



# VIETNAM

## IMMEDIATE REPORT VOLUME 1 (PUBLIC VERSION)

### VIETNAM: ENVIRONMENTAL SANITATION AND WASTEWATER TREATMENT BUSINESS ROUNDTABLE MARCH 11, 2014

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SUBMITTED TO:

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## The U.S. Trade and Development Agency

The U.S. Trade and Development Agency helps companies create U.S. jobs through the export of U.S. goods and services for priority development projects in emerging economies. USTDA links U.S. business to export opportunities by funding project planning activities, pilot projects, and reverse trade missions while creating sustainable infrastructure and economic growth in partner countries.

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## EXECUTIVE SUMMARY

The United States Trade and Development Agency (USTDA) hosted, in conjunction with a World Bank-funded study tour, a half-day Business Roundtable for a delegation of senior officials from Vietnam and U.S. businesses. The study tour was a component of the World Bank's proposed Second Ho Chi Minh City Environmental Sanitation Project, which is designed to improve drainage and wastewater treatment in Ho Chi Minh City (HCMC), Vietnam.

The study tour began on March 2, 2014, and included site visits to wastewater treatment plants in Huntington Beach, CA; Managua, Nicaragua; New York, NY; and Washington, DC. The Business Roundtable was held on March 11, 2014, at the USTDA's Business Conference Center in Washington, DC, following the delegation's various site visits.

The Business Roundtable was hosted to facilitate increased U.S. business involvement in Vietnam's environmental sanitation sector by affording U.S. companies the opportunity to engage with the delegation about upcoming project opportunities associated with the Second HCMC Environmental Sanitation Project. The event also enabled U.S. companies who are currently active in Vietnam and have shown interest in Vietnam's water and environment sector an opportunity to strengthen their position in Vietnam's environmental market. Additionally, the Business Roundtable provided a forum for the delegation to learn about U.S. wastewater treatment practices, capabilities, and technologies in wastewater treatment.

The main objectives of the Business Roundtable were met by the following:

- U.S. participants received from the delegation detailed information about the Second HCMC Environmental Sanitation Project, which included the project owner, estimated costs and funding sources, anticipated implementation time (including phasing), the main project components, and a drawing of the preliminary project design. To provide the full context of the HCMC Environmental Project, U.S. participants were provided a detailed description of the first phase of the HCMC Environmental Sanitation Project, which was completed in 2012. U.S. participants were apprised of the project objectives, specific components of the completed work, including project outcomes, cost, as well as drawings and photographs of the completed work.
- U.S. participants also received from the delegation detailed information about the historical and current flood situation in HCMC, along with identified solutions to effectively address flooding conditions, including approved projects that are part of the HCMC People's Committee Steering Center of Urban Flood Control Program.

- U.S. industry representatives were offered the opportunity and encouraged to meet one-on-one with individual Vietnamese delegates or with the entire delegation to discuss ongoing and potential business relationships and projects and to present their services and/or equipment.
- All U.S. participants who responded to the post-event survey indicated that the Business Roundtable met their respective business objectives. *(Additional details are provided in the Confidential Annex.)*
- Delegates were presented information about U.S. technologies used by Alexandria Renew Enterprises, which provides water reclamation services for Alexandria, VA, customers and wholesale services to Fairfax County, VA. The Alexandria system is recognized as one of the most advanced waste water reclamation facilities in the U.S.
- Delegates also received a presentation from Xylem, Inc., a water technology supplier based in Westchester County, New York. The presentation included information regarding the company's mission to provide innovative solutions for the wastewater problems in Vietnam and information about Xylem's core business philosophy and products, as well as some of the company's typical projects in Vietnam. Xylem emphasized its commitment to helping solve Vietnam's water problems.
- Following the Business Roundtable, the World Bank, Vietnam representative provided the World Bank Group's "Detailed Work Program" for Fiscal Years 2015 – 2017, which shows funding commitments for several projects in Vietnam, and is attached as Appendix D.
- The World Bank, Vietnam representative also expressed to Jacobsen Daniels Associates, Business Roundtable Logistics Coordinator, the World Bank's appreciation for the Business Roundtable, and also reported that the Vietnamese government delegates "highly appreciated" the event.



## PARTICIPANTS SUMMARY

A total of 34 individuals participated in the Business Roundtable, which included:

- 1 Entity with State/Local Government Representative
- 6 Federal Government Participants
- 10 Foreign Government Officials
- 2 Foreign Private Business Professionals
- 2 International Organization Representatives
- 2 IQC Contractors
- 1 IQC Translator (Interpreter)
- 3 Non-Governmental Organization Representatives
- 6 US Based Company Private Business Professionals
- 1 US Based Company Private Business Professional from Abroad

The Foreign Participants are listed in Table 1 below. The U.S. participants are listed in Table 2 below. Contact information for all participants is included in Appendix A.

<b>TABLE 1 FOREIGN PARTICIPANTS</b>		
<b>FIRM/ ORGANIZATION</b>	<b>NAME</b>	<b>TITLE</b>
Ministry of Finance - Director of Debt Management and External Finance	Mrs. Duong Quynh Le	Director of Multilateral Division
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People's Committee of Ho Chi Minh City Department of Planning and Investment	Mr. Tran Bach Ngoc	Head of ODA Project Management Division
Ho Chi Minh City People's Committee Steering for Flood Control	Mr. Nguyen Hoang Anh Dung	Deputy Director
District 2, People's Committee	Mr. Huynh Thanh Khiet	Vice Chairman
Ho Chi Minh City Department of Transport -Implementation Management Agency of Environmental Sanitation Project	Mr. Phan Chau Thuan	Director
Ho Chi Minh City Department of Transport -Implementation Management Agency of Environmental Sanitation Project	Mr. Vong Hai Long	Vice Director
Ho Chi Minh City Department of Transport -Implementation Management Agency of Environmental Sanitation Project	Mr. Ly Thanh Danh	Chief of Project Management Unit
The World Bank – Sustainable Development Department	Mr. Le Duy Hung	Sr. Urban Specialist
CDM International	Mr. Can Duy Nguyen	MIS Specialist

Anh Viet Travel	Mr. Nguyen Khoa Luan	Tour Leader
Anpha Travel Agency	Mr. Nguyen Ngoc Quang	Tour Guide

<b>TABLE 2 U.S. PARTICIPANTS</b>		
<b>FIRM/ORGANIZATION</b>	<b>NAME</b>	<b>TITLE</b>
AECOM	Vincent Ruddy	Director, International Development Global Programs
Alexandria Renew Enterprises	Karen Pallansch	CEO
American Water Works Association - International Council	Ventura Bengoechea	Member
CDM Smith, Inc.	David Fernandes	Vice President
Global Environment & Technology Foundation (U.S. Water Partnership)	Tori Phillips	Project Coordinator
Hach	Frank Kaiser	Divisional Sales Manager
Interpreter	Landai H. Nguyen Rees	Interpreter/Simultaneous Vietnamese - English
Jacobsen Daniels Associates	Genelle Allen	Vice President
Jacobsen Daniels Associates	Darryl Daniels	Managing Partner
RMA	Brad Johnson	President
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U.S. Trade and Development Agency	Pinsuda Alexander	Country Manager/ South and Southeast Asia Region
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U.S. Trade and Development Agency	Adrian Stover	Research Analyst
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The World Bank – Sustainable Development Department	Sudipto Sarkar	Water Practice Leader
Xylem, Inc.	Dennis Barnes	Product Manager - Biological Process Solutions
Xylem, Inc.	Joseph Vesey	Vice President – Americas Region & Chief Marketing Officer

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### **Continental Breakfast**

The Business Roundtable began with a continental breakfast for all participants. On-site registration was available throughout the event.

### **Welcome and Introduction of Delegation**

The Roundtable began with a welcome to the delegates and U.S. participants by Ms. Pinsuda Alexander, Country Manager for South/Southeast Asia Region, USTDA. Ms. Alexander also explained the Roundtable objectives as providing an opportunity for dialogue between the Vietnamese delegates and U.S. business community on how wastewater treatment is handled in the United States. After delegate introductions, a World Bank representative explained the other activities of the delegates' study tour, which occurred from March 2 – 10, 2014, and stated that the Roundtable was the last event of the tour. A brief video titled, "The Re-Birth of a Heavily Polluted Canal in Vietnam," was shown to introduce the Second HCMC Environmental Sanitation Project to the U.S. participants, which included an explanation of the work completed during Phase 1 of the project.

### **Introduction of How U.S. Companies May do Business with World Bank-Funded Projects**

Mr. E. Scott Bozek, Advisor and Director of Business Liaison, U.S. Commercial Service, Office of the U.S. Executive Director, discussed current procurement issues for World Bank-funded projects. He provided an overview of the number and dollar value of World Bank-funded contracts U.S. companies have received during fiscal years 2007 -2013. Mr. Bozek presented map showing the location of all World Bank-funded projects in Vietnam. He stated that the World Bank is providing \$450 million in funding for Phase 2 of the HCMC Environmental. He also explained that this is an appropriate time for U.S. companies to network with the Vietnamese delegates because after the bidding process starts, the project team will no longer be available to discuss the project. Mr. Bozek then explained the bidding process and provided participants with web links to obtain project documents.

**Background and Developments of Second Ho Chi Minh City Environmental Sanitation Project****HCMC Environmental Sanitation Project – Phases 1 and 2**

Delegate Ly Thanh Danh, Chief of Project Management Unit of the HCMC Department of Transport - Implementation Management Agency of Environmental Sanitation Project, provided detailed information about the completed Phase 1 and the upcoming Phase 2 of the project.

**Phase 1**

The primary project objectives for Phase 1 of the HCMC Environmental Sanitation Project were to:

- Ensure hydraulic capacity and effectively manage flooding in basin areas in Vietnam.
- Prepare for treating wastewater and prevent pollution to canal water.
- Restore the canal, improve the environment, and implement the Urban Renewal Plan.

Total Phase 1 project costs were USD \$317 million. Mr. Thanh Danh described the main components of the completed work and reported that as a result of the Phase 1 work, flooding has been alleviated at the Nhieu Loc - Thi Nghe Basin area, public health has improved, land values have increased, and a positive impression of the region has been created for investors and foreign tourists.

**Phase 2**

The primary components of the Phase 2 work include constructing the interceptor to convey wastewater from the NL-TN Pumping Station and convey District 2 wastewater to the NL-TN Wastewater Treatment Plant, constructing additional levels of the sewer system for District 2 to collect wastewater from households and residential areas connected to the interceptor to convey wastewater to the plant for treatment, improving environmental sanitation management and implementing the project. A preliminary drawing of the project and a construction timeline were also provided.

**Utility Owner:** Ho Chi Minh City (HCMC) People's Committee

**Employer:** Investment Management Authority of HCMC Environmental Sanitation Project

**Anticipated implementation time:** 2014 – 2019

**Project Location:** District 2, HCMC

**Total estimated funding for the project:** USD \$524 million

*Flood Situation and Solutions in HCMC*

Delegate Nguyen Hoang Anh Dung, Deputy Director of the HCMC People’s Committee Steering Center for Flood Control, HCMC, Vietnam, provided an overview and statistical information about the historical and current flood situation in HCMC. Mr. Hoang Anh Dung also provided details about identified solutions to effectively address flooding in HCMC. The proposed solutions are:

- Reduce, erase and prevent flooding points.
- Organize and manage implementation of plans approved by the Prime Minister, which entail strictly managing land resources, maintain rivers and canals to support drainage that is adaptive to climate changes, and decentralize the retention basis network and establish a database and software for drainage system.
- Strengthen cooperation in science and technology fields to conduct research and train labor force to develop a sustainable flood control program that is adaptive to climate change.
- Strengthen urban flood management by building suitable regulations of compensation for backfilled water surfaces and prevention of increased overflow.
- Promoting awareness and community consensus for developing a sustainable and friendly strategy for flood control and water environmental protection.
- Accelerate progress in executing approved drainage system and wastewater treatment projects.

Various drawings of the projects included in the HCMC People’s Committee Steering Center of Urban Flood Control Program were presented.

A questions and answers period followed the delegate presentations.

## Best Practices and Solutions in Wastewater Treatment Management

### Overview of U.S. Technologies Used at the Alex Renew Water Resource Recovery Facility (WRRF)

Ms. Karen Pallansch, Chief Executive Officer of Alexandria Renew Enterprises, presented an overview of the creation of Alexandria’s wastewater treatment facility including its state-of-the-art-technology, physical layout, and processes used to treat wastewater. Detailed information was provided about the facility’s use of U.S. technology, including *Flowserve* Non-Clog Dry-Pit Centrifugal Pumps, *Parkson* AquaGuard® climber screen, screenings washer, and screenings compacter system as part of the Fine Screening System, *Smith & Loveless* PistaGrit® vortex grit chambers as part of the Grit Removal System, *Sanitaire* membrane-type disc (fine bubble) diffusers, *Hoffman-Lamson* Multi-Stage Centrifugal Blowers, *Rodney-Hunt* Flow Isolation and Diversion Gates, *Waterlink* (now *Parkson*) Tertiary Plate Settlers, *Tetra*® U-Block Filter Underdrains, *Hach* Dissolved Oxygen Meters, *Fluid Components* Air Flow Meters, *Allen-Bradley* Programmable Logic Controllers, and *Allen-Bradley* Operator Interface Terminals, PanelView. Ms. Pallansch also explained the Construction Manager At Risk delivery approach that AlexRenew is currently using for a construction project that is underway.

### Xylem, Providing Innovative Solutions to the Challenges of Water Problems in Vietnam

Mr. Joseph P Vesey, Vice President – Americas Region and Chief Marketing Officer with Xylem, Inc., provided an overview of the company and its business philosophy, products and approach as a leader in water technology supplies. Mr. Vesey stated that Xylem offers innovative solutions and explained some of the company’s typical projects in Vietnam, including filter pump and irrigation pump stations. He also emphasized Xylem’s commitment in Vietnam by highlighting that the company’s Asia Pacific region headquarters are located in Singapore and that an office is being established in HCMC, new employees are being recruited in the region, and training programs and technology in wastewater treatment are being instituted.

Ms. Pallansch and Mr. Vesey responded to questions from the Ms. Alexander and Roundtable participants.

The final agenda for the Business Roundtable is included in Appendix B. Presentations made during the Roundtable are included in Appendix C.

### **The World Bank, Vietnam**

Following the Business Roundtable, The World Bank – Sustainable Development Unit in Vietnam conveyed that it has a “Detailed Work Program” for Fiscal Years (FY) 2015 – 2017 that includes:

- In FY 2015, Phase 2 of the HCMC Environmental Sanitation Project (Wastewater Treatment Plant); \$450 million total funding; \$200 million provided by the International Development Association (IDA) and \$250 million provided by the International Bank for Reconstruction and Development (IBRD).
- In FY 2016, HCMC Flood Risk Management Project; the amount of funding for this project has not yet been determined.

A complete listing of the projects included in the World Bank Group’s Detailed Work Program for FY 2015-2017 is attached as Appendix D.

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	<b>APPENDIX A – PARTICIPANTS’ CONTACT INFORMATION</b>
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**FOREIGN PARTICIPANTS - 14**

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- 2 Foreign Private Business Professionals
- 1 International Organization Representative
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	<p><b>APPENDIX B – BUSINESS ROUNDTABLE OVERVIEW AND AGENDA</b></p>
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# VIETNAM

## ENVIRONMENTAL SANITATION AND WASTEWATER TREATMENT BUSINESS ROUNDTABLE

SPONSORED BY THE U.S. TRADE AND DEVELOPMENT AGENCY IN CONJUNCTION WITH THE WORLD BANK  
CONNECTING VIETNAMESE ENVIRONMENTAL SANITATION AND WASTEWATER TREATMENT OFFICIALS  
WITH U.S. BUSINESSES AND SUPPLIERS

### OVERVIEW and AGENDA

MARCH 11, 2014

#### Overview

As part of a World Bank-organized study tour for senior officials from Vietnam, USTDA is hosting this roundtable for U.S. companies to engage directly with the delegation in order to discuss wastewater treatment practices and solutions in the United States.

The broader study tour is part of the World Bank's planned Second Ho Chi Minh City (HCMC) Environmental Sanitation Project, which aims to improve drainage and wastewater treatment of HCMC. The Business Roundtable will serve the dual purpose of informing U.S.-based companies about the upcoming project opportunities associated with the Second Environmental Sanitation Project (ESP) and educating the Vietnamese delegation on U.S. wastewater treatment practices, capabilities, and technologies.

The World Bank loan of \$450 million will build on the first phase of the HCMC Environmental Sanitation Project, and will finance:

- i. a wastewater treatment plant,
- ii. remaining interceptor, and
- iii. sewerage in HCMC's District 2.

Vietnam's development plans indicate that the costs of meeting the wastewater collection and treatment goals for 2025 are estimated to be \$10.8 billion. This will require an estimated annual capital investment between 2010-2025 of around \$700 million, presenting significant opportunities for U.S. technologies and expertise.



