

Urban Wastewater and Sanitation Situation in Vientiane, Lao PDR

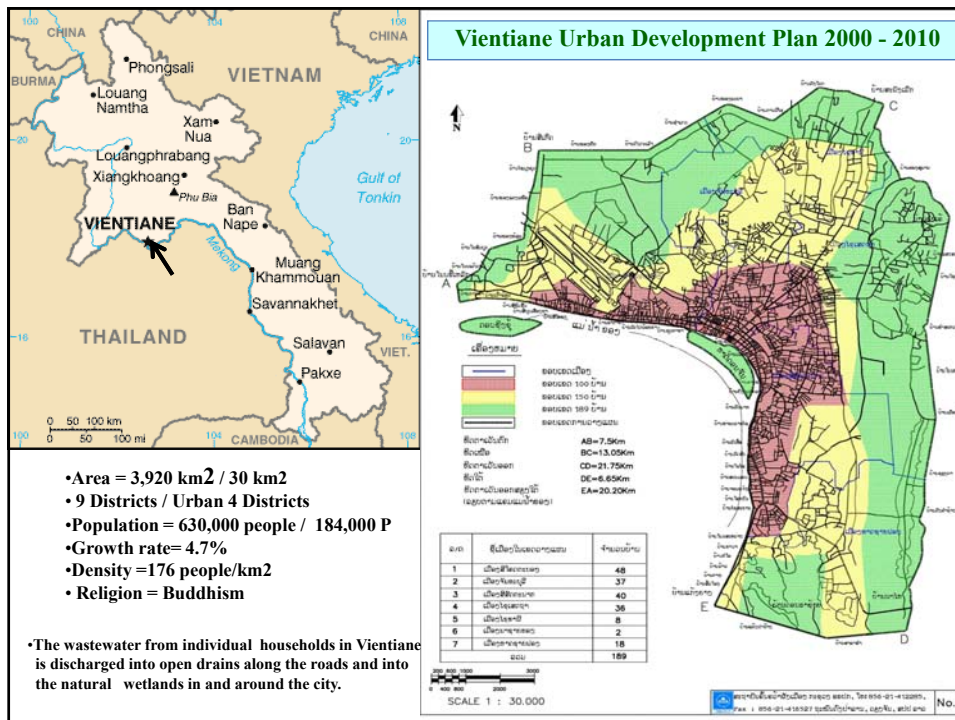
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Outline of Presentation

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- Status of Wastewater and Sanitation.
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Vientiane Capital City Water bodies.

- **Vientiane capital city contains almost 1,500 km² of permanent and seasonal water bodies,**
 - floodplains,
 - swamps and marshes.
- **The wetland areas supply a wide range of economically valuable goods and services:**
 - fishery products.
 - farming and natural resource collection activities.
 - flood attenuation, maintenance of water quality and supplies.
 - treatment of domestic, agricultural and industrial wastes.
 - recreation, etc.

The development projects in Urban Area for Water and Sanitation Disposal

- **Rehabilitation of Sihom Area, UNCDF/UNDP, 1991-1997:**
 - To improve the living conditions of the population of Sihom area through rehabilitation and upgrading.
 - To improve the sanitation and storm water drainage, and strengthen the institutional capacity.
- **Wastewater Management of Thatluang Marsh, EU, 1993:**
 - To improve wastewater treatment and drainage out of the central Vientiane area.
 - The project built a system of stabilization ponds at Thatuang Marsh designed to serve an estimated population of 44,590 for 2005 with a per capita BOD discharge of 45g/capita/day assuming 50% of the pollutant load would reach the treatment plant BOD.

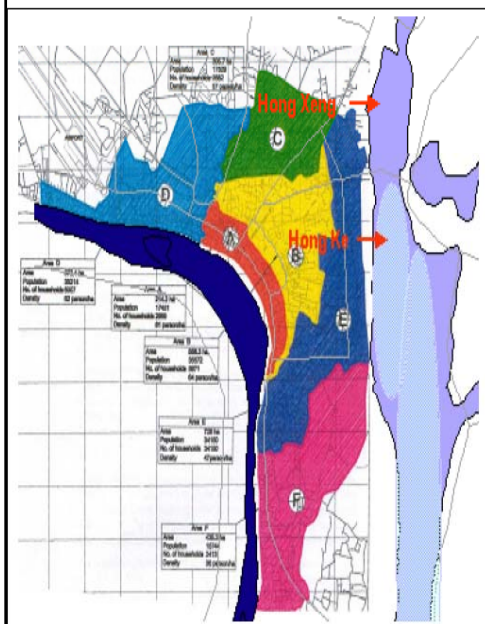
The development projects in Urban Area for Water and Sanitation Disposal (Cont's)

- **Vientiane Integrated Urban Development Project, ADB, 1996-2000:**
 - To improve access to basic services and infrastructure, thus providing benefits of urban environmental health to the population of Vientiane.
 - Vientiane Urban Development and Management Committee (VUDMC) to institutionalize urban planning and strengthen the development of the control system.
- **Improvement of Urban Environment in Vientiane, Danida, 2001-2004:**
 - To continue support to the municipal planning with the development of linkages between green and brown environmental issues and increased village involvement in environmental planning, implementation and monitoring.

