the Project Implementation Manual. Finally, the use of MoUs and PCs will reinforce both vertical and horizontal coordination under flood risk management in Ibadan.

Annex 5: Implementation Support Plan

NIGERIA: IBADAN URBAN FLOOD MANAGEMENT PROJECT

BACKGROUND

1. The project is designed to strengthen flood resilience and urban drainage in the city of Ibadan. This will occur through strengthening emergency preparedness and response, and undertaking flood risk mitigation and urban drainage improvements in priority and targeted project sites. While most of the project resources are directed to these investments on the ground, institutional development will also be supported by the project to reinforce the sustainability of targeted investments.

2. The Implementation Support Plan describes how the World Bank in close coordination with the Oyo State Government will support the implementation of the risk mitigation measures (identified in the ORAF) and provides necessary technical guidance to facilitate achieving the PDO (linked to results/outcomes identified in the results framework). Several key decisions will be taken during implementation such as establishing an early warning system, State based and Community based long-term investments - structural and non-structural flood management measures (flood fund, overlap of mandates, capacity building etc.) and allocation of contingency funding. Furthermore, the recognition of significant fiduciary risk of the project, the ISP also identifies the minimum requirement to meet the World Bank's fiduciary obligations.

Strategy and Approach for Implementation Support

3. The overall supervision strategy for the proposed IUFMP will draw heavily from lessons learnt from the implementation of projects in Nigeria and in other countries. The project will use a combination of monitoring tools and systems to ensure quality and in depth supervision. Implementation support will focus on significant oversight on the design, construction and overall quality of major civil woks associated with flood risk mitigation and urban drainage improvements.

4. The Project Steering Committee will provide sound Government oversight while the Project Technical Committee will provide technical oversight during project implementation. This project's Project Technical Committee (PTC) will also enhance supervision by bringing technical experts from academia and private sector when necessary to bear on technical challenges. These approaches will be augmented by physical supervision conducted by World Bank teams with expert staff and financial and technical audits. Along with key state MDAs and relevant Federal MDAs will also be closely involved in the supervision

5. The PIU comprises a Project Coordinator and key technical staff including an environment safeguards specialist, social safeguards/social impact specialist, procurement specialist, project accountant, internal auditor, communications specialist, M&E specialist, hydraulic specialist and infrastructure engineer. Fiduciary and safeguards specialists will benefit from ongoing World Bank trainings.

6. The PIU will be further supported by a Project Management Consultancy (PMC) which will bring additional support and raise capacities of the PIU staff through training and on-job support. The PMC is expected to provide technical assistance to the PIU in all aspects of project management required for the effective implementation of all components of IUFMP. The PMC team comprises a Team Leader/Disaster Management Specialist, a Procurement Specialist, a Social Safeguards Specialist, an Environment Safeguards Specialist, an Infrastructure Engineer, an Urban Development Specialist and a Dam Safety Specialist. In addition to desk reviews and maintaining the project M&E system at PIU, the PMC will

carry out site visits to verify project information provided by PIUs, inspect quality of project implementation, and provide on-site capacity building support.

7. Given the large allocation of resources towards flood mitigation investments, these activities will be subject to intensive oversight. Key lessons incorporated in the supervision strategy are: (a) the need for comprehensive site visits/physical verification by the World Bank managed teams with leading relevant professional expertise, (b) in depth review of engineering designs (c) follow up on fiduciary issues (d) strengthening of prior and post reviews of contract procurement to highlight fiduciary red flags such as collusion and price fixing, (e) verifying authenticity of bidders (f) reconciling payments with contracts and (g) include a large number of implementation support missions early in project implementation to help get the project off to a good start. Supervision teams will consist of flood hydraulic/infrastructure engineers, early warning and hydro-met experts, urban development specialists, fiduciary (procurement/FM) specialists and environment and social safeguards specialists. The teams will review M&E data and verify results in the field.

8. **Table 5.1** below reflects preliminary estimates of skill requirements, timing and resource requirements for the Implementation Support Plan (ISP) over the life of the project. Keeping in mind the need to maintain flexibility over project activities from year to year, the ISP will be reviewed annually to ensure that it continues to meet the implementation support needs of the project.