# VIETNAM

## ENVIRONMENTAL SANITATION AND WASTEWATER TREATMENT BUSINESS ROUNDTABLE

SPONSORED BY THE U.S. TRADE AND DEVELOPMENT AGENCY IN CONJUNCTION WITH THE WORLD BANK  
CONNECTING VIETNAMESE ENVIRONMENTAL SANITATION AND WASTEWATER TREATMENT OFFICIALS  
WITH U.S. BUSINESSES AND SUPPLIERS

### Agenda

#### 8:30 – 9:00 am

On Site Registration and Continental Breakfast

#### 9:00 – 9:10 am

Welcome and Introduction of Delegation, Ms. Pinsuda Alexander, Country Manager for Southeast Asia, U.S. Trade and Development Agency

#### 9:10 – 9:30 am

Introduction of How U.S. Companies May Do Business with World Bank-funded Projects by Mr. E. Scott Bozek, Advisor and Director of Business Liaison, Office of the U.S. Executive Director, The World Bank Group

#### 9:30 – 10:15 am

Presentation of Project Background and Developments

“Flood Situations and Solutions in Ho Chi Minh City” by Mr. Nguyen Hoang Anh Dung, Deputy Director of Steering Committee for Flood Control, Ho Chi Minh City, Vietnam

“Ho Chi Minh City Environmental Sanitation Project, First Phase and Second Phase” by Mr. Ly Thanh Danh, Chief of Project Management Unit of Implementation Management Agency, Ho Chi Minh City, Vietnam

#### 10:15 - 10:30 am

Questions and Answers

#### 10:30 - 10:45 am

Coffee Break

#### 10:45 - 11:45 am

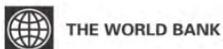
Best Practices and Solutions in Wastewater Treatment Management Presentations by  
Mr. Joseph P. Vesey, Vice President Americas Region and Chief Marketing Officer, Xylem  
Ms. Karen Pallansch, Chief Executive Officer, Alexandria Renew Enterprises

#### 11:45 - 12:30 pm

Facilitated One-on-One Discussions

#### 12:30 pm

Conclusion of Program



	<b>APPENDIX C -PRESENTATIONS</b>
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Introduction of How U.S. Companies May Do Business with  
World Bank-funded Projects

## How To Do Business With The World Bank Group

From 2007 to 2013 U.S. companies have won prime contracts with the World Bank (IBRD/IDA) worth about \$760 million (slide 2). U.S. companies acting as subcontractors to a prime contractor have also won many millions of dollars of contracts. These totals would be more than the \$760 million but are not traceable. For example, a major U.S. company won a contract in Bangladesh for its turbines and generators worth more than \$100 million while being a subcontractor to a Spanish prime contractor.

The best way to win a contract with the WBG is to become aware of the projects at a very early stage. If a company is looking to do business with a particular country, it is best to read the “Country Assistance Strategy” or CAS (slide 10). If a company is more interested in specific sectors, then it is best to track “Project Information Documents” or PIDs (slide 14). For a listing of the CASs and PIDs click on the following link: [www.worldbank.org/projects](http://www.worldbank.org/projects) (slide 14). Procurement notices are published locally and by UN Development Business: <http://www.devbusiness.com/> (slide 14) – this is a subscription service which costs about \$500 a year. Another good method of tracking WB opportunities is to access the WB mapping program: <https://maps.worldbank.org> (slide 3). Here there are many ways of viewing the projects and procurement opportunities (slides 3-7). Besides giving loans and grants to countries, the WB also makes awards of contracts directly: <https://wbgeconsult2.worldbank.org> (slide 13).

See the full PowerPoint presentation for more details. The basics of procurement for the World Bank Group also apply to the other multilateral development banks:

- Inter-American Development Bank ([www.iadb.org](http://www.iadb.org))
- Asian Development Bank ([www.adb.org](http://www.adb.org))
- European Bank for Reconstruction and Development ([www.ebrd.com](http://www.ebrd.com))
- African Development Bank ([www.afdb.org](http://www.afdb.org))

See slide 15 for a listing of Commercial Service representatives working at these development banks. They can provide further information and assistance.

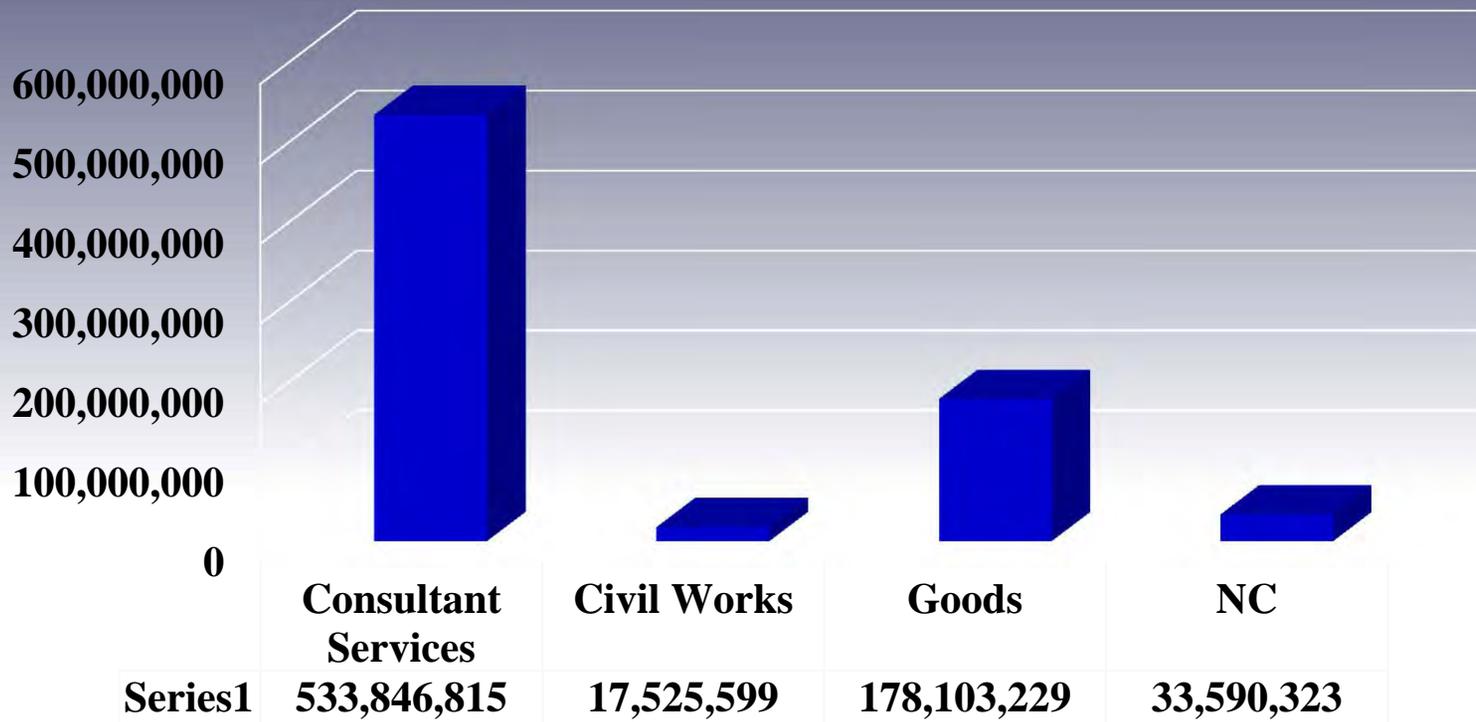
A faint, light blue world map is visible in the background of the top half of the slide. The map shows the continents and is overlaid on a grid of latitude and longitude lines. The overall color scheme is a gradient of blue and white.

# Current Issues in Procurement

E. Scott Bozek  
Advisor and Director of Business Liaison  
Office of the U.S. Executive Director  
The World Bank Group

# U.S. Company Contracts with WB

Overall Total: FY07-13



# Mapping for Results

Firefox Mapping for Results | The Wo... afghan\_overview.pdf (applica... +

maps.worldbank.org Bing

Most Visited Getting Started HP - See What's Hot HP Games HP MSN SDFCU Secure Email Pa... SDFCU Secure Email Se... Suggested Sites Web Slice Gallery Bookmarks

## Mapping for Results

By Country By Indicator Home Georeports Featured Methodology About

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geoIQ World Bank

**Mapping for Results** visualizes the locations of World Bank-financed projects to better monitor development impact, improve aid effectiveness and coordination, and enhance transparency and social accountability. [Read More »](#)

Country Name

**RSS**

 Subscribe to the Bank's Email and RSS Updates on Mapping for Results [Sign up for email updates »](#) [Subscribe Now »](#)

10:02 PM 3/10/2013

# Afghanistan: Irrigation Project

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maps.worldbank.org/sa/afghanistan | Bing

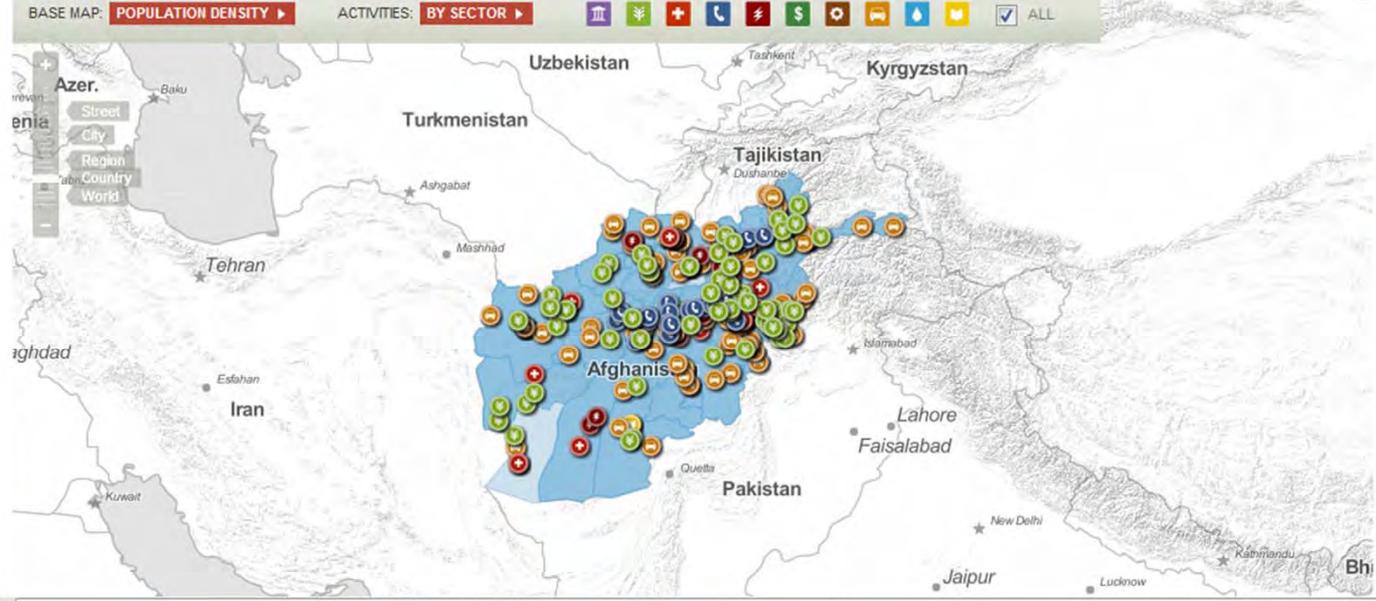
Most Visited | Getting Started | HP - See What's Hot | HP Games | HP MSN | SDFCU Secure Email Pa... | SDFCU Secure Email Se... | Suggested Sites | Web Slice Gallery | Bookmarks

## Mapping for Results - Afghanistan, South Asia

DOWNLOAD | SHARE

AFGHANISTAN | **37** financed activities working in **318** mapped locations

BASE MAP: POPULATION DENSITY | ACTIVITIES: BY SECTOR |



FINANCED ACTIVITIES BY SECTOR

**\$2.63 billion**  
All

- Public Admin..., and Justice
- Energy and mining
- Transportation
- Agriculture, ... and forestry
- Education
- Health and o...cial services
- Finance
- Water, sanit...od protection
- Information ...ommunications
- Industry and trade

funding for local and national activities  
MORE DATA

AFGHANISTAN

9:36 PM  
3/10/2013

# Afghanistan: Irrigation Project

The screenshot displays a web browser window with the URL <http://www.worldbank.org/>. The page title is "Irrigation Restoration and Development Project". The navigation menu includes tabs for OVERVIEW, DETAILS, FINANCIALS, PROCUREMENT, RESULTS, MAP, and DOCUMENTS. The "MAP" tab is active, showing a map of Afghanistan with 58 mapped locations marked by green and yellow icons. The map includes labels for major cities like Kabul, Herat, Kandahar, and Mazar Sharif, as well as geographical features like the Kunuz and Kunduz rivers. The "NEWS" section on the right contains two entries: "LOANS AND CREDITS: Afghanistan - Irrigation Restoration and Development Project" dated April 28, 2011, and a "PRESS RELEASE: World Bank Provides Further Support to Afghanistan's Irrigation Infrastructure through Improving 300,000 Hectares of Land" also dated April 28, 2011. Below the news is a "HOW WE WORK" section with links for Products & Services, Project Cycle, Policies, and Procurement. The Windows taskbar at the bottom shows the system time as 9:46 AM on 3/13/2013, along with various application icons.

# Afghanistan: Irrigation Project

**Irrigation Restoration and Development Project**

OVERVIEW DETAILS **FINANCIALS** PROCUREMENT RESULTS MAP DOCUMENTS

**Financing Plan at Board Presentation (US\$ Millions)**

FINANCIER	COMMITMENTS
Ida Grant	97,800,000.00
Borrower	2,500,000.00
Afghanistan Reconstruction Trust Fund	48,400,000.00

**Total Project Financing (US\$ Millions)**

Product Line	IBRD/IDA	Lending Instrument	Specific Investment Loan
IBRD Commitment	N/A	Grant Amount	N/A
IDA Commitment	97.80	Total Project Cost**	148.70
IBRD + IDA Commitment	97.80		

\*\*\*Summary Status of World Bank Financing (US\$ Millions) as of Feb 28, 2013

[Download to Excel](#)

FINANCIER	APPROVAL DATE	CLOSING DATE	PRINCIPAL	DISBURSED	REPAYMENTS	INTEREST, CHARGES & FEES
-----------	---------------	--------------	-----------	-----------	------------	--------------------------

**NEWS**

**LOANS AND CREDITS**  
Afghanistan - Irrigation Restoration and Development Project  
April 28, 2011

**PRESS RELEASE**  
World Bank Provides Further Support to Afghanistan's Irrigation Infrastructure through Improving 300,000 Hectares of Land  
April 28, 2011

**HOW WE WORK**

- Products & Services
- Project Cycle
- Policies
- Procurement

10:50 AM  
3/13/2013

# Afghanistan: Irrigation Project

**Irrigation Restoration and Development Project**

**OVERVIEW** DETAILS FINANCIALS PROCUREMENT RESULTS MAP DOCUMENTS

**ABSTRACT\***

The objective of the Irrigation Restoration and Development Project (IRDP) for Afghanistan is to increase agriculture productivity and production in the project areas. This project paper seeks the approval of the Executive Directors to provide a grant in an amount of SDR 61.7 million (equivalent to US\$97.8 million) to the Islamic Republic of Afghanistan for the Project. The grant would support the Government of Afghanistan (GoA) with the continued implementation of the national priority irrigation rehabilitation program to [Read More](#)

PROJECT AT-A-GLANCE	
Project ID	P122235
Country	Afghanistan
Region	South Asia
Status	Active
Approval Date (as of board presentation)	APR 28, 2011
Closing Date	DEC 31, 2017
Total Project Cost**	US\$148.70 million
Commitment Amount	US\$97.80 million
Team Leader	Jun Matsumoto

**LATEST PROJECT DOCUMENTS**

Afghanistan - Irrigation Restoration and Development Project : P122235 - Implementation Status Results Report : Sequence 03 (English)  
AUG 26, 2012

Afghanistan - Irrigation Restoration and Development Project (IRDP) : Procurement plan (English)  
MAY 18, 2012

Afghanistan - Irrigation Restoration and Development Project : P122235 - Implementation Status Results Report : Sequence 02 (English)  
MAR 11, 2012

[View All Documents »](#)

**NEWS**

**LOANS AND CREDITS**  
Afghanistan - Irrigation Restoration and Development Project  
April 28, 2011

**PRESS RELEASE**  
World Bank Provides Further Support to Afghanistan's Irrigation Infrastructure through Improving 300,000 Hectares of Land  
April 28, 2011

**HOW WE WORK**

- Products & Services
- Project Cycle
- Policies
- Procurement

10:51 AM  
3/13/2013

# Afghanistan: Irrigation Project

- Project designed to increase agricultural productivity and production
- \$70 million for rehabilitation of irrigation infrastructure, covering 300,000 hectares and benefiting 230,000 households
- \$30 million for the construction of three multi-purpose dams
- \$38 million for technical assistance, capacity building, and project management
- \$5 million for the establishment of hydro-meteorological facilities and service (this contract won by U.S.-based firm)