Wastewater and Sanitation Responsibilities

- The government has set up four water analysis laboratories in different regions throughout the country dividing responsibilities over the water analysis processes in an efficient manner:
 - Irrigation Department, MAF responsibility of the water analysis laboratory of the Mekong River and its tributaries.
 - Ministry of Health is responsible for laboratory of the quality of water drinking.
 - Ministry of Industry and Commerce responsible for water released from industries and Mining project.
 - Water Resources and Environment Administration (WREA) responsible for Wastewater in urban surroundings in VCC, and Other urban area.
 - WRCC is responsible on integration and coordination of water uses and developments by different sectors, including ecological flow, and report to the government.
 - Main problems found are wastewater and sewage in VCC is from the city area which discharge into the marsh (Thatluang Wetland), It is responsibility by VUDDA.

Sanitation and Wastewater Purification:



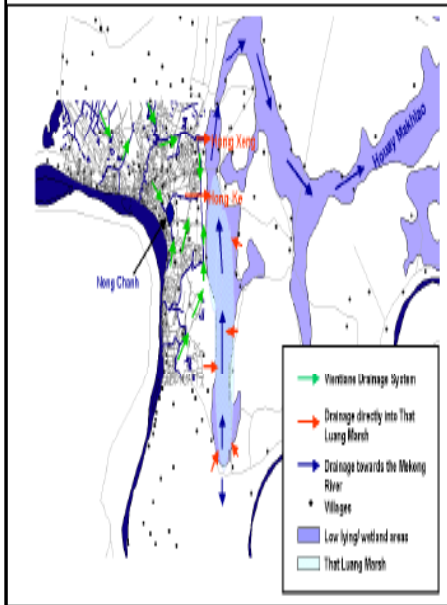
Thatluang Marsh is currently performing wastewater treatment services for domestic wastewater that is being drained into it:

- (A) Commercial area
- (B) Urban development area
- (E) Resident area
- (F) drain via primary and tertiary canals to HongKe canal and then into marsh.

The marsh is thus providing wastewater and sanitation services for household wastewater and sewage drainage.

There are two major types of costs that are associated with artificially replacing the wastewater treatment and water purification services of Thatluang marsh.

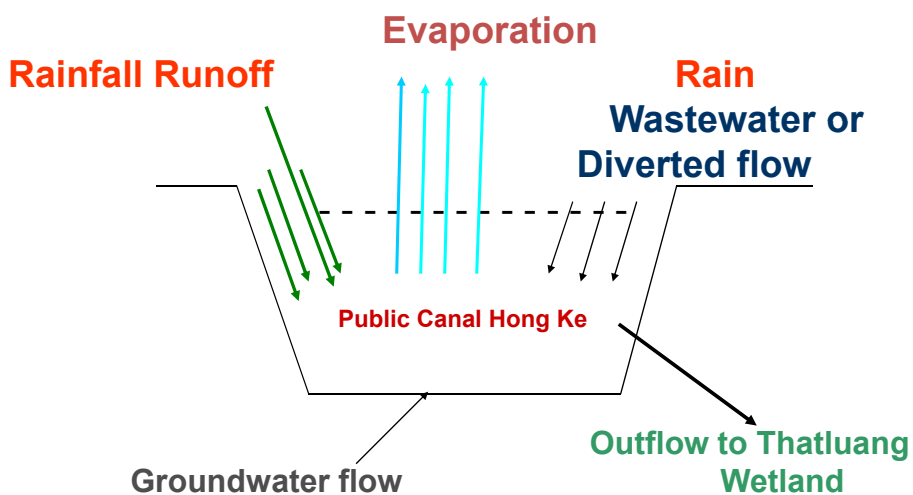
Wastewater Discharge:



There are three main drainage channel systems:

1. Hong Xeng mainly drains water from Sikhottabong district and some part of Chanthaboury district, through Nong Duang marsh and Pasak stream.
2. Hong Ke drain is the main channel, which is connected to Hong Thong and Nong Chanh swamp, draining water from Chanthaboury and Sisattanak district through the Morning market.
3. Hong Khoua Khao is a drainage system for draining water from Nong Chanh to Morning market and finally to Thatluang wetland through Hong Ke drainage channel, then to Houy Mak Heo 64 km to Mekong River.

Wastewater Discharge to Public Canal



Setting of Wastewater and Sanitation Management

- Implementation priorities relate to specific urban center needs, which would be identified along with urban hierarchy adopted by the government.
- The management of water supply requires the government involvement and institutional capacity as well as financial resources for its development.
- Drainage master plan for VCC urban area, covering all catchments, needs to be given high priorities.
- Such urban drainage plans with the need for creating and maