IBADAN URBAN FLOOD MANAGEMENT PROJECT (IUFMP)

IUFMP PRESENTATION

THE TECHNICAL DEEP DIVE ON INTEGRATED URBAN FLOOD

TOKYO DEVELOPMENT LEARNING CENTER, TOKYO, JAPAN

APRIL 18 – 21, 2016
MAP OF THE FEDERAL REPUBLIC OF NIGERIA

States of Nigeria
OYO STATE OF NIGERIA

MAP OF OYO STATE
SHOWING THE LOCAL GOVERNMENT AREAS AND THEIR HEADQUARTERS
Ibadan Urban Flood Management Project (IUFMP)
• **Ibadan** is the capital of Oyo State and the third largest metropolitan area in Nigeria after Lagos and Kano. With a population of **3.1 million** and a land area of 3,850 square kilometers (2013). The population of the city has been rapidly grown from around 60,000 in the early 1800s and is projected to reach **5.6 million** by 2033.

• Ibadan Urban Flood Management Project (IUFMP) is a $200M IDA credit which has been effective since Nov. 2014, the project aims to repair and improve several of the critically damaged infrastructure affected by the floods of 2011, strengthen community-based resilience capacity, and provide support for risk assessment and early warning systems to mitigate any future flood occurrences.

• 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 latest flood event on August 26, 2011 caused the death of more than 120 people and serious damages to key infrastructure. Many bridges collapsed, roads washed away, and the Eleyele dam and the waterworks were severely impacted, which has not been optimally functional since.
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. The responses to the past flooding events have been piece meal mainly focusing on alleviating immediate and short-term needs such as rebuilding destroyed assets.
The IUFMP consists of three main components:

1. Flood Risk Identification, Prevention & Preparedness Measures
2. Flood Risk Reduction; and
3. Project Administration & Management Support

**Component 1** - 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 (Integrated Physical Master Plan, Solid Waste Management Master Plan, Integrated Flood Risk Management Master Plan and Feasibility Studies on design and supervision of physical works), and by designing and establishing an integrated flood early warning and response system.

**Component 2** - 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’ Such include rehabilitation of drainages, culverts, roads. Eleyele Dam for Safety, and other identified critical socio-economic sites to restore their functionality.
Ongoing Activities and programs (contd.)

• **Component 3** – Project Administration and Management. This will finance incremental operational costs related to the implementation of the project for goods, equipment, staff, travel, and Project Management Unit’s consultant services.

The adoption of a framework design approach for 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 – drainage, solid waste, and urban...
**Challenges** – The formulation of an effective and sustainable urban flood risk management program for Ibadan is a **long, complex and costly process**. 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.

- **Financing Gaps**: While the evolvement of Sector- Specific Master Plans is excellent, the lack of adequate funding is an evidence of incapacitation and inconclusiveness. Desilting of Eleyele Dam, Sustainable Solid Waste Management Program, Physical Works in the Urban Drainage Master Plan are some outstanding to be financed.
SOLUTIONS AND GOOD PRACTICES:

**Solutions** - The project aims to contribute to the growth and resilience goals of Nigeria’s Vision20:2020 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.

**Good Practices** – The Development of Ibadan's Physical Master plan and Ibadan’s Integrated Flood Risk Management Master plan 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.
Thank You, Any Questions?

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Project Development Objective: to reduce flood risk and improve drainage in selected areas in Ho Chi Minh City, which is Tham Luong – Ben Cat – Nuoc Len sub-catchment in the core inner city.

HCMC Vision on Urban IFRM through this project:

<table>
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<tr>
<th>Vision</th>
<th>Elements</th>
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| Strengthening capacity of Urban IFRM at the city level and regional level | - Urban planning  
- Institutional coordination  
- Flood forecasting and early warning system |
| Enhancing flood management infrastructures | - Significant prioritized no-regret structural measures proposed in Master Plan 752 and Master Plan 1547 are invested in selected areas of Ho Chi Minh City |

Indicators to measure success in Integrated Urban Flood Management:

- Land areas and number of people protected against 10-year return period flood risk.
- Establishment of a well-functioning operation command center connecting to the office of HCMC People’s Committee and other public institutions, outreaching to flood vulnerable communities.
# Ho Chi Minh City, Vietnam – Ongoing Activities and programs

<table>
<thead>
<tr>
<th>Plan</th>
<th>Key structures</th>
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<tbody>
<tr>
<td>Master Plan 752 (2020)</td>
<td>* New construction and improvement of the existing combined sewers system</td>
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<tr>
<td></td>
<td>* New construction of separated drainage sewers system (storm water and</td>
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<td>wastewater systems)</td>
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<tr>
<td></td>
<td>* Pumping stations</td>
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<td>* Wastewater Treatment Plants</td>
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<td>* Dredging, improving the primary and secondary canals</td>
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<td>Master Plan 1547 2030)</td>
<td>Zone I: in the right side of Saigon river</td>
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<tr>
<td></td>
<td>* Tidal Sluice Gates</td>
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<td></td>
<td>* Dikes along the right bank of Saigon river</td>
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<tr>
<td></td>
<td>* Dredging, improving main canals</td>
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<td></td>
<td>* Retention ponds</td>
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<tr>
<td></td>
<td>Zone II: in the left side of Saigon river</td>
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<tr>
<td></td>
<td>* Dikes along the left bank of Saigon river: 6 km</td>
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<tr>
<td></td>
<td>* Dikes along Dong Nai river: 14 km</td>
</tr>
<tr>
<td></td>
<td>* Dredging, improving main canals: 20 km</td>
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</tbody>
</table>
Ho Chi Minh City, Vietnam – Ongoing Activities and programs
Ho Chi Minh City, Vietnam – Ongoing Activities and programs
City of Accra, Ghana
Integrated Urban Flood Management

ACCRA METROPOLITAN ASSEMBLY

PRESENTED BY:

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TOKYO, JAPAN 20TH APRIL 2016
Spatial growth of Accra between 1991 and 2011

- Accra has tripled its urban extent in 20yrs
- Area now cuts across the jurisdiction of 16 District Assemblies
- Effects of flooding felt mostly downstream

Change in Built-up area
- Accra 1991
- Accra 2002
- Accra 2011

Derived from 30m Landsat
Flood Prone Basins and Areas of Intervention

- 3 Drainage Master Plans developed over the years
  - Drainage Master Plan for Accra – 1963 and 1991
  - Coastal Management Plan, 1991
Planned Versus Reality....