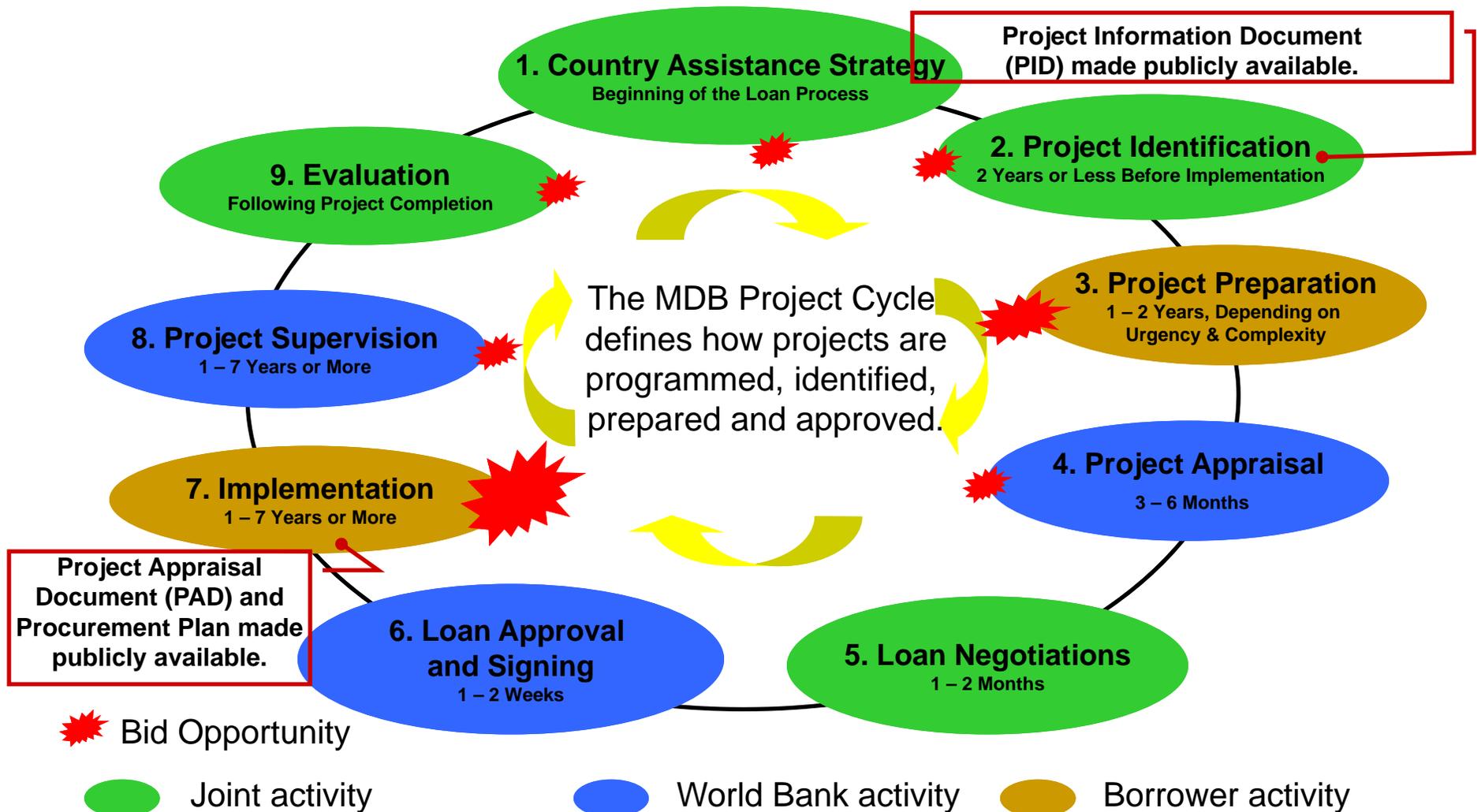
## ***Four Basic Product Lines***

---

- 1. Bank-funded procurement: a foreign government borrows money from the MDB to buy goods and services**
- 2. Corporate procurement: the MDB buys goods and services for its own account**
- 3. Investment products: trade finance, investment funds, carbon finance**
- 4. Risk mitigation products: political risk insurance**

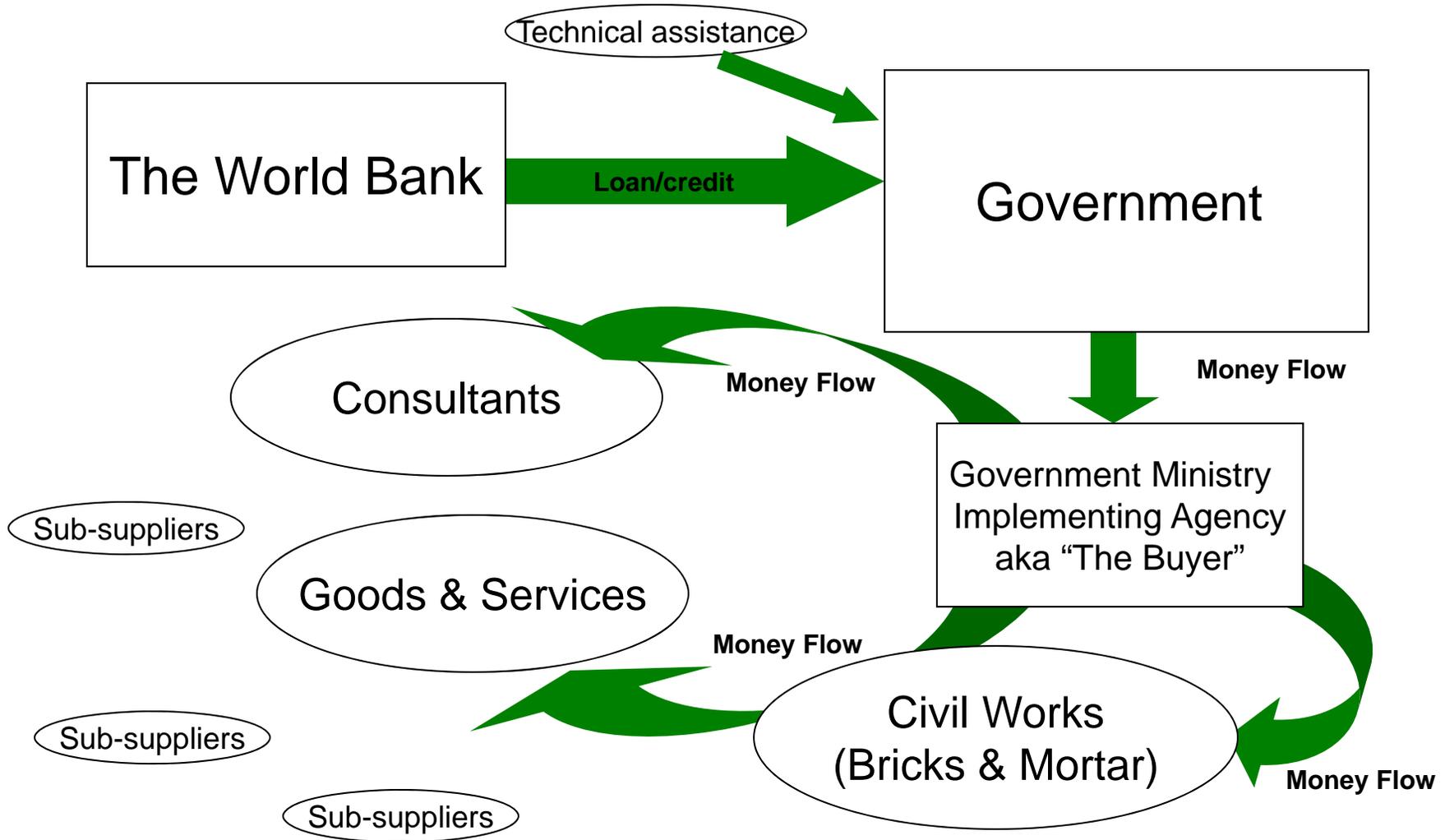
# MDB-Funded Procurement

## The Project Cycle: PID, PAD, Procure



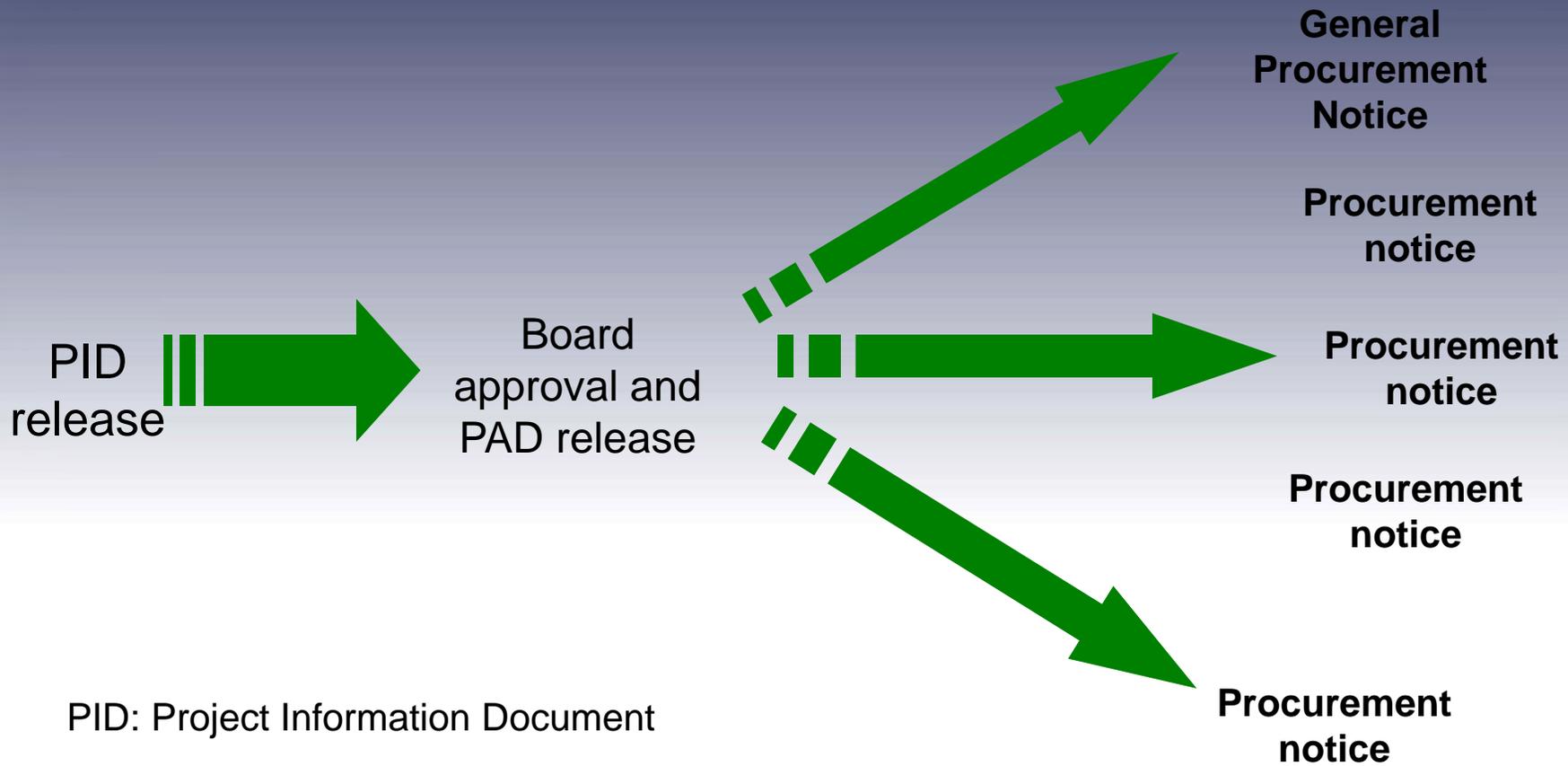
# Identify World Bank-funded Bid Opportunities

## Money Flow for Loans



# *Identify World Bank-funded Bid Opportunities*

## The PID PAD Procure Pipeline



PID: Project Information Document

PAD: Project Appraisal Document

# ***Corporate Procurement – eConsultant2***

---

<b>Title</b>	<b>Country</b>	<b>Deadline</b>
Facilitating Access to Finance for Domestic Private Water Providers in Cambodia	Cambodia	May 20, 2013
Southeast Europe Tax Program - Process Mapping and Reengineering - Albania	Albania	May 22, 2013

<https://wbgeconsult2.worldbank.org>

# ***Identify World Bank-funded Bid Opportunities***

## **World Bank Project Cycle Documents**

1. **PID (Project Information Document)** – The first publicly available document about a given project is the 6-7 page PID, which conceptualizes the project.  
[www.worldbank.org/projects](http://www.worldbank.org/projects)
2. **Project Appraisal Document (PAD)** – The 100+ page PAD offers detailed information, including a procurement plan for the first 18 months.  
[www.worldbank.org/projects](http://www.worldbank.org/projects)
3. **Procure** – Procurement notices are published locally and in UN Development Business.  
[www.devbusiness.com](http://www.devbusiness.com)

# *The MDB Basic Course*

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**202-458-0120**



## Presentation of Project Background and Developments



HO CHI MINH CITY PEOPLE'S COMMITTEE  
STEERING CENTER OF URBAN FLOOD CONTROL PROGRAM

# FLOOD SITUATION AND SOLUTIONS IN HO CHI MINH CITY



March 2014

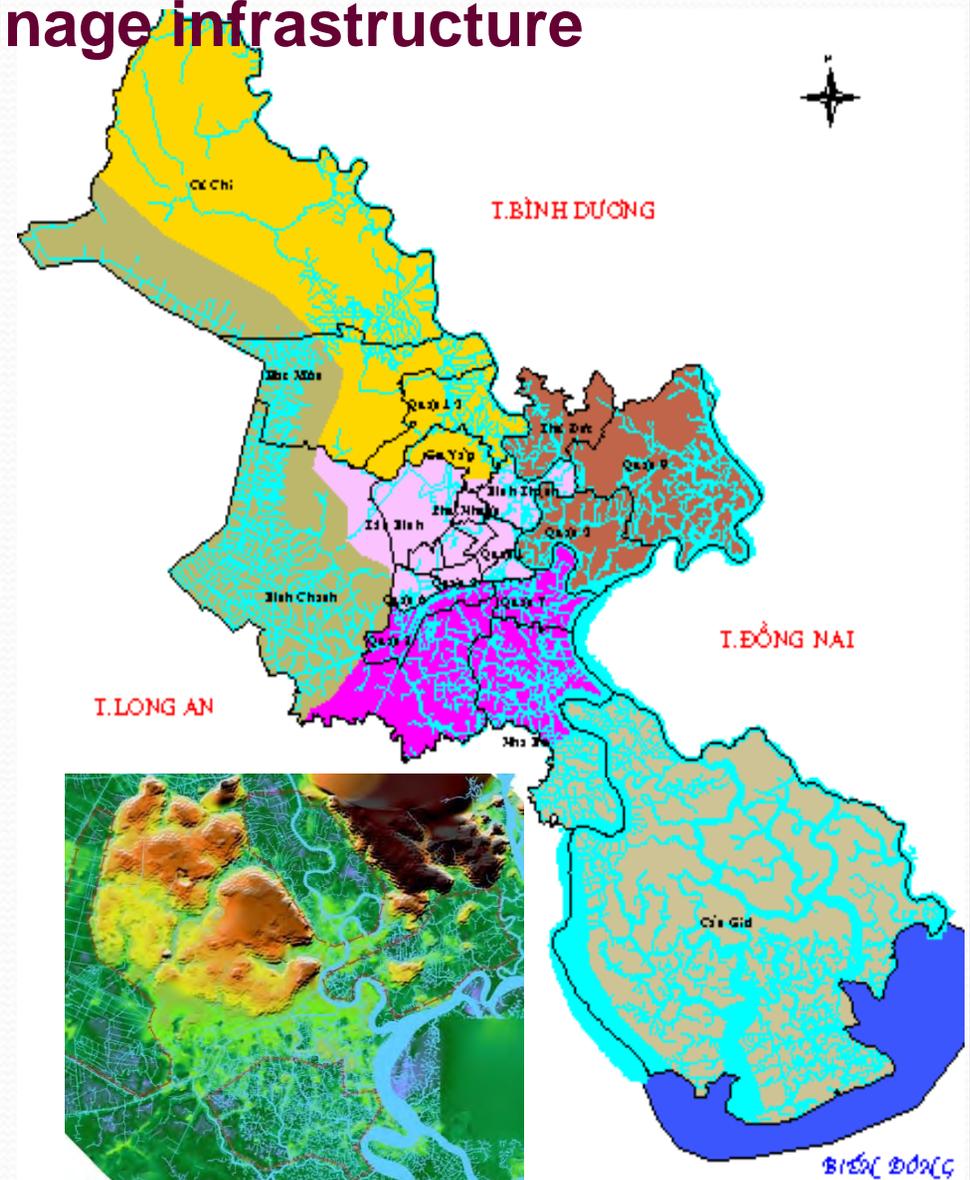


# I. OVERVIEW and CURRENT SITUATION

## 1. Natural topography and drainage infrastructure

Area of HCMC : 2.095 km<sup>2</sup>. There are 60% of low areas under +1.60m, which heavily suffers the tide of SaiGon and Dong Nai River.

There are 2,008km of rivers and canals with approximately 1,050km of dikes and embankments in the city (including 200km of unstable embankments which have problems as flood tide).