Table 5.1: Implementation Support Plan

Time	***Focus***	***Skills Needed***	***Resource Estimate***	***Partner Role***
Project Years 1 to 2	***Regular monitoring*** - Initiating key project activities and quality control processes, PIU operating effectively, M&E, Procurement and Financial Management systems operating effectively	TTL/Co-TTL, Legal Safeguards, Financial Procurement, Engineer Country team	*3 missions per years US$35,000 per mission* *Total* ***US$210,000***	PIU will implement initial investments under the project and World Bank will supervise these investments
Start of 3rd year	***Critical Project Review-1 to*** evaluate findings of masterplans, ensure learning from first 2 years is incorporated in phase II of project activities	TTL/Co-TTL, Legal Safeguards, Financial, Procurement Engineer, Early warning, dam safety, flood risk assessment, risk mitigation experts	*1 mission US$60,000, additional consultant fee to help in assessing lessons learned*	PIU, IMG, and all key MDAs will be present. PIU and IMG will prepare their report on learning from first 2 years of the project

Project Year 3 to 4	***Regular monitoring*** - Initiating phase II project activities and quality control processes, PIU operating effectively, M&E, Procurement and Financial Management systems operating effectively	TTL/Co-TTL, Legal Safeguards, Financial Procurement, Engineer Country team	*2 missions per year for 2 years US$ 35,000 per mission* *Total US$ 140,000*	PIU will implement phase II investments under the project and will provide regular update
Start of 3rd year	*Project Mid-term review*	TTL/Co-TTL, Legal Safeguards, Financial, Procurement Engineer, Early warning, dam safety, flood risk assessment, risk mitigation experts	*1 mission US$60,000 additional consultant fee to help in assessing lessons learned*	PIU, IMG, and all key MDAs will be present. PIU and IMG will prepare their report on learning from first 2 years of the project
Project Years 5 to 8	Mid Term Review of overall project progress of civil works, Review of technical, financial performance, safeguards and overall project. Reallocation of contingency funding. Final IS mission and then ICR	TTL/Co-TTL, Legal Safeguards, Financial Procurement, Engineer Country team	*2 missions per year for 4 years US$40,000 Per mission* *Total* ***US$ 320,000***	PIU will prepare comprehensive progress report in advance of each mission and field plan and field plan Provide inputs for completion review and reporting.

Skills Mix Required

Skills Needed	***Number of Staff Weeks***	***Number of Trips***	***Comments***
• Team Leader • Flood Risk Management • Institutional assessment • Dam safety • Hydraulic Engineer • Urban Development • Environmental and Social • Monitoring • Procurement • Financial Management	Estimated to be 7-10 weeks per person a year	Located in Nigeria 2 per year 2 per year 2 per year 2 per year 2 per year 2 per year Local Staff Local Staff Local Staff Local Staff Local Staff	To be adjusted annually depending on available supervision budget and needs

Annex 6: Project Economic and Financial Analysis

NIGERIA: IBADAN URBAN FLOOD MANAGEMENT PROJECT

Economic and Financial Analysis

1. This cost-benefit analysis assesses the economic efficiency of short term measures and the entire project (combination of short, medium and long term measures). These include: (i) short term measures (years 1-3): Early warning and response system, and priority infrastructure improvements, and (ii) medium and long term measures (years 4-8): Integrated flood management including improved urban drainage.

2. ***Conservative Approach:*** Cost-benefit analysis for disaster risk management in a developing country context is generally challenged by lack of data and information. There are several complexities and uncertainties inherent in quantifying disaster risk management for weather-related hazards that are further compounded by climate change[47], and cost-benefit analysis is also challenged in handling intangibles and discounting of future impacts, which is particularly important for extreme events. Due to the limited resolution of available projected climate change impacts on floods, disaster risk is based on past experience and therefore does not consider climate change impacts.

3. Considering these limitations, and in order to build confidence and robustness of a cost-benefit analysis of disaster risk management, a transparent and conservative approach is warranted[48]. All assumptions and their supporting analysis are therefore reported. Where a range of potential analysis inputs is generated, the most "conservative" values were adopted, meaning that for a range of potential benefits the lowest value is used. This results in the analyzed net present value and benefit/cost ratio representing the lowest threshold of expected economic effectiveness; most likely the truly realized economic efficiency will be greater than what is herein reported. Omitting climate change impacts should also be considered as contributing to the conservative nature of the assessment.

4. ***Current Financial Flood Risk:*** Considering the stochastic nature of disasters, common practice for cost-benefit analysis of disaster risk management is to determine the average annual losses due to disasters. This represents the averaging of all potential losses over time to quantify the expected economic burden per year. When sufficient data is available, the average annual loss is calculated as the area under a loss frequency curve, which is a common metric, indicating the probability of the full potential range of losses per year.

5. Damage risk to buildings for the 10-, 25-, 100- and 1000-year floods were estimated during the project's rapid flood risk assessment[49]. Local community leaders inform that blockages and flooding occur most years and that some limited property damage occurs on average every year[50]. Adhering to a conservative approach, it is however assumed that flood damages are experienced starting with the 2-year flood.

6. The rapid flood risk assessment estimates, based on precipitation statistics, that the 2011 flood was approximately a 10-year event. While the return periods for the rainfall, peak river flow and resultant flood damage of a single event are not necessarily the same, they are generally strongly correlated.

[47] IPCC (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.* Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.
[48] Kull, D., Mechler R. and Hochrainer, S. (2013). "Probabilistic Cost-Benefit Analysis of Disaster Risk Management in the Context of Development Assistance." *Disasters*, 37(3):374-400.
[49] Ambiental (2014). *Ibadan Preliminary Flood Risk Assessment*. Prepared for the World Bank.
[50] Ambeintal (2014). Personal communication.

Rainfall statistics are therefore used as a proxy to estimate damage probabilities. The rapid risk assessment modeled the 2011 building damages at approximately US$ 32 million, while the Oyo State Government estimated overall damage and losses of approximately NGN 52.8 billion (US$ 321 million)[51]. The results from the rapid assessment are therefore pro-rated based on the 2011 event to develop estimates of potential flood losses: these result in an expected annual average flood loss of US$105.3 million/year.

Table 6: 1 Estimate of Potential Flood Losses

Return Period (years)	2	10	25	100	1000
Total building damage (US$ mln)	0	31.9	40.8	51.5	61.6
Total losses (US$ mln)	0	321.4	411.0	518.8	620.6

7. ***Benefits:*** The rapid flood risk assessment estimated the reduction in building damages due to:

- Priority/critical conveyance improvements;
- Attenuation through inundation of selected green spaces (medium and long term measure);
- Improved urban drainage (medium and long term measure);
- A combination of all of the above.

As with the assessment of current flood risk, the modeled reductions in building damages are pro-rated to represent reductions in full flood losses based on the 2011 event.

8. With lead times below 24 hours, global experience indicates that less than 10% of total flood losses can be reduced through early warning (see for example Subbiah et al 2009[52]). This analysis uses the lower end of the range of global experience (5%), also in line with the conservative approach. It should be noted that early warning is very effective for saving lives, which is however not considered in this analysis.

9. To avoid potential double counting and adhering to the conservative approach, the benefits of the combined short, medium and long term interventions as estimated in the rapid risk assessment are assumed to also include the benefits of the early warning system.

Table: 6.2: Reductions in Average Annual Flood Losses due to Project Components

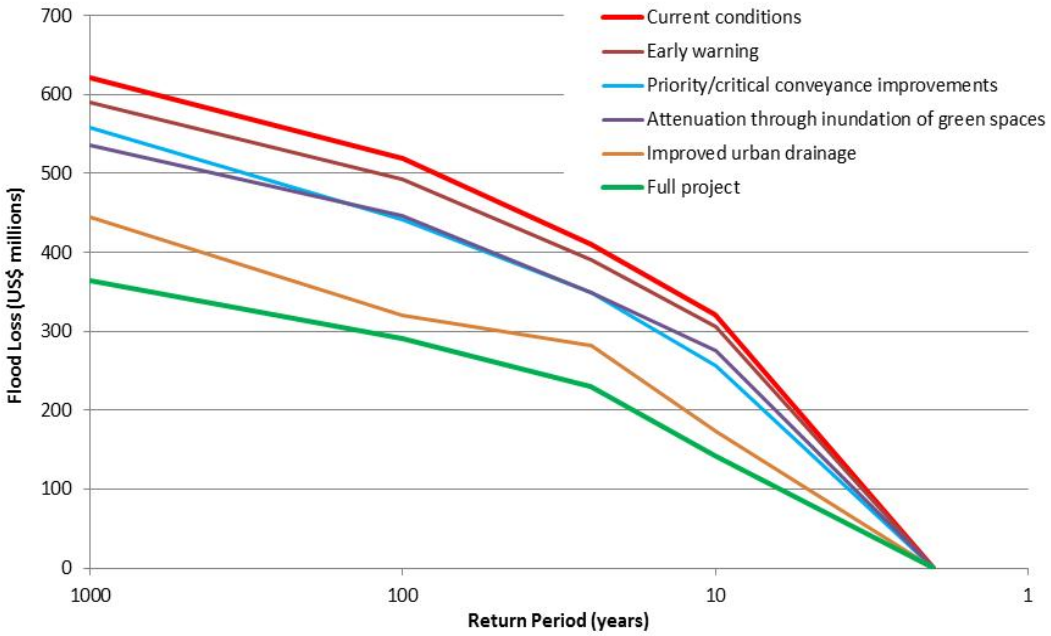
Intervention	**Reduction in Average Annual Losses**	
	Percentage	**US$ million**
Early warning	5	5.3
Priority/critical conveyance improvements	18	19.4
Attenuation through inundation of green spaces	14	15.3
Improved urban drainage	42	44.6
Full project	**52**	**55.0**

[51] World Bank (2013). *Nigeria: Flood Impact Scoping and Capacity Building for Disaster Preparedness*. Internal Draft, Washington.

[52] Subbiah, A.R., Bildan, L., Narasimhan, R. (2009). *Background Paper on Assessment of the Economics of Early Warning Systems for Disaster Risk Reduction*. World Bank-UN Project on the Economics of Disaster Risk Reduction, GFDRR, Washington.

10. It should be noted that the full project reductions in losses are not simply the cumulative sum of reductions of the different interventions, as there are overlaps of the losses reduced by the various interventions (for example the same currently at-risk building could be protected by a number of different interventions). As such and to avoid potential "double counting," the rapid assessment also modeled the combined impacts of the various interventions, except early warning which was not added to the total project reductions (again to avoid the risk of double counting). The loss-frequency curves of the current flood risk conditions and the situation after implementation of various project components are shown below.

Figure 6.1: Ibadan Flood Loss-Frequency Curves



11. Benefits are assumed to be realized over time as follows:

- Early warning: only after completion of the system, starting year 3.
- Priority/critical conveyance improvements: step-wise realization of benefits following each year of implementation (year 1 = no benefits, year 2 = 50% of benefits, year 3 = 100% of benefits).
- Attenuation through green spaces and improved urban drainage: step-wise realization of benefits following each year of implementation (up to year 3 = no benefits, year 4 = 17% of benefits, year 5 = 34% of benefits…year 9 = 100% of benefits).

12. The emergency-triggered response and recovery financing facility (budget sub-component 1.4 "contingency component") does not accrue any benefits, because it is not avoiding losses, rather covering their costs. As the analysis considers benefits accruing in the future, changes in exposed values are taken into consideration. No estimations of potential increases in values at risk are available, so population growth projections are used as a proxy. Bolanle (2014) provides growth estimates from UN-HABITAT and the Oyo State Ministry of Budget and Planning[53]. These are combined prioritizing the more conservative estimates to produce annual population growth over the expected project lifetime.

[53] Bolanle, W. (2014). *Background and Rationale to Flood Management in Ibadan*. Department of Urban and Regional Planning, Centre for Sustainable Development, University of Ibadan.