- Slum development within the planned channel and retention ponds

Ongoing project:
- AS3DAP/Conti Project

In the aftermath of the June 3 floods:
- TA from World Bank Group
Underlying Risks and Vulnerability to Floods

June 3, 2015: Floods in Accra
Rainfall: 90-170mm, 1 in 6 – 200 years event;
52,622 affected people; 150 deaths (fuel station);

Damage Assessment
• “Snap-shot” of the damages in the water, housing and transport sectors
• US$ 55 million damages and US$ 105 million reconstruction needs

Addressing underlying flood risk and flood mitigation
• Addressing legal, institutional (drainage management) and spatial planning issues;
• Addressing operation, maintenance and solid waste collection system;
• Long term flood mitigation measures and resilient infrastructure development;

CityStrength Diagnostic: A diagnostic tool identifying sector challenges and opportunities for strengthening resilience for the short, medium and long term;
The overall objective of the Technical Assistance programme is to assist the Government in identifying key issues to be addressed to achieve greater urban resilience in Accra and develop a criteria-based, prioritized investment plan to improve urban management and resilience.
Expected outcomes

- The expected development impact and outcomes for this activity are:
  - a) just in-time analysis of and actionable recommendations and suggestions in key areas affecting the resilience of Accra, and
  - b) to inform prioritizations of investments in Accra (from DPs, from Government), including any upcoming WBG financed operations and investments in Accra, and
  - c) enhancing capacity of Government agencies and cities to analyze, evaluate and prioritize issues and interventions that can contribute to improving the resilience of Accra to flooding.
City of Accra, Ghana
Integrated Urban Flood Management
City of Accra, Ghana
Integrated Urban Flood Management

Conclusion

- The event of June 3rd, 2015 gave credence to the fact that AS$^3$DAP is still relevant if we want to abate perennial flooding in Accra.

- It is also hoped that the completed study from the World Bank would also propose further measures for Integrated Urban Flood Management thereby reducing the risk of catastrophes and activities to protect critical infrastructure in the City of Accra.
Thank you for your attention........

ACCRA
LIVE IN, LOVE IT
Northern Ghana White Volta River Flood Early Warning & Forecasting System (FEWS-VOLTA) Project

TECHNICAL DEEP DIVE ON INTEGRATED URBAN FLOOD RISK MANAGEMENT WORKSHOP, TOKYO, JAPAN

18-21 APRIL, 2016
SUPPORTED BY THE WORLD BANK GROUP

By

Sylvester Darko
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Accra - Ghana
Vision and Objectives of the Project: The broad objective is to strengthen the institutional capacity of the agencies responsible for flood and disaster risk management in support of Ghana’s efforts to achieve the Hyogo Framework for Action for disaster reduction.

Key Objective: Strengthening flood management in the White Volta river Basin
Northern Ghana White Volta River Flood Early Warning & Forecasting System (FEWS-VOLTA) Project

**Background**

- **Northern Ghana Floods – Annual ritual**
- **The White Volta and Black Volta rivers - Large flood peak/extent, several km**
- **Victims and damage**

![Graph showing daily flow at Daboya gauging station with peaks on January 6, 7, and 9, 2006.](image)

![Images of flooded areas showing affected villages and landscapes.](image)
Northern Ghana White Volta River Flood Early Warning & Forecasting System (FEWS-VOLTA) Project

Products

Water Information system (WIS-Volta)

GIS-database (GIS-Volta)

Flood assessment models
  ➢ Flood Genesis
  ➢ Flood mitigation
  ➢ Hazard maps
  ➢ Flood Early Warning System (FEWS-Volta)
Northern Ghana White Volta River Flood Early Warning & Forecasting System (FEWS-VOLTA) Project

White Volta river flood genesis

Easy analysing with WIS and models:
Gradual building up of flood waters during the rain season
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Flood Mitigation - Pwalugu Reservoir

Size and dam management determine flood mitigation effect.
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Flood hazard map

Emergency planning

Spatial planning
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FEWS-VOLTA

Rainfall forecast
Satellite measurements
Field information
Northern Ghana White Volta River Flood Early Warning & Forecasting System Project

FEWS-Volta

Forecast river floods
Analyse precipitation patterns
Validation and incorporation of mainstream flood risk maps into M/DAs planning maps

M/DAs trained on application of flood risk maps (FRM) for flood management

Adoption of developed FRM by M/DAs as a tool for future development planning efforts

Disseminate flood risk management information in the project communities

Alternative land use activities
Challenges

- Project sustainability after the project period (December, 2016)
- Up scaling the EWS to other areas in Ghana especially city of Accra.
- Rehabilitation/maintenance of gauging stations
- Irregular field visits to collect data and to undertake river discharge measurements due to financial constraints
- Procurement & Replacement of obsolete equipment with modern state-of-the-art equipment
Northern Ghana White Volta River Flood Early Warning & Forecasting System Project

Thanks for your Attention