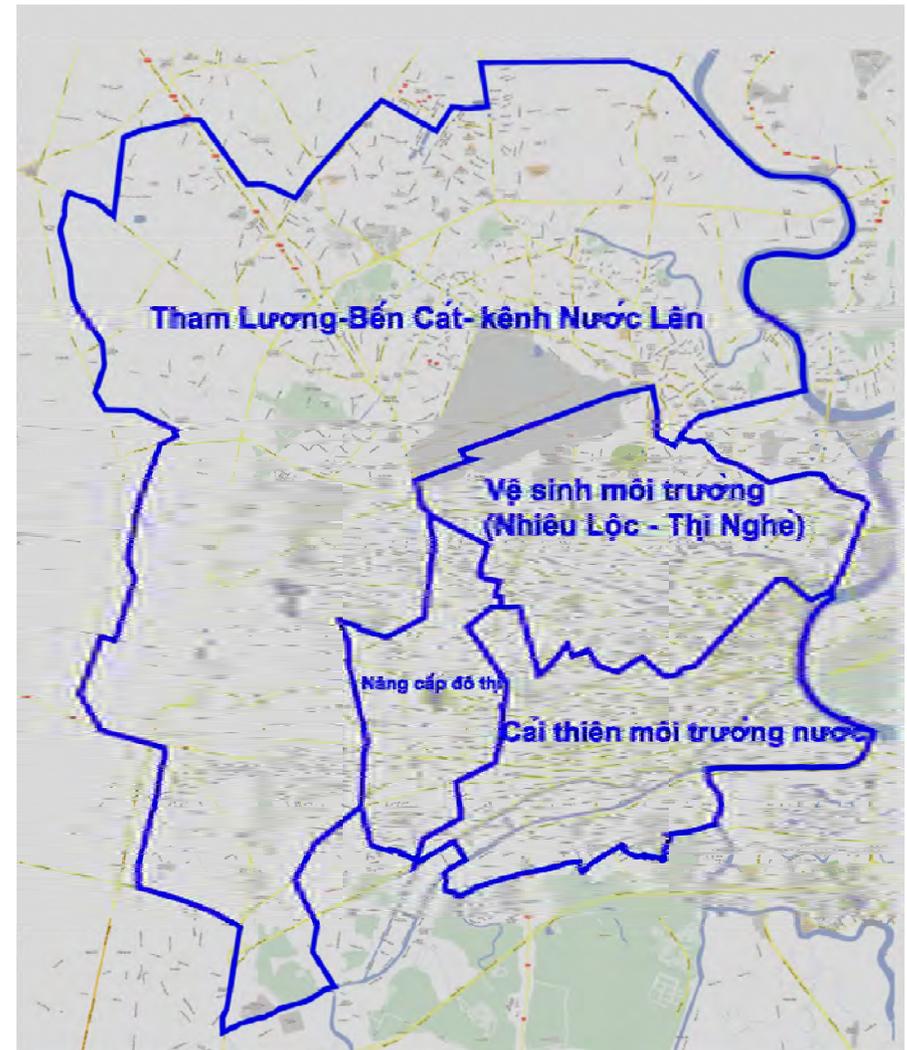
## I. OVERVIEW and CURRENT SITUATION

In 2001, there are 517km of sewers built by brick and concrete during many phases (mainly focusing in District 1, 3 and 5).

So far, 3,217km of sewers have been built. However, the majority of works concentrate in the central city with approximately 100km<sup>2</sup>.

Ho Chi Minh City drainage system master plan up to 2020 was approved by Prime Minister at Decision No. 752/QĐ-TTg dated 19/6/2001: drainage research is done for area of 680km<sup>2</sup> which is divided into 6 catchment areas. Among them, detail study has been implemented for city center (100km<sup>2</sup>) in order to execute 3 flood control projects.

## DRAINAGE CATCHMENT





# II. FLOOD SITUATION

## Flooding situation

### Flood by rain

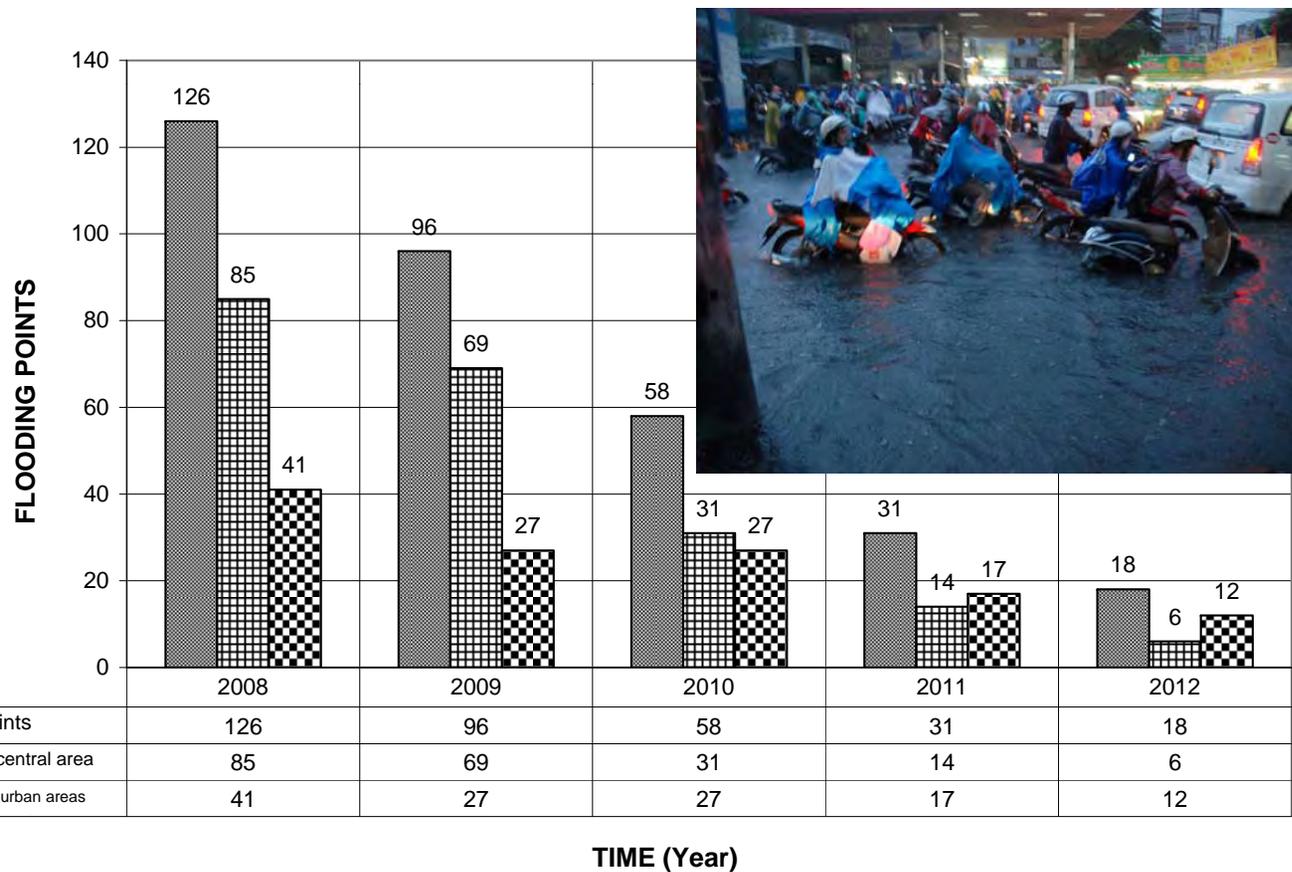
Year	2008	2009	2010	2011	2012	2013
Total flood points	126	96	58	31	18	14

### Flood by tide (m)

2008	1,55	95
2009	1,56	40
2010	1,55	26
2011	1,59	08
2012	1,62	03
2013	1,68	02



STATISTICAL GRAPH OF FLOOD POINTS IN DISTRICTS OF CENTRAL AREA AND SUBURBAN AREAS OF HO CHI MINH CITY FROM 2008 TO 2012





# HO CHI MINH CITY PEOPLE COMMITTEE STEERING CENTER OF FLOOD CONTROL PROGRAM

## III. SOLUTIONS





# III. SOLUTIONS

**1. Focusing on measures for reduction and erasement of existing flooding points as well as prevention of new generations.**

**Clearance of canal encroachment must be carried out in order to dredge in accordance with the technical designs, and is combined with urban planning and development of drainage system as well.**

**Town planning along 2 canal sides should be implemented, to create an adequate detention space in order to increase buffer zone for water regulation.**





### III. SOLUTIONS

## 2. Organizing and managing implementation of the approved Plannings by Prime Minister:

**a. Strictly managing land resources for drainage and flood control issue and river/canal protection, avoiding the decrease of water area serving for drainage.**

**- Protecting agricultural land fund to form 3 lines of ecological belts along two riversides of Sai Gon, Dong Nai and Nha Be River.**

**- Allocating retention basin in suitable positions; highly keeping the wetland areas in low-land regions; deducing increase in runoff, etc. Keeping the existing rivers/canals to support drainage and urban landscape, etc adaptive with climate change.**

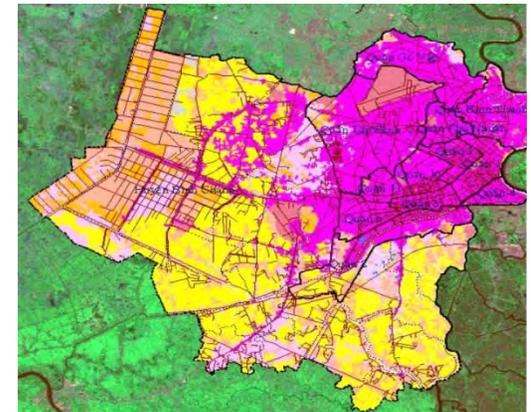
**b. Establishing mechanism and policy for sewage and drainage field.**



## III. SOLUTIONS

c. **Checking and supplementing the Planning associating 4 elements: rain, tide, flood and ecology in an unity for flood management with sustainably climate change adaptation.**

- Executing planning of decentralized network of retention basin to reduce flooding.
- The project of Setting up the database and managemen software for drainage system in HCMC.
- Building solutions and action plans in response to climate change for sewerage and drainage field in HCMC.
- The project of Installation of flood monitoring and warning network for entire city (including SCADA system).





## III. SOLUTIONS

3. Strengthening exchange and cooperation in scientific and technological field with international organizations, NGOs, internal and external experts in order to do research, train human resources for the task of development of a sustainable flood control program to cope with climate change.



Researching on the implementation of effective measures to mobilize social resources taking part in flood control program.

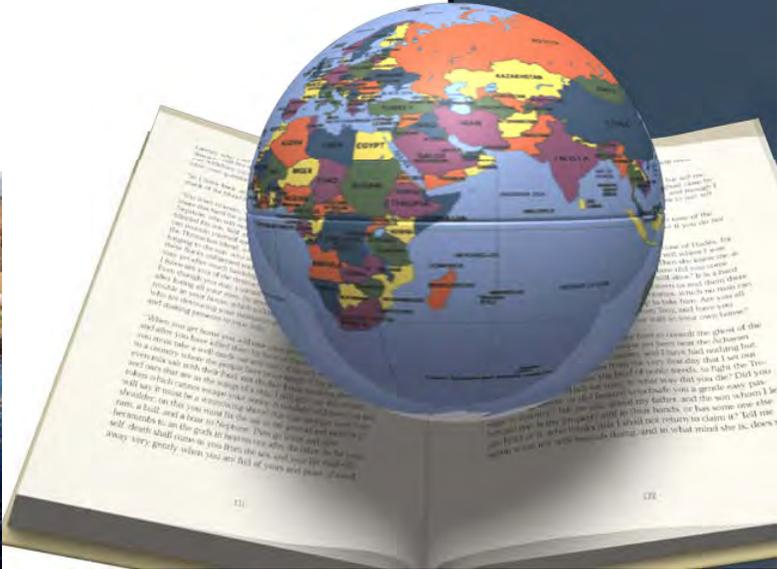
4. Enhancing governance in infrastructure of drainage, waste treatment and urban flood management causing by climate change.

- **Strengthening urban management**; building suitable regulations of compensation for backfilled water surface and prevention of the increase of overflow factor.



## B. TASK, SOLUTIONS

5. Promotion of the strength of political parties in order to intensify educational propaganda, raising awareness, knowledge and consensus of community is the critical element for deploying a sustainable and friendly strategy for flood control and water environmental protection.





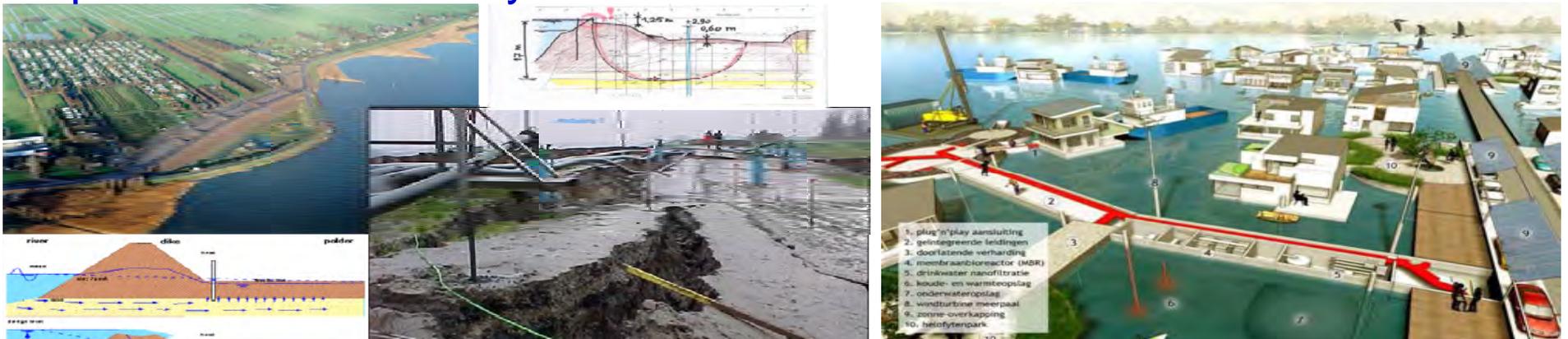
## B. TASK, SOLUTIONS

**6. Structural measure: hastening the executing progress of projects, especially ODA projects and technical assistance projects.**

- The development projects of drainage system and wastewater treatment were approved by Prime Minister via Decision 752/QD-TTg dated 19/6/2001.

- The Technical assistance project “Flood control Project in HCMC” is funded by Dutch government.

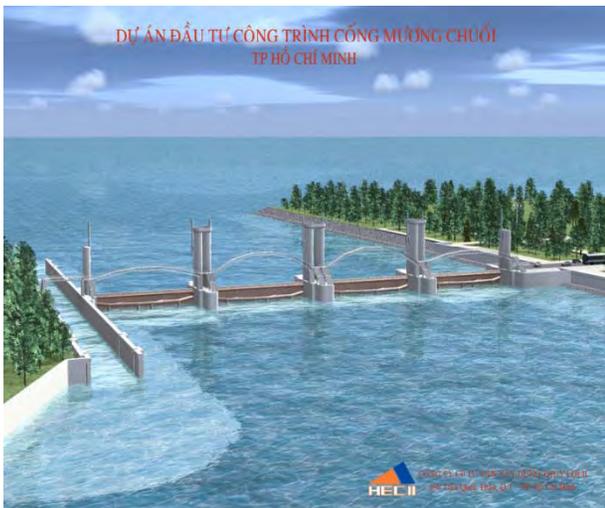
- Technical cooperation project “Capacity development of drainage management and wastewater treatment in HCMC-phase 2” is funded by JICA.