13. ***Costs:*** Project costs are divided across the 8 years of implementation assuming equal distribution, depending on whether a particular activity is short, medium or long term:

Table: 6.3 Project Costs

	Project Costs (US$ million)								
Activity	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**TOTAL**
1 Risk identification and preparedness	**16.63**	**16.63**	**1.63**	**1.63**	**1.63**	**1.63**	**1.63**	**1.63**	**43.00**
1.1 Technical studies	11.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00	22.00
1.2 Development of resilient urban development strategy	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1.3 Early warning & response	3.50	3.50	0.00	0.00	0.00	0.00	0.00	0.00	7.00
1.4 Contingencies[54]	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	13.00
2 Mitigation measures	**10.45**	**10.45**	**21.35**	**21.35**	**21.35**	**21.35**	**21.35**	**21.35**	**149.00**
2.1 Priority infrastructure improvements	10.45	10.45	0.00	0.00	0.00	0.00	0.00	0.00	20.90
2.2 Long term risk mitigation and drainage	0.00	0.00	21.35	21.35	21.35	21.35	21.35	21.35	128.10
3 Project Implementation Support	**4.00**	**4.00**	**4.00**	**4.00**	**3.00**	**3.00**	**3.00**	**3.00**	**28.0**
3.1 Administration costs	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	24.00
3.2 Implementation support	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	4.00
TOTAL	**31.08**	**31.08**	**26.98**	**26.98**	**25.98**	**25.98**	**25.98**	**25.98**	**220.00**

14. Operations and maintenance (O&M) costs are assumed at 10% of capital (project) investments. O&M costs are incurred following the same temporal pattern as realized benefits:

- Early warning: only after completion of the system, starting year 3.
- Priority/critical conveyance improvements: step-wise O&M costs following each year of implementation (year 1 = no O&M, year 2 = 50% of O&M, year 3 = 100% of O&M).
- Attenuation through green spaces and improved urban drainage: step-wise O&M costs following each year of implementation (up to year 3 = no O&M, year 4 = 17% of O&M, year 5 = 34% of O&M …year 9 = 100% of O&M).

15. ***Cost-Benefit Analysis:*** By comparing the costs and benefits of the project over time an understanding of the relative value of the planned investments can be generated. While cost-benefit analysis provides a useful process to help steer investment decision-making, it should however not be the only factor considered for project decision-making. While the implementation phase of the project is 8

[54] Unallocated amount in the project is used for assessing project cost under Contingency Component which will only be triggered in case of state declaration of flood emergency in Ibadan city.

years, for this analysis it is assumed that the project impact (lifetime) is 30 years.

16. The cost-benefit analysis utilizes a discount rate to represent societal preference for consuming in the present as opposed to saving and consuming in the future. A discount rate of 0% indicates no preference between now and the future, while a discount rate of 15% represents a higher preference for spending now. In this analysis a range of discount rates (0-15%) is applied for the sake of sensitivity analysis. The resulting cost-benefit metrics are summarized in the following tables reporting the following metrics:

- Present costs: all years' project and O&M costs discounted to present values and summed (in case of 0% discount rate then there is no discounting).
- Present benefits: all years' benefits discounted to present values and summed (in case of 0% discount rate then there is no discounting).
- Net present value (NPV): present benefits minus present costs (if the NPV is greater than 0 then the investment is considered economically effective).
- Benefit/cost ratio: present benefits divided by present costs (if the benefit/cost ratio is greater than 1.0 then the investment is considered economically effective)

17. The results for the short term measures are shown below in ***Table 6.4***:

Table: 6.4 Short term measures CBA Results

	Discount Rate			
Metric	**0%**	**5%**	**10%**	**15%**
Present costs (project and O&M, US$ million)	115.5	110.3	90.3	79.5
Present benefits (US$ million)	1,054.2	495.7	280.5	182.6
Net present value (US$ million)	898.8	385.4	190.2	103.0
Benefit/cost ratio	6.8	4.5	3.1	2.3