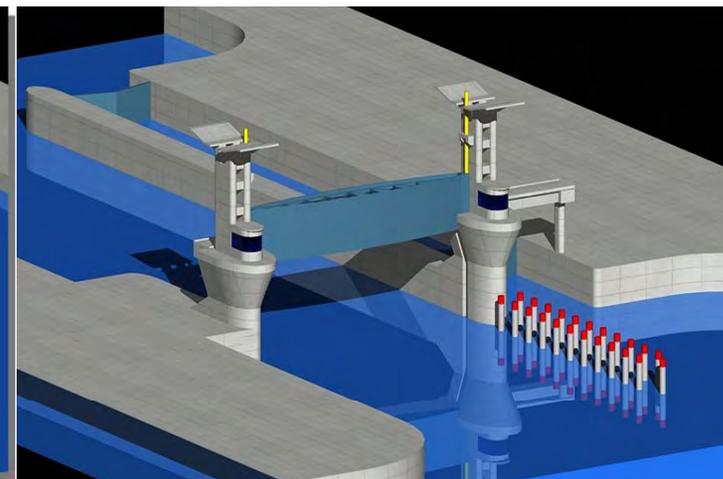
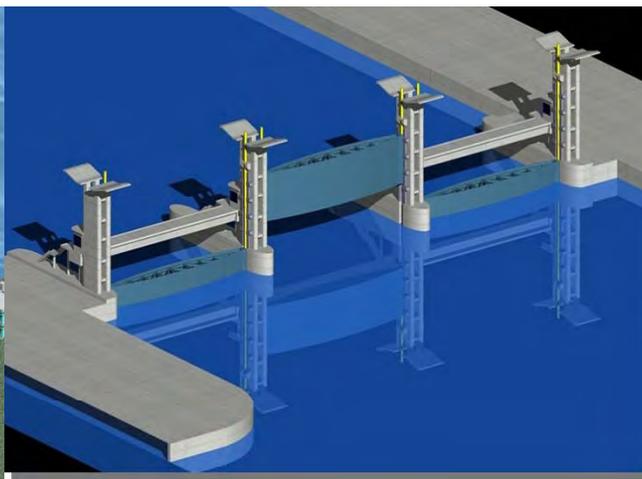
# HO CHI MINH CITY PEOPLE'S COMMITTEE STEERING CENTER OF URBAN FLOOD CONTROL PROGRAM



**MUONG CHUOI CULVERT**

**NHIEU LOC- THI NGHE  
CULVERT**

**KINH LO CULVERT**



**PHU XUAN  
CULVERT**

**KINH RIVER CULVERT**

**TAN THUAN CULVERT**



**GIRDLE SHAPED DIKE ALONG SAIGON RIVER FOR  
PREVENTING EROSION AND OVERSLOW**

**$L = 61,6$   
 $\text{km}; B = 7,0\text{m}; Z_n = +3,0\text{m}; Z_d = +2,2\text{m}.$**



*THANK YOU!*

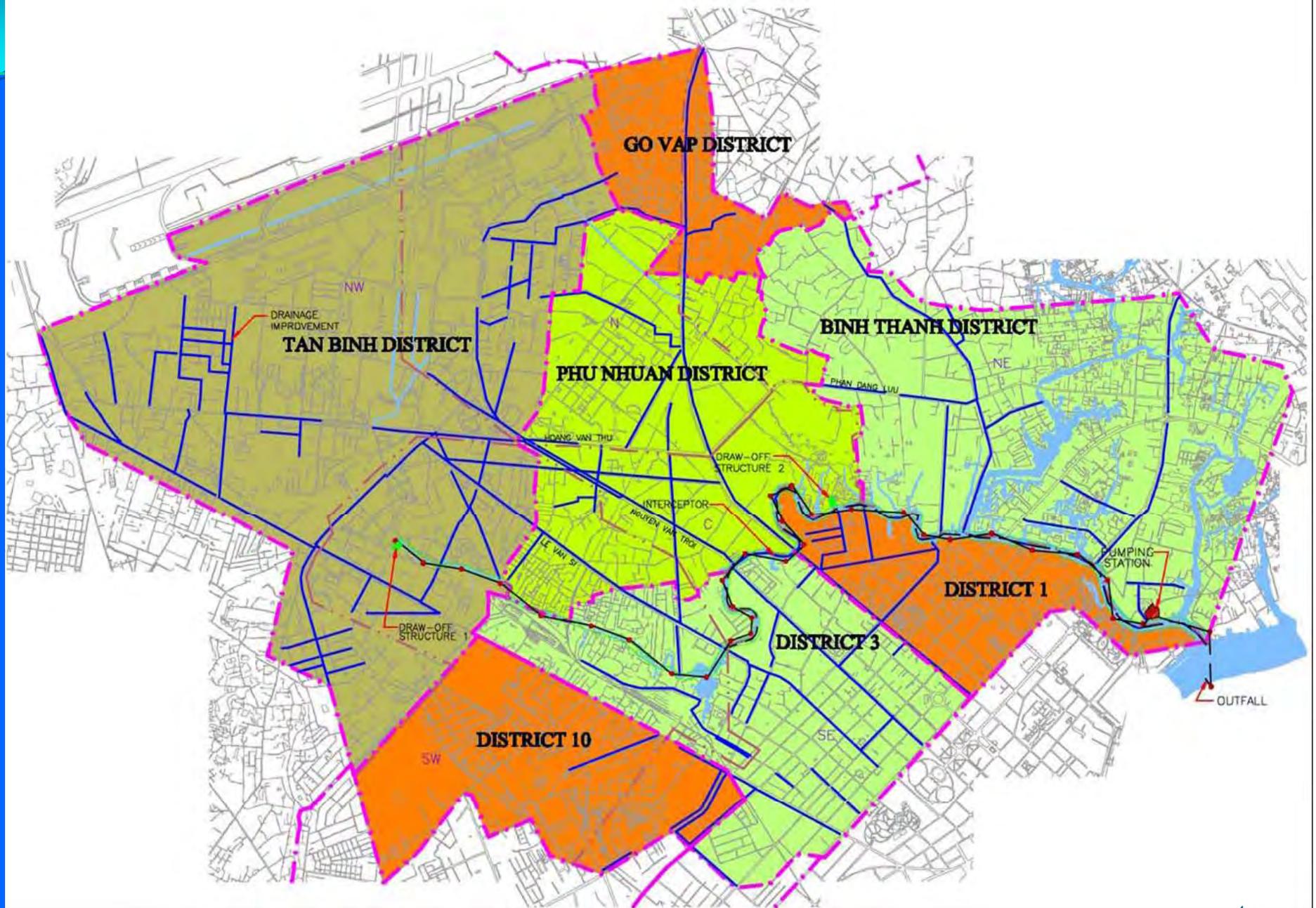
# **HO CHI MINH CITY ENVIRONMENTAL SANITATION PROJECT**

## **PHASE I**



# LOCATION OF NHIEU LOC-THI NGHE BASIN IN HO CHI MINH CITY





## **A. GENERAL INFORMATION**

### **1. Project objectives:**

- Ensure hydraulic capacity and deal with the flooding in the basin area
- Prepare for the treatment of wastewater and prevent pollution to the canal water.
- Rehabilitate and renew the canal, improve environment and implement the urban renewal plan

**2. Total investment: USD 317 million : ODA fund is USD 294 million ( WB credit) ; counterpart fund is USD 23 million.**

## B. PROJECT IMPLEMENTATION

The project was completed in 2012 . The main items which were carried out include:

No.	Work Item	Implementation
1	Interceptor (using pipe jacking method) and CSO system	9,051 m (including 2.5m dia. pipe and 3m dia. pipe), 36 main shafts, 59 CSOs
2	Extension and Replacement of level 2 & 3 Sewer and Repair and rehabilitation of existing sewer by CCTV method	Construction: 58.145m CCTV: 5.171m
3	Pumping station with screen and auxiliary equipment	1 pumping station (including 12 pumps with capacity of 64,000 m <sup>3</sup> /hour)
4	Rehabilitation of NLTN canal	Dredging Concrete sheet pile wall Handrails Green tree Lighting system



## **C. EFFICIENCY OF THE PROJECT:**

***Alleviation of flooding:*** The flooding formerly caused damages to houses, property, commodities trading, vehicles, roads and other infrastructure. It also caused losses due to reducing economic activity, difficulty and time-consuming in traveling, affected the physical and psychological well-being and caused damage to the environment ... After the project has been completed, at the Nhieu Loc - Thi Nghe Basin area, the survey results showed no flooding. Therefore, the project objectives have been met.

***Improvement of Public Health:*** Avoiding medical costs and income loss due to illness. The survey data on health at the areas along two sides of the Canal also showed that the diseases caused by water and environmental pollution have decreased over years. This proves that the environment at Nhieu Loc - Thi Nghe Canal area has been much improved and thereby improving the quality of life of the people.

*(continued):*

***The Project has brought a new face to the City:*** + Contributing to the implementation of the City renewal plan, creating a good impression to the investors and foreign tourists. To increase the visual aesthetics along 02 sides of Nhieu Loc - Thi Nghe Canal, the City People's Committee has used the City's budget to implement the "Nhieu Loc - Thi Nghe Canal Road Improvement Project" for building sample street **"GREEN, CLEAN, BEAUTIFUL, FRIENDLY"**.

+ Increasing the value of the land along both sides of Nhieu Loc - Thi Nghe Canal.

In addition to the above good effects, the project also has trained many staff in the Departments and the PMU has extensive experience in the implementation and management of ODA projects. This helps the City implement and manage the ODA projects better and better in the future.



## D. SOME PHOTOS OF THE PROJECT:



D3000 PIPE JACKING

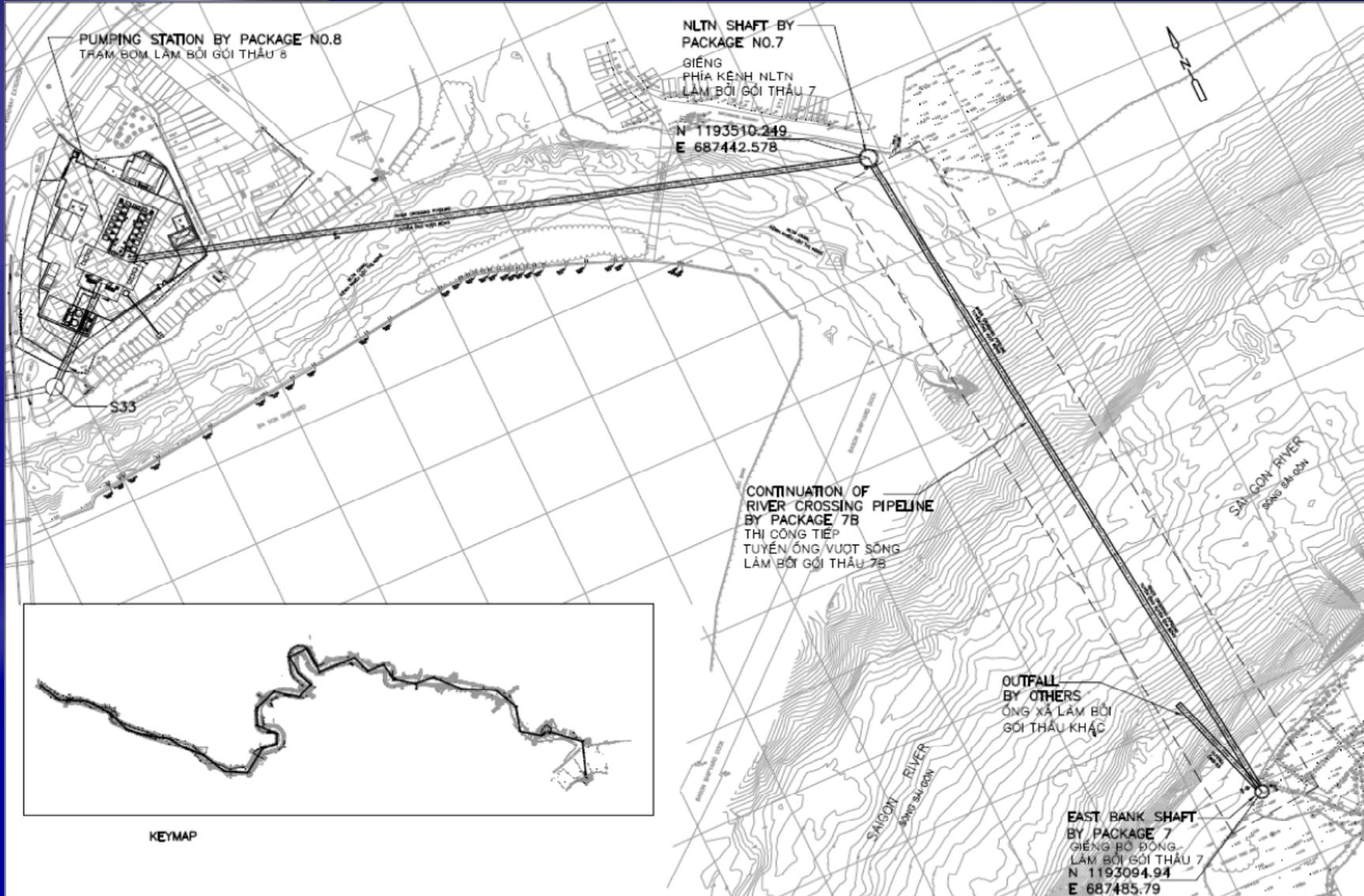


# Interceptor





# Interceptor – Pipe crossing the Saigon River







**PUMPING STATION**

# Pumping Station





# NHIEU LOC-THI NGHE CANAL

Before the project



After the project completed



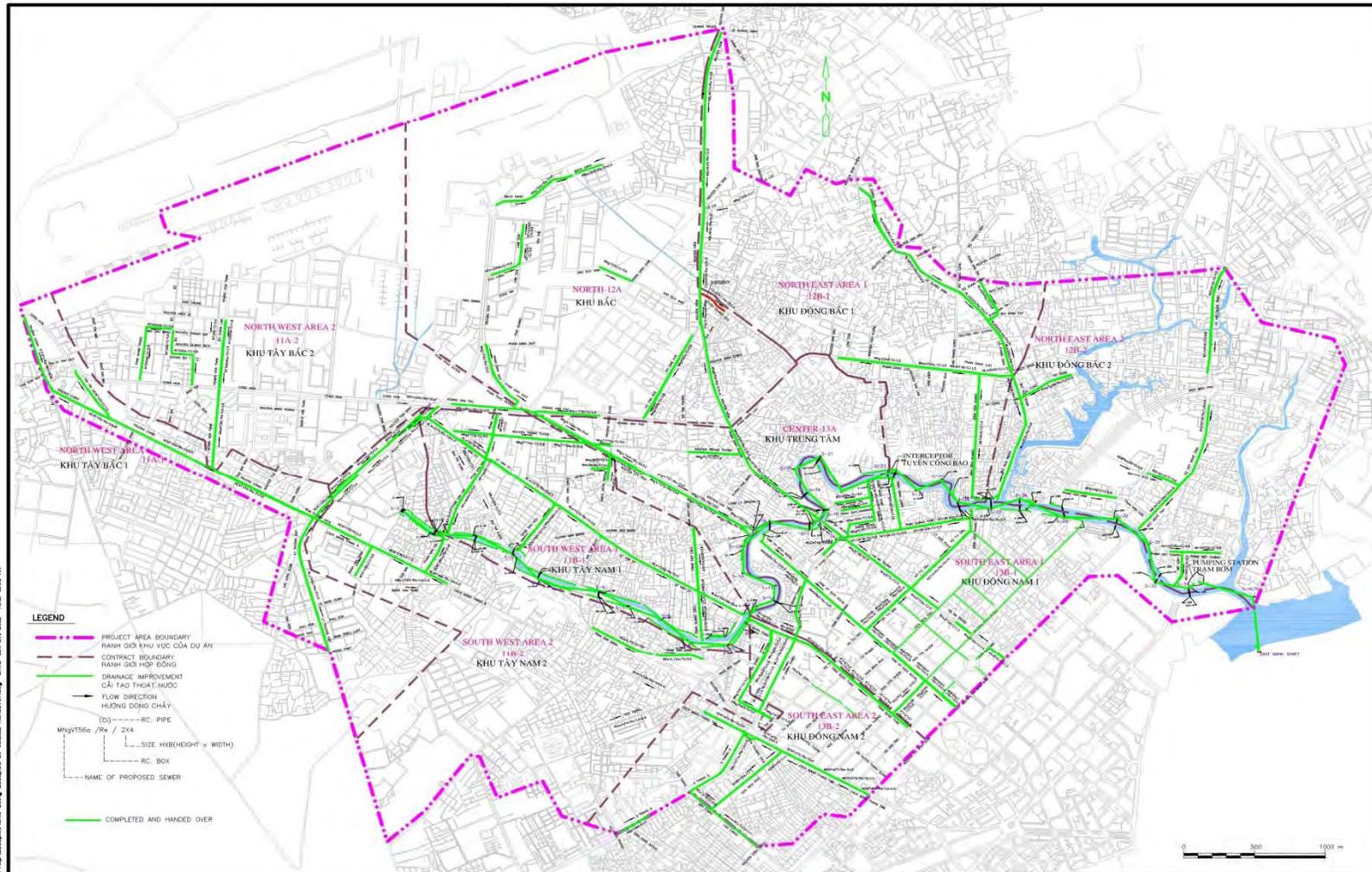
# NHIEU LOC-THINGHE CANAL

Before the project



After the project completed

# Nhieu Loc – Thi Nghe Basin Layout of the sewerage system



P:\16 - HCMC - Environment - nhieu loc thi nghe basin - EIS\env-imp-16-nhieu loc thi nghe basin.dwg DATE: 29/06/2012 TIME: 13:58 PM

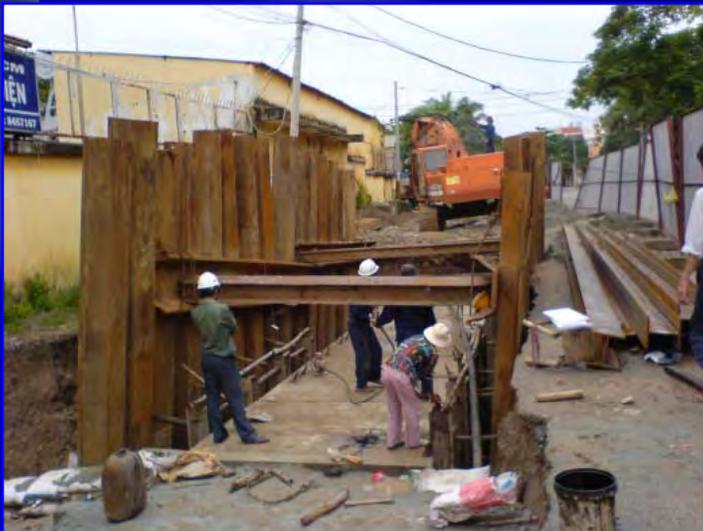
NO.	DATE	DRWN	CHKD	REMARKS

**CDM** International Inc. (USA)  
 30 Boulevard de Longmead & Nelson Inc.

PEOPLE'S COMMITTEE OF HO CHI MINH CITY  
 DEPARTMENT OF TRANSPORT  
 HCMC ENVIRONMENTAL SANITATION PROJECT  
 NLTN BASIN

SEWERS—PLAN OF WORKS COMPLETED  
 HANDED-OVER  
 JUNE 29, 2012

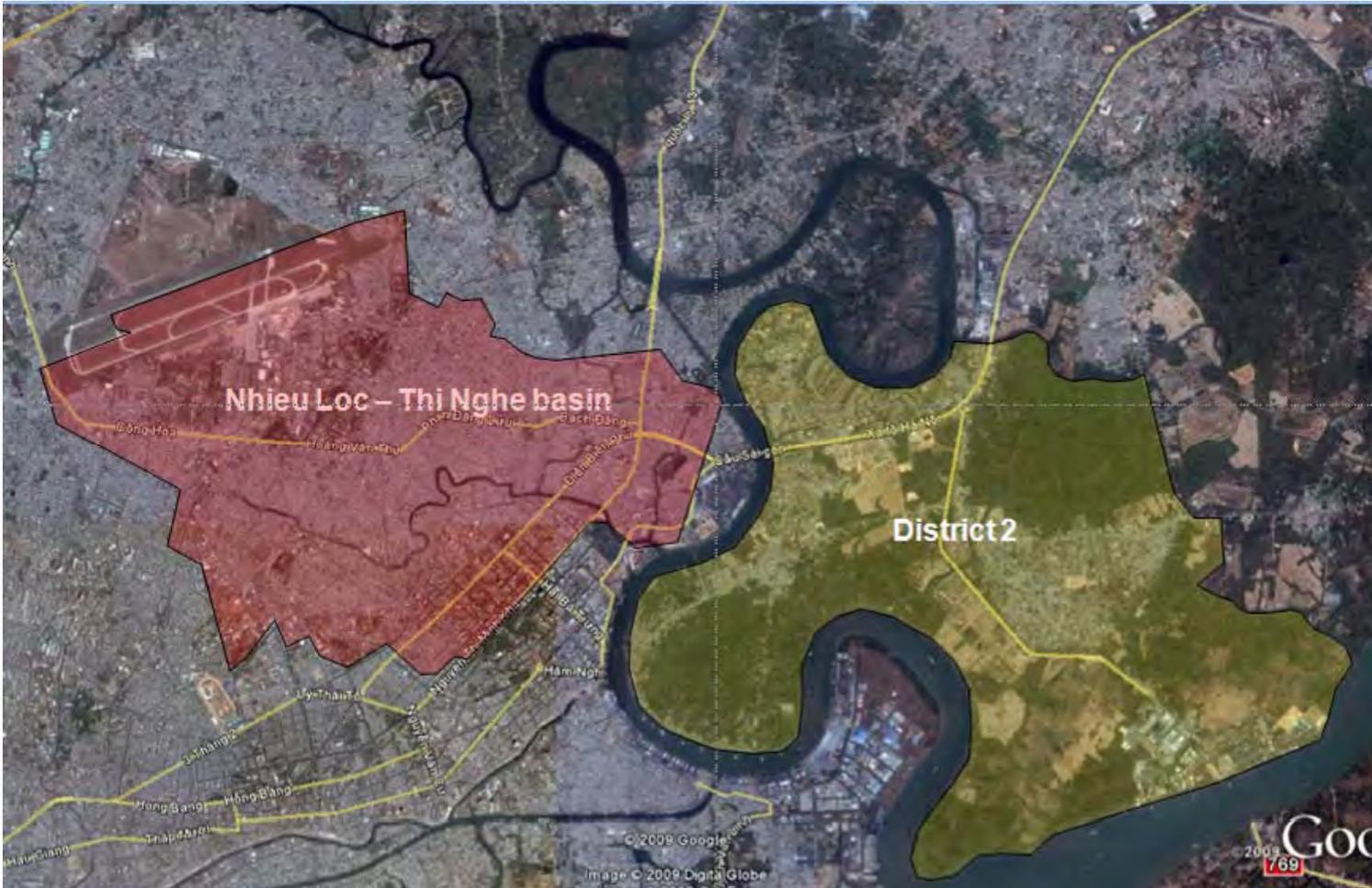
# Sewerage construction





# **HO CHI MINH ENVIRONMENTAL SANITATION PROJECT**

## **PHASE 2**





## PART A: GENERAL INFORMATION

1. **Project:** Ho Chi Minh Environmental Sanitation Project - Phase 2
2. **Donor:** World Bank (WB)
3. **Utility Owner:** Ho Chi Minh City People's Committee
4. **Employer:** Investment Management Authority of Ho Chi Minh Environmental Sanitation Project
5. **Anticipated implementation time:** 2014 – 2019
6. **Project Location:** District 2, Ho Chi Minh City
7. **Total estimated funding of the Project:** USD 524 million (Five hundred twenty-four million U.S. dollars), including:
  - ODA fund: USD 450 million, in which:
  - IDA loan: USD 200 million;
  - IBRD loan: USD 250 million.

The HCMC counterpart fund is equivalent to **USD 74 million**  
(Seventy four million U.S. dollars)

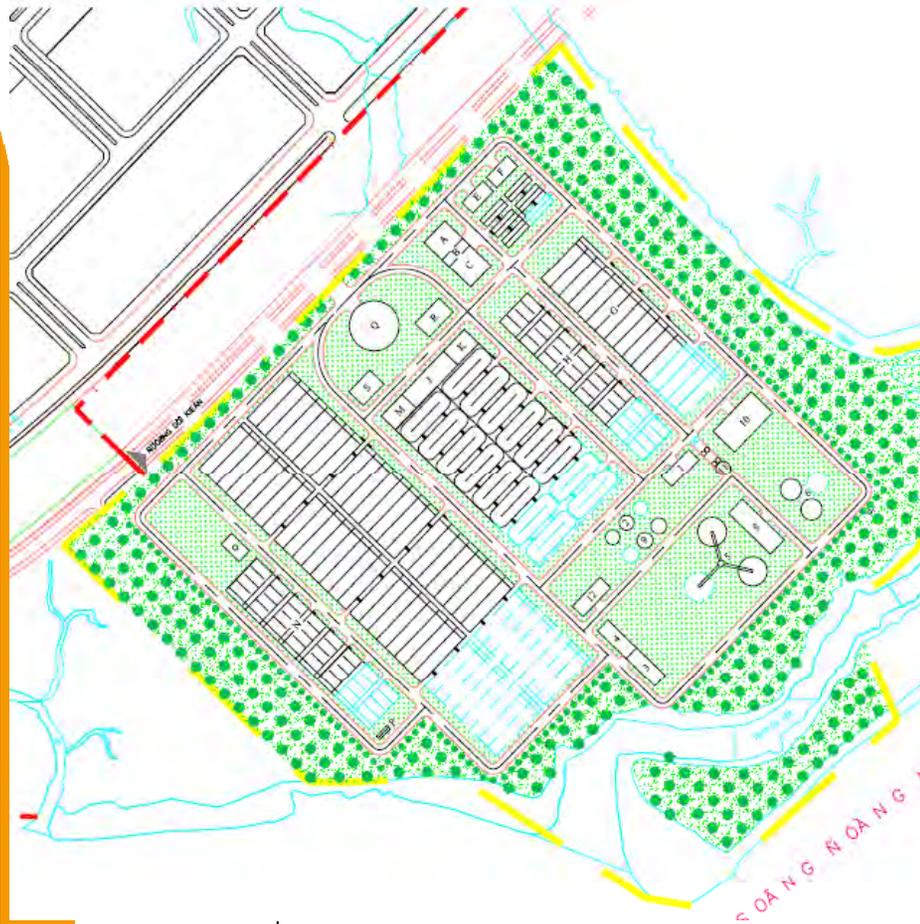
## 8. Forms of ODA support

- a. ODA grant
- b. Concessional ODA
- c. Mixed loan ODA

## 9. Main components of the Project

- Construct the interceptor of **3.2m** diameter, **7.85km long** to convey waste water from the NL-TN Pumping Station and convey District 2 waste water to the NL-TN Wastewater Treatment Plant.
- Construct NL-TN Wastewater Treatment Plant with a capacity of **480,000m<sup>3</sup>/day** (phase 1). Before discharging into Saigon and Dong Nai Rivers, treated water quality will meet **Class A** standard according to the Vietnam standards for waste water 14:2008
- Construct level 2 and 3 sewer system for District 2 to collect waste water from households and residential areas connected to the interceptor to convey waste water to the plant for treatment.
- Improve the environmental sanitation management and implement the project: five main supporting components proposed for this component include capacity building for Flood Control Center, environmental sanitation research, IEC (information, education and communication), financial management and social safety measures, training and equipment for Flood Control Center.

# Preliminary design – WWTP lay out



## LEGEND / CHÚ THÍCH:

### 1- WATER LINE AND OPERATION BUILDINGS:

#### 1- DÂY CHUYỀN XỬ LÝ NƯỚC VÀ CÁC KHU VẬN HÀNH:

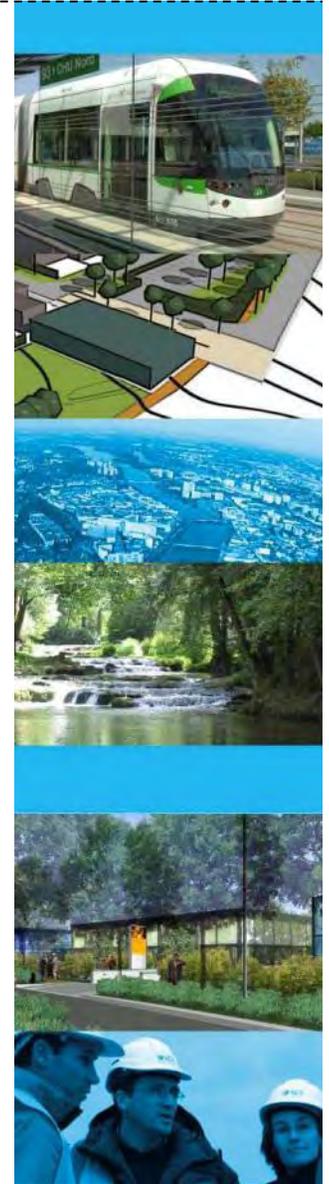
- A. INFLOW STRUCTURE AND COARSE SCREENS
- A. CỬA TIẾP NHẬN NƯỚC THẢI VÀ SONG CHẮN RÁC THỔ
- B. LIFTING PUMPING STATION / TRẠM BƠM
- C. FINE SCREENS / SONG CHẮN RÁC TINH
- D. GRIT AND GREASE REMOVAL / BỂ LẮNG CÁT VÀ DẦU MỠ
- E. ODOUR CONTROL / KHỬ MÙI
- F. TECHNICAL BUILDING (BLOWER STATION, SAND WASHING AND SEPARATION)
- F. KHU KỸ THUẬT (TRẠM CẤP KHÍ, KHU RỬA LỌC VÀ PHÂN TÁCH CÁT)
- G. PRIMARY SETTLING TANKS / BỂ LẮNG SƠ CẤP
- H. BIOLOGICAL TANKS (DENITRIFICATION (ANOXIC ZONE) / BỂ XỬ LÝ SINH HỌC ( BỂ THIẾU KHÍ - KHỬ NITƠ)
- I. BIOLOGICAL TANKS (CARBON REMOVAL AND NITRIFICATION ZONE)
- J. TECHNICAL BUILDING (BLOWER STATION) / KHU KỸ THUẬT (TRẠM CẤP KHÍ)
- K. TECHNICAL BUILDING (SLUDGE RECIRCULATION TO ANOXIC ZONE)
- K. NHÀ KỸ THUẬT (TUẦN HOÀN Bùn ĐẾN BỂ THIẾU KHÍ)
- L. SECONDARY SETTLING TANKS / BỂ LẮNG THỨ CẤP
- M. TECHNICAL BUILDING (SLUDGE RECIRCULATION TO CARBON REMOVAL AND NITRIFICATION ZONE)
- M. NHÀ KỸ THUẬT (TUẦN HOÀN Bùn ĐẾN BỂ HIẾU KHÍ)
- N. DISINFECTION (CHLORINATION) TANKS / BỂ KHỬ TRÙNG (CHLORINE)
- O. TECHNICAL BUILDING (CHLORINATION) / NHÀ CHLORINE
- P. OUTFLOW AND MEASUREMENT / CỬA XẢ VÀ KIỂM TRA NƯỚC ĐẦU RA
- Q. TECHNICAL AND OPERATIONAL BUILDING / KHU KỸ THUẬT VÀ VẬN HÀNH
- R. POWER SUPPLY BUILDING / TRẠM PHÁT ĐIỆN
- S. WORKSHOP / NHÀ XƯỞNG

### 2- SLUDGE LINE / DÂY CHUYỀN XỬ LÝ Bùn:

- 1. TECHNICAL BUILDING ( PRIMARY SLUDGE PUMPING STATION) / NHÀ KỸ THUẬT (TRẠM BƠM Bùn SƠ CẤP)
- 2. GRAVITY THICKENING TANKS FOR UNTREATED PRIMARY SLUDGE / BỂ LẮNG TRỌNG LỰC (Bùn SƠ CẤP)
- 3. TECHNICAL BUILDING (SECONDARY (EXCESS) SLUDGE PUMPING STATION / NHÀ KỸ THUẬT (TRẠM BƠM Bùn THỨ CẤP)
- 4. TECHNICAL BUILDING FOR GRAVITY BELT THICKENERS (EXCESS SLUDGE) AND PUMPING FACILITIES TO DIGESTER
- 4. NHÀ KỸ THUẬT ( BĂNG CHUYỀN TÁCH NƯỚC Bùn THỨ CẤP VÀ TRẠM BƠM Bùn ĐẾN BỂ PHÂN HỦY Bùn)
- 5. DIGESTERS / BỂ PHÂN HỦY HỖN YẾM KHÍ
- 6. GAS HOLDING TANKS / BỂ CHỨA BIOGAS
- 7. GAS TORCH / THÁP ĐỐT BIOGAS DỰ
- 8. TECHNICAL BUILDING (SLUDGE HEATING, HEAT AND POWER PLANT, PUMPING FROM/TO DIGESTION, GAS TREATMENT)
- 8. NHÀ KỸ THUẬT (LÀM NÓNG Bùn, TRẠM PHÁT NHIỆT ĐIỆN, TRẠM BƠM ĐẦU VÀO/ĐẦU RA, XỬ LÝ BIOGAS)
- 9. HOMOGENIZATION AND POST GRAVITY THICKENING TANKS FOR DIGESTED SLUDGE
- 9. BỂ LẮNG / HÒA TRỘN TRỌNG LỰC Bùn SAU PHÂN HỦY
- 10. SLUDGE DEWATERING BUILDING (INCLUDING FEEDING AND EVACUATION PUMPING FACILITIES)
- 10. NHÀ KỸ THUẬT (MÁY ÉP Bùn LY TÂM, THIẾT BỊ BƠM ĐẦU VÀO / ĐẦU RA)
- 11. SLUDGE STORAGE (SILOS) / KHO CHỨA Bùn (SILO)
- 12. ODOUR CONTROL (SLUDGE LINE) / KHỬ MÙI (XỬ LÝ Bùn)

# Phasing

- No phasing for the interceptor construction,
- Phasing of the construction of the WWTP:
  - **First phase to cover to the year 2020:**
    - » Hydraulic capacity of 480,000 m<sup>3</sup>/day,
    - » Organic capacity of 620,000 PE.
  - **Second phase to cover to the year 2045:**
    - » Hydraulic capacity of 830,000 m<sup>3</sup>/day,
    - » Organic capacity of 1,500,000 PE.