18. The results for the full project (short, medium and long term measures) are shown in ***Table 6.5***:

Table: 6.5 Full project (short, medium and long term measures) CBA Results

	Discount Rate			
Metric	**0%**	**5%**	**10%**	**15%**
Present costs (project and O&M, US$ million)	660.5	395.9	279.2	217.4
Present benefits (US$ million)	2,174.7	959.3	502.4	301.9
Net present value (US$ million)	1,514.2	563.4	223.2	84.5
Benefit/cost ratio	3.3	2.4	1.8	1.4

19. In both cases, benefits are always greater than costs, indicating that the project is cost effective. Considering that across the range of applied discount rates the benefits remain greater than costs, a certain degree of confidence can be placed in this broad economic effectiveness conclusion. To further test the sensitivity of the analysis, costs were increased by 25% and benefits reduced by 25%, indicating a "worst case scenario", with the following results in ***Table 6.6 and Table 6.7***:

Table: 6.6 Short term measures CBA Results for Worst Case Scenario

Metric	Discount Rate			
	0%	**5%**	**10%**	**15%**
Present costs (project and O&M, US$ million)	194.3	137.9	112.9	99.4
Present benefits (US$ million)	790.7	371.8	210.4	136.9
Net present value (US$ million)	596.4	233.9	97.5	37.5
Benefit/cost ratio	4.1	2.7	1.9	1.4

Table: 6.7 Full project (short, medium and long term measures) CBA Results for Worst Case Scenario

Metric	Discount Rate			
	0%	**5%**	**10%**	**15%**
Present costs (project and O&M, US$ million)	825.6	494.9	349.0	271.7
Present benefits (US$ million)	1,631.0	719.5	376.8	226.4
Net present value (US$ million)	805.4	224.6	27.8	-45.3
Benefit/cost ratio	2.0	1.5	1.1	0.8

20. The following broad conclusions can be drawn from the economic analysis:

- The short-term interventions, namely installation of an early warning and response system and critical infrastructure improvements at priority locations, will certainly be economically efficient.
- The full project (short, medium and long term measures combined), including in addition to the short term measures improved urban drainage and attenuation through inundation of green spaces, is highly likely to be economically efficient.
- The full project would also include improvements at all bridge crossings. The costs of this are included in the assessment, while the benefits are not. As such, the results under-estimate the overall economic efficiency.
- The full project would also include benefits from improved safety of the Eleyele Dam, this was however not included in the analysis due to the impossibility of assessing the current probability of a dam failure.
- The short-term measures outperform the full project in terms of economic efficiency, justifying their selection as priorities for implementation.
- Urban drainage makes the greatest contribution of all interventions to flood risk reduction.
- The damage and loss estimates from the 2011 flood, which were used to pro-rate the results of the risk assessment, are not considered complete. If the full damage and losses and therefore potential benefits were better known, the project's economic efficiency would be greater.
- As the predicted climate change impact of increased flood frequency and magnitude[55] is not included in the analysis, benefits should be further considered to be underestimated. The planned project will help mitigate potential increases in losses due to climate change, leading to greater benefits.

[55] World Bank (2012). *Nigeria: Enhancing the Resilience of Development to Climate Change*. Report No. 69027, Washington, D.C.

21. These conclusions align with a recent global analysis that highlighted a few key flood risk management strategies that stand out in terms of economic efficiency[56], indicating that the overall project design has satisfactorily considered issues of cost effectiveness:

- Floodplain protection: Utilization of the natural dynamics of river pathways consistently provides positive return across contexts, potentially because it reduces the lack of catastrophic failure and has relatively few downsides or negative externalities.
- Early warning: One of the most cost efficient and socially equitable approaches to reduce risk[57], and most effective when events are frequent as is the case in Ibadan.
- Flood proofing of residential infrastructure: Overall, this is lower cost than most other strategies for flood risk reduction, however the cost of this exercise is usually borne by those owning the houses. It may be worth exploring under the community resilience component of this project.

[56] ISET (2012). *Understanding the Economics of Flood Risk Reduction – A Preliminary Analysis*. Institute for Social and Environmental Transition-International, Boulder, CO.
[57] World Bank, United Nations (2010). *Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention*. Washington, D.C.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