Thank you

	<p><b>Best Practices and Solutions in Wastewater Treatment Management</b></p>
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# Overview of U.S. Technologies Used at the AlexRenew WRRF

## USTDA Vietnamese Wastewater Treatment Business Roundtable

Karen Pallansch  
Chief Executive Officer  
March 11, 2014



ALEXANDRIA  
**re**new  
ENTERPRISES



# Alexandria Renew Enterprises



**One of the most advanced water reclamation facilities in the US, located in an urban landscape**



# Alexandria Renew Enterprises



- Created in 1952 as an independent Authority
- Led by an appointed 5 member citizen board
- Provides water reclamation services for Alexandria customers and wholesale service to Fairfax County

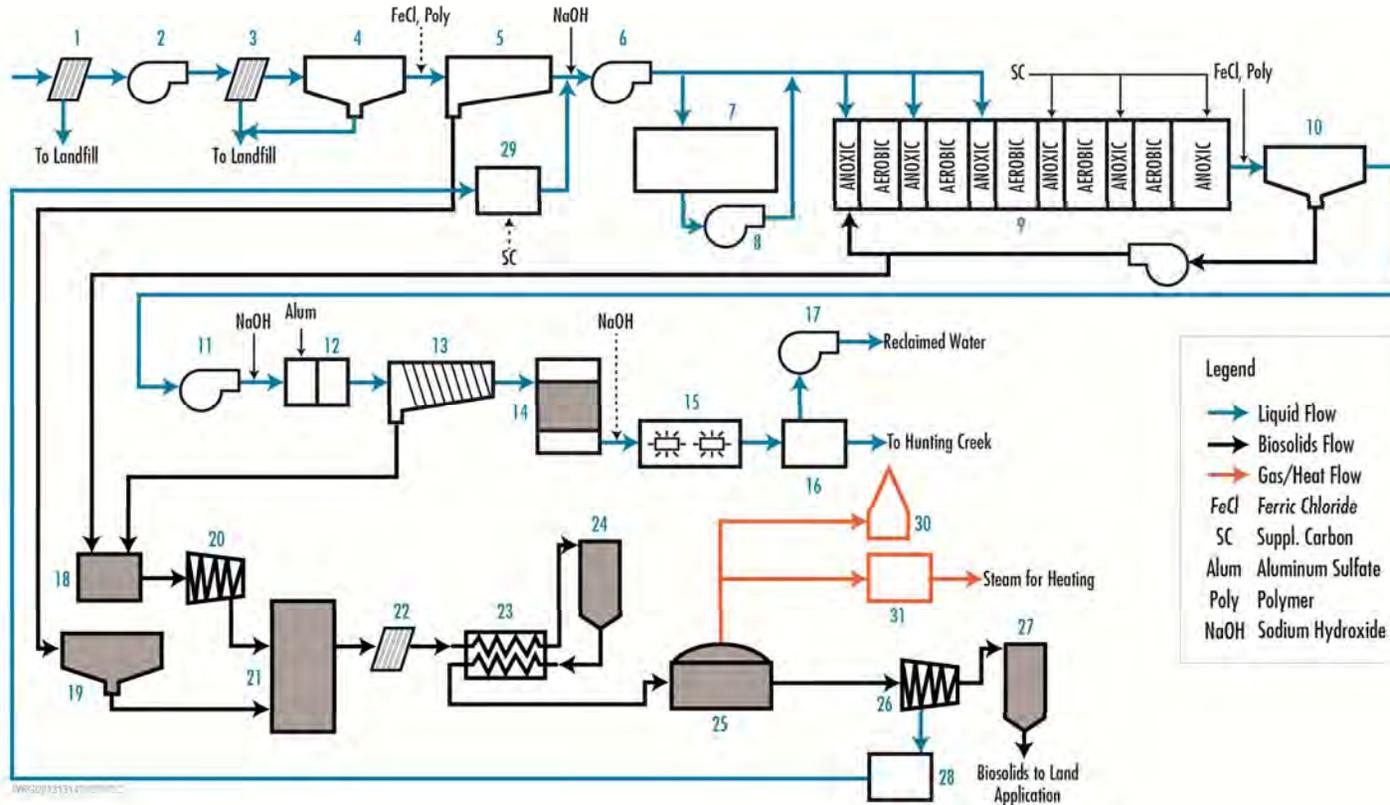
# Alexandria Renew Enterprises



## Small site

- National cemetery
- Major highway
- Stream
- Electrical substation
- Only 33 usable acres

# AlexRenew WRRF Process Flow Diagram



**Legend**

- Liquid Flow
- Biosolids Flow
- Gas/Heat Flow
- FeCl Ferric Chloride
- SC Suppl. Carbon
- Alum Aluminum Sulfate
- Poly Polymer
- NaOH Sodium Hydroxide

Unit Processes			
1 Coarse Screens	9 Biological Reactor Basins	17 Reclaimed Water Pumps	25 Anaerobic Digesters
2 Raw Sewage Pumps	10 Secondary Settling Tanks	18 Raw Sludge Blending Tanks	26 Dewatering Centrifuges
3 Fine Screens	11 Intermediate Pumps	19 Gravity Thickeners	27 Biosolids Silos
4 Vortex Grit Chambers	12 Rapid Mix/Floc. Tanks	20 Thickening Centrifuges	28 Centrate Storage Tanks
5 Primary Settling Tanks	13 Tertiary Settling Tanks	21 Thickened Sludge Eq. Tanks	29 Centrate Pre-Treat. Reactors
6 Primary Effluent Pumps	14 Gravity Filters	22 Sludge Screenings Presses	30 Gas Flares
7 Nutrient Mgmt. Facility	15 UV Disinfection	23 Heat Exchangers	31 Biogas Boilers
8 Nutrient Mgmt. Pumps	16 Post-Aeration Channels	24 Pasteurization Tanks	

# AlexRenew WRRF Permit Limits

## Monthly Average Limits:

Parameter	Limit
cBOD <sub>5</sub>	5.0 mg/L
TSS	6.0 mg/L
Ammonia (Apr-Oct)	1.0 mg/L
Ammonia (Nov-Jan)	8.4 mg/L
Ammonia (Feb-Mar)	6.9 mg/L
Total Phosphorus	0.18 mg/L

In addition, AlexRenew has an annual average Total Nitrogen limit of 3 mg/L based on the waste-load allocation at design flows and loads (54 Million Gallons per Day Annual Average Daily Flow)



# Non-Clog Dry-Pit Centrifugal Pumps

## Flowserve Pumps

- Raw Sewage Pump Station  
6 pumps, 300 HP Motors
- Primary Effluent Pump Station  
6 pumps, 250 HP Motors
- Intermediate Pumps  
6 pumps, 400 HP Motors
- Nutrient Management Facility Pumps (future)  
4 pumps, 150 HP Motors  
4 pumps, 40 HP Motors



## Fine Screening System

**Parkson** AquaGuard® system consists of:

- Belt-type climber screen, 6-mm openings (4 units)
- Screenings washer (4 units)
- Screenings compactor/press (4 units)

Fine screening system removes solids from the flow stream in order to protect downstream equipment.

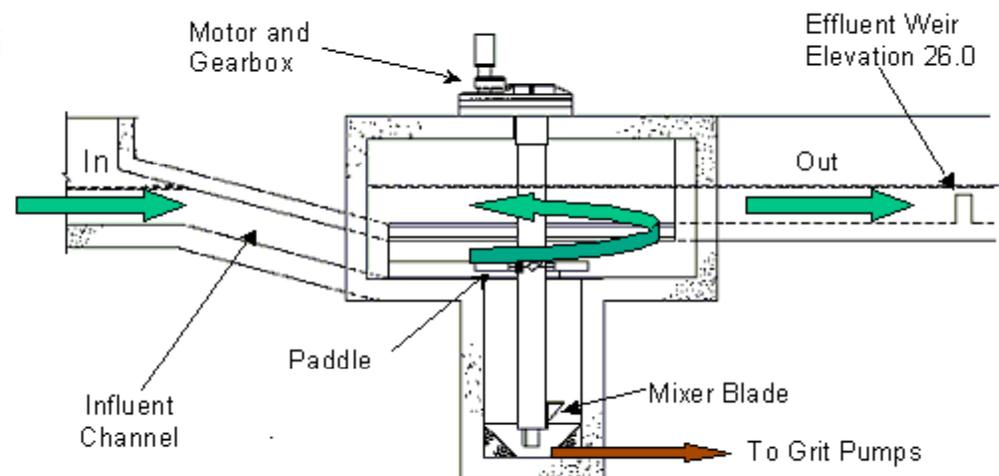


## Grit Removal System

**Smith & Loveless** PistaGrit<sup>®</sup> vortex grit chambers remove sand, gravel and other heavy solids from the plant influent stream to protect downstream equipment and keep material out of biosolids.

System Consists of:

- 20-ft diameter circular chambers (4 units)
- Grit mixer (4 units)
- Grit pumps (4 units)

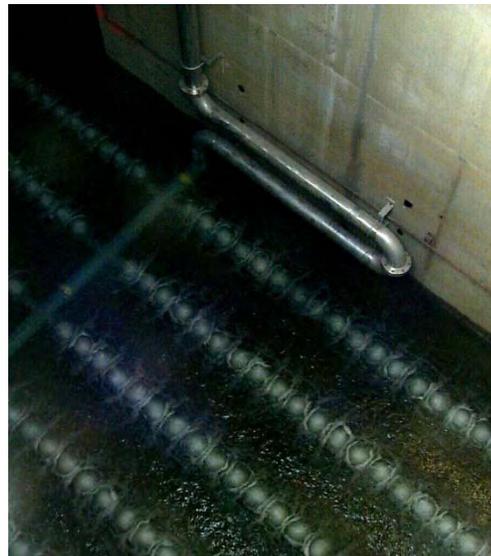


## Fine Bubble Diffusers

**Sanitaire** membrane-type disc diffusers, 9-inch diameter

- > 20,000 diffusers in 5 basins

Fine bubble diffusers are used to introduce air to the biological reactor basins. Fine bubble diffusers offer good oxygen transfer efficiency and thus reduce operating costs.



# Multi-Stage Centrifugal Blowers

## Hoffman-Lamson Blowers

- 5 units
- 16,600 scfm per unit
- 1,250 HP motors

The blowers provide low-pressure air (13 psi) to aerate the biological reactor basins.



## Flow Isolation and Diversion Gates

**Rodney-Hunt** gates are used in the biological reactor basins

- 18 cast iron gates, 10 ft x 10 ft in size
- 20 weir gates, 8 ft x 8 ft in size
- 5 butterfly gates 8.5 ft x 13.5 ft in size

Cast iron, aluminum, and stainless steel gates are used throughout the plant to isolate channels or tanks and divert flow. They are also used as adjustable weirs.



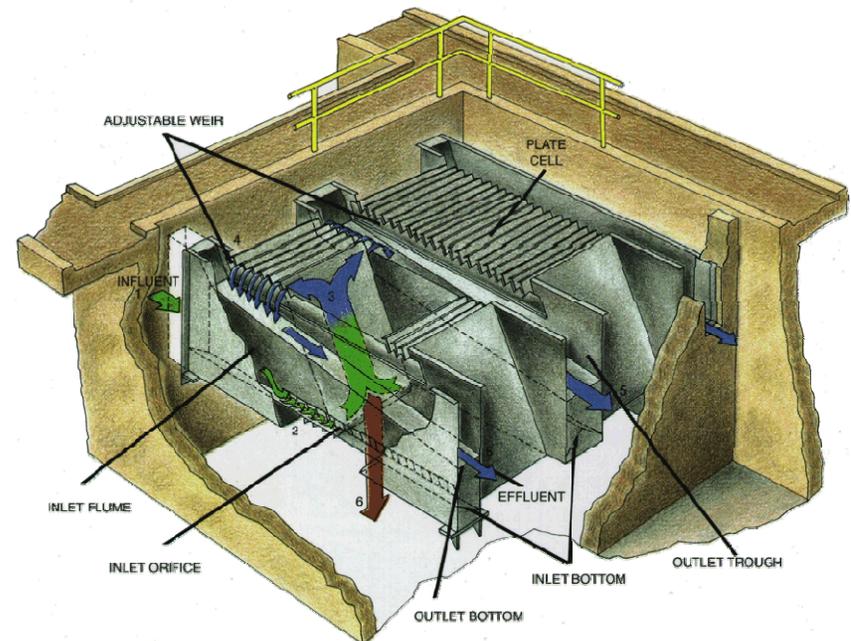
# Tertiary Plate Settlers

Waterlink (now Parkson) plate settlers used:

- 8 tertiary settling tanks
- > 1,400 plates per tank

Tertiary settling removes solids and total phosphorus prior to filtration

Inclined-plate settlers were used to increase the performance of the tanks and reduce the footprint



## Filter Underdrains

Tetra<sup>®</sup> U-Block used:

- 22 filter units
- 6.4 MGD per filter

Dual media filters (sand and gravel) are used to polish the final effluent

Filter underdrains are used to provide optimal backwash flow distribution and also for the ability to add air scour to the process.



## Instrumentation

Instruments used at AlexRenew:

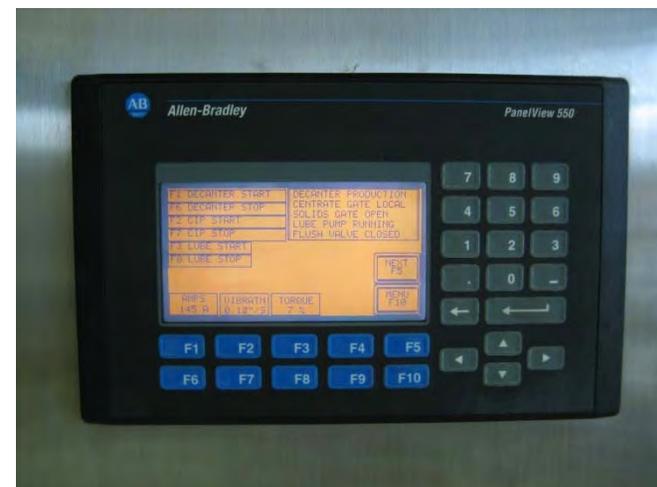
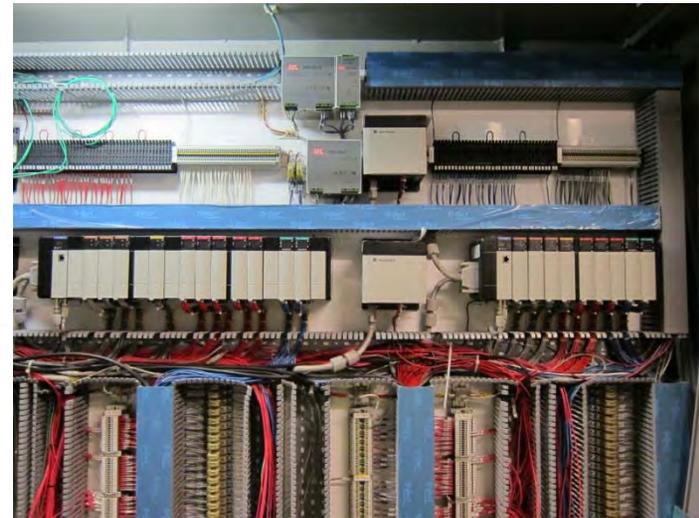
- Hach Dissolved Oxygen Meters
- Fluid Components Air Flow Meters



## Controls – Allen-Bradley

AlexRenew uses a Supervisor Control and Data Acquisition System (SCADA) system to monitor and control the processes. The system consists of:

- Programmable Logic Controllers (PLC) PLC-5s, SLC-500s, & ControlLogix) by Allen-Bradley
- Operator Interface Terminals (OIT), PanelView by Allen-Bradley



## Current Project Under Construction

Construction Manager at Risk (CMAR) Delivery Approach

- Provides best-value approach and flexibility to integrate with neighboring commercial/residential development
- Equipment procurement to deliver/match existing plant (Pumps, Gates, PLCs, instruments)





**xylem**  
Let's Solve Water

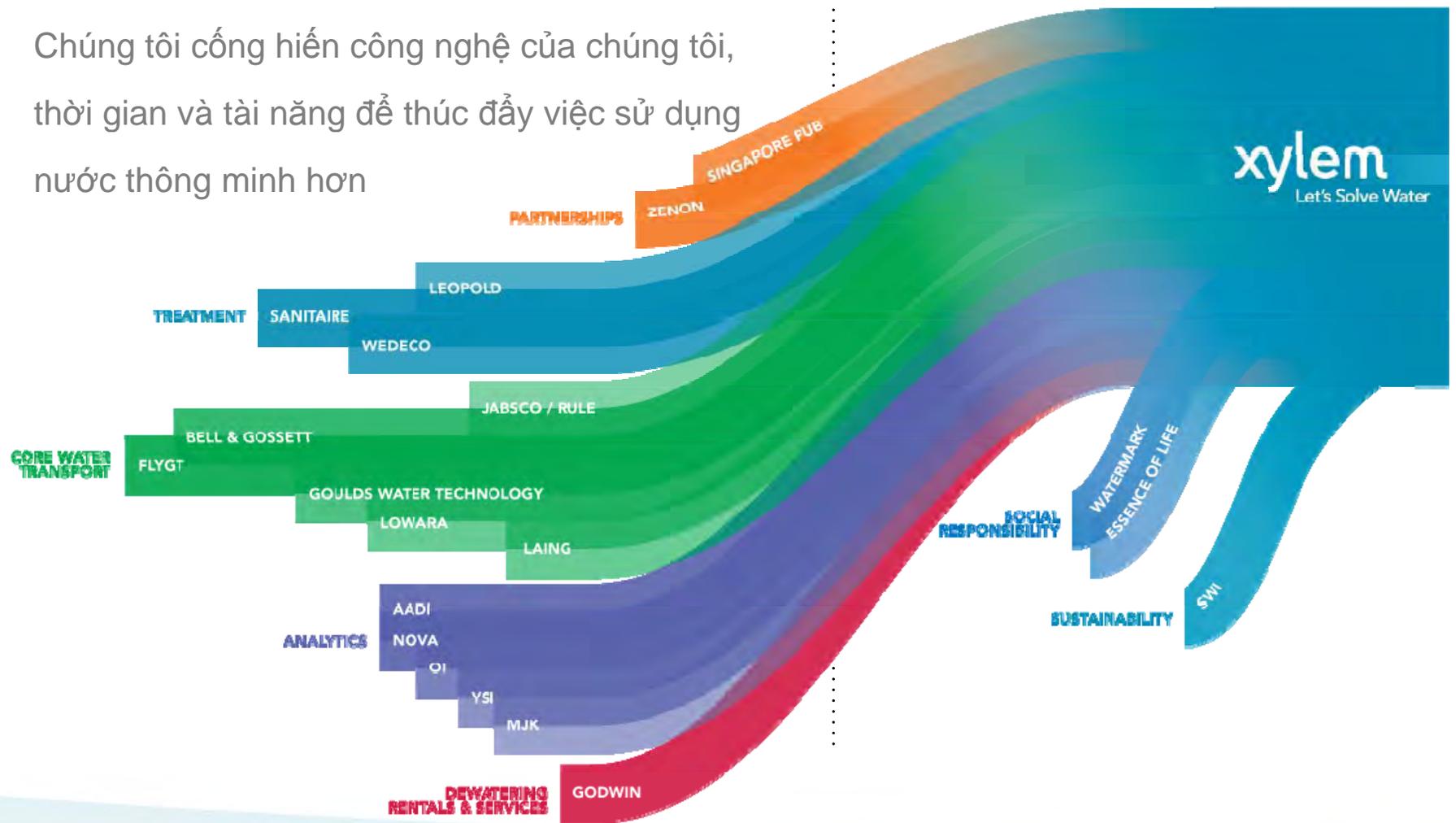
# Xylem

Cung cấp giải pháp sáng tạo cho những thách thức trong vấn đề nước ở Việt Nam

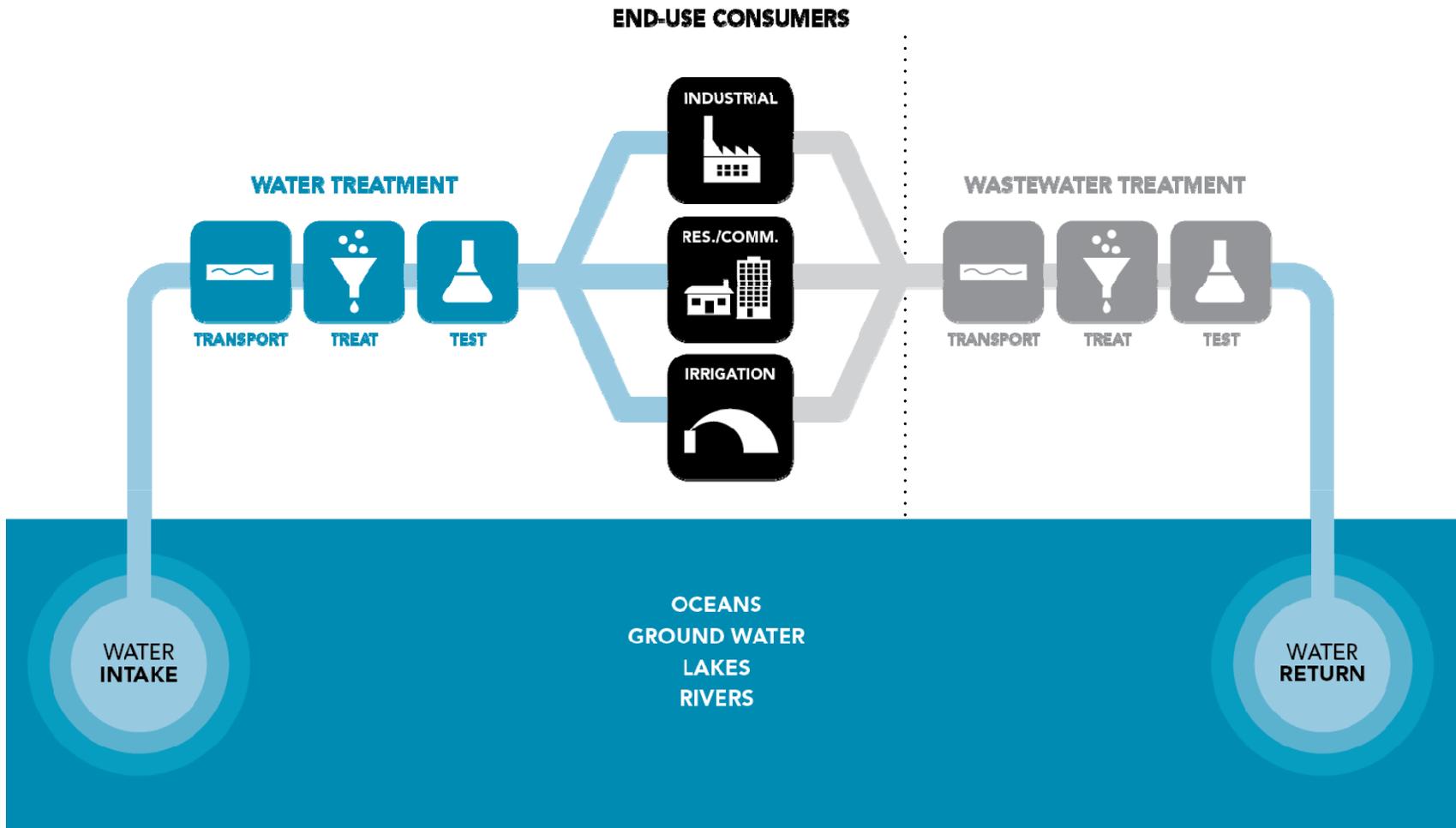


# Nhà cung cấp công nghệ nước hàng đầu

- Doanh thu gần 4 tỷ USD
- Chúng tôi cống hiến công nghệ của chúng tôi, thời gian và tài năng để thúc đẩy việc sử dụng nước thông minh hơn



# Chúng tôi mở rộng chu trình tổng thể của nước



# Tổng quan lĩnh vực cung cấp của Xylem

Ứng Dụng	Sản Phẩm	Thương Hiệu
Trung chuyển nước	 <ul style="list-style-type: none"><li>Máy bơm nước sạch và máy bơm nước thải</li><li>Dịch vụ cho thuê bơm thoát nước</li><li>Hệ thống giám sát và điều khiển</li></ul>	<ul style="list-style-type: none"><li>Flygt</li><li>Godwin</li></ul>
Xử lý nước	 <ul style="list-style-type: none"><li>Khử trùng bằng UV và Ozone</li><li>Hệ thống màng lọc</li><li>Quy trình xử lý sinh học</li></ul>	<ul style="list-style-type: none"><li>Sanitaire</li><li>WEDECO</li><li>Leopold</li></ul>
Kiểm tra chất lượng nước	 <ul style="list-style-type: none"><li>Hệ thống kiểm tra và đánh giá chất lượng nước</li><li>Thiết bị đo tại hiện trường</li><li>Thiết bị đo phòng thí nghiệm</li></ul>	<ul style="list-style-type: none"><li>YSI</li><li>WTW</li></ul>

Chuỗi sản phẩm đa dạng mang tới các giải pháp sáng tạo

# Các dự án điển hình tại Việt Nam



## Trạm bơm Nhiêu Lộc – Thị Nghè

Một trong những trạm bơm nước thải lớn nhất tại Việt Nam



## Trạm bơm tưới Bạch Hạc

Dự án phục hồi Trạm bơm tưới tiêu quy mô lớn đầu tiên



## Nhà máy xử lý nước BOO Thủ Đức

345,000 m<sup>3</sup>/d

Dự án Leopold quy mô lớn đầu tiên



## Trạm bơm Thuận Phước

Dự án lớn về phòng ngừa lũ lụt tại Đà Nẵng

# D/A xử lý nước thải Nam Bình Dương giai đoạn 1

Lần đầu tiên lắp đặt công nghệ xử lý sinh học ICEAS kết hợp với khử trùng bằng UV đáp ứng tiêu chuẩn nước đầu ra của Việt Nam (được chứng nhận bởi cơ quan có thẩm quyền)



# D/A xử lý nước thải Nam Bình Dương giai đoạn 1

Lần đầu tiên lắp đặt công nghệ xử lý sinh học ICEAS kết hợp với khử trùng bằng UV đáp ứng tiêu chuẩn nước đầu ra của Việt Nam (được chứng nhận bởi cơ quan có thẩm quyền)

*“Ngày hôm nay là cột mốc quan trọng đánh dấu sự tiến bộ của hạ tầng nước và nước thải ở Việt Nam. Công nghệ mới này là một đóng góp có ý nghĩa trong việc cải thiện chất lượng cuộc sống và môi trường khu vực cho dân cư.”*

**Ông Nguyễn Văn Thiên**  
**Chủ tịch kiêm Tổng Giám đốc**  
**Cty TNHH MTV Cấp thoát nước & Môi trường Bình Dương**  
**BIWASE**

Stt	Chỉ tiêu/đơn vị	Phương pháp thử/ thiết bị đo	Kết quả	
			TCCC/222	QCVN 14:2008/ BTNMT (A)
1	Xác định pH	TCVN 6492-2011 (*)	6,0	5-9
2	Xác định nhu cầu oxy sinh hóa sau 5 ngày (BOD <sub>5</sub> ) (mg/L)	SMEWW-5210 BOD (B) (*)	6	30
3	Xác định hàm lượng chất rắn lơ lửng (SS) (mg/L)	SMEWW-2540-D-95 (*)	7	30
4	Xác định hàm lượng nitơ tổng (Tổng N) (mg/L)	TCVN 6638-2000 (*)	9,6	-
5	Xác định hàm lượng phospho tổng (Tổng P) (mg/L)	TCVN 6202-2008 (*)	0,64	-
6	Coliform (MPN/100mL)	TCVN 6187-1-09	60	3.000
7	Xác định hàm lượng dầu mỡ động thực vật (mg/L)	TCVN 7875 -2008	KPH	10

**Ghi chú:** K=1,0; Try số cơ quan (lớn hơn hoặc bằng 10.000m<sup>3</sup>)  
(\*) được công nhận theo tiêu chuẩn ISO/IEC 17025; KPH: không phát hiện  
TCCC/222: Sau hệ thống xử lý nước thải  
Mẫu vẫn còn nguyên niêm phong khi nhận mẫu

**PHÓ PHÒNG THỬ NGHIỆM**  
  
NGUYỄN CHÍ CƯỜNG

**KT GIÁM ĐỐC**  
**THỦ GIÁM ĐỐC**  
  
Th.S LÊ THỊ PHỒ

Chỉ định: Mẫu thử này không được sử dụng phân phối ngoài cơ quan bộ môn không có sự đồng ý bằng văn bản của Trung tâm Quản lý Tài Nguyên & Môi Trường

# Lợi thế của Xylem

Bất kỳ hãng nào cũng có thể cung cấp thiết bị - Tại sao Xylem lại khác biệt



## Sản phẩm

- Hệ thống tuyến nổi và hệ thống lắng
- Bể phản ứng mẻ liên tục
- Hệ thống sục khí khuấy tán
- Bể sinh học màng
- Máy khuấy chìm
- Bơm bùn
- Hệ thống lọc trọng lực đa tầng
- Hệ thống siêu lọc
- Hệ thống khử trùng bằng tia cực tím & ozone
- Bơm nước thải
- Thiết bị điều khiển và hiển thị

## Năng lực

- Kinh nghiệm hơn 200 năm
- Thiết kế hệ thống với chi phí vòng đời sản phẩm thấp nhất
- Đối tác chiến lược với tập đoàn toàn cầu như GE
- Nghiên cứu và phát triển sản phẩm, công nghệ
- Thiết kế hệ thống ứng dụng công nghệ mới nhất
- Dịch vụ sau bán hàng trọn gói
- Đào tạo, chuyển giao công nghệ

Chuyên nghiệp trong việc cung cấp các thiết bị đơn lẻ hoặc thiết bị đồng bộ phù hợp

Một nguồn cung cấp thiết bị thống nhất  
Hệ thống điều khiển và thiết kế đồng bộ

# Cam kết của Xylem với Việt Nam



- Trụ sở chính của vùng Châu Á Thái Bình Dương được đặt tại Singapore
- VPĐD của Xylem tại HCM sẽ sớm được thành lập
- Nhân viên mới được tuyển dụng .
- Đại diện và mạng lưới bảo dưỡng bản địa
- Ngôn ngữ, kiến thức và văn hóa bản địa.



Hiện tại:

- VP chi nhánh
- ▲ NM sản xuất
- TT bảo dưỡng
- ★ Trụ sở

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Cau Giay District, Hanoi, Vietnam



# Cam kết của Xylem với Việt Nam



**Chương trình đào tạo và chuyển giao công nghệ xử lý nước và nước thải sẽ diễn ra:**

Ngày 24-25 tháng 3 năm 2014  
Giành cho đội ngũ Kỹ sư của  
BIWASE

Ngày 26 tháng 3 năm 2014  
Giành cho đội ngũ Kỹ sư và Giám  
đốc của UCCI

Ngày 27 tháng 3 năm 2014  
Giành cho đội ngũ Kỹ sư và Giám  
đốc của IMA

“Là đối tác đáng tin cậy trên toàn cầu,  
Xylem sẵn sàng giúp các thành phố trở  
nên bền vững hơn bằng cách “Giải  
quyết những vấn nạn về nước”

-- **Steve Loranger**  
*Chủ tịch kiêm Tổng giám đốc  
Tập đoàn Xylem*

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# xylem

Let's Solve Water

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	<p><b>APPENDIX D - WORLD BANK GROUP DETAILED WORK PROGRAM (VIETNAM) FY 2015-2017</b></p>
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# WORLD BANK GROUP

## DETAILED WORK PROGRAM FY15-17

### Overview

<b>Total No. of Projects</b>	10
<b>Total Commitments</b>	US\$1.635 Billion; about <b>20%</b> of total Vietnam Commitments
<b>Projects Exited in FY13</b>	RRD1, HIFU, WSDP, PIIP
<b>Projects Exiting in FY15</b>	<b>CCESP</b>

# WBG DETAILED WORK PROGRAM

## FY15-17 – SUPERVISION 1

Project Title & Objective		FY Start	FY Finish	IDA Amount (USD mil.)
<b>Coastal Cities Environmental Sanitation</b>	Sustain improvements in environmental conditions in Nha Trang, Quy Nhon and Dong Hoi Cities.	07	15	<b>190</b>
<b>Quy Nhon Sanitation GEF</b>	Waste water treatment plan	09	15	<b>5</b>
<b>Urban Water Supply and Wastewater</b>	Increase access to water supply and sanitation services in urban areas through rehabilitation, expansion of the water supply system, drainage network, waste water collection and treatment.	11	16	<b>200</b>

# WBG DETAILED WORK PROGRAM

## FY15-17 – SUPERVISION 2

Project Title & Objective		FY Start	FY Finish	IDA Amount (USD mil.)
<b>Mekong Delta Urban Upgrading</b>	This project will follow the on-going Vietnam Urban Upgrading Project by financing large infrastructure investments in primary and secondary infrastructure and targeted infrastructure investments in low-income areas in some cities in the Mekong Delta Region.	12	17	<b>292</b>
<b>Rural Sanitation and Water Supply PforR</b>	Increase sustained access to water supply and sanitation services and improve sector planning, monitoring and evaluation in participating provinces of the National Target Program for Rural Water Supply and Sanitation.	13	17	<b>200</b>
<b>Da Nang Sustainable City Development</b>	Support upgrading and expansion of environmental infrastructure and improvement of public transport service including a pilot bus-rapid-transit (BRT) corridor, two critical sections of road, and capacity building activities.	13	19	<b>203</b>
<b>Irrigated Agriculture Improvement</b>	To improve the sustainability of irrigated agricultural production systems in selected provinces in the Central Coastal and Northern Mountainous Regions in Vietnam.	14	20	<b>210</b>

# WBG DETAILED WORK PROGRAM

## FY15-17 – SUPERVISION 3

	Project Title & Objective	FY Start	FY Finish	IDA Amount (USD mil.)
<b>Mekong Delta Water Resources Management for Rural Development</b>	To protect and enhance the utilization of water resources in the project provinces of the Mekong Delta Region in order to sustain prior gains in agricultural productivity, provide access to water supply for rural households, and contribute to climate change adaptation.	11	17	<b>160</b>
<b>Vietnam Managing Natural Hazards</b>	To increase the resilience of people and economic assets to natural hazards in selected river basins of the project provinces within the overall framework of Vietnam's National Disaster Prevention, Response and Mitigation Strategy Towards 2020.	13	19	<b>150</b>
<b>Mekong integrated Water Resources Management- Phase 2</b>	to develop the capacity of the Ministry of Natural Resources and Environment, Vietnam National Mekong Committee and relevant agencies to manage trans-boundary water resources and climate risks through river basin approaches and improved water resources data collection, analysis, and exchange.	14	19	<b>25</b>
<b>TOTAL</b>	<b>10 PROJECTS; US\$1.635 BILLION IDA</b>			

# WBG DETAILED WORK PROGRAM

## FY15-17 – LENDING PIPELINE

	Project Title & Objective	FY	IDA/IBRD Proposed Amount  (USD mil.)
<b>Results-based National Urban Development Program – Northern Mountains</b>	To improve planning, implementation and sustaining of priority infrastructure services by participating cities in the lagging Northern Mountain region.	14	<b>250 IDA</b>
<b>Ho Chi Minh City Environmental Sanitation Project (WWT Plant) Phase 2</b>	Improve the environmental conditions in selected areas of HCMC, (1) Wastewater Interceptor; (2) Wastewater Treatment Plant; and (3) Investment Support and Institutional Development	15	<b>Total 450 (200 IDA; 250 IBRD)</b>
<b>HCMC Flood Risk Management</b>	Strengthen flood management systems in HCMC and improve environmental conditions in selected areas of the city	16	<b>TBD</b>
<b>TOTAL</b>	<b>3 PROJECTS</b>		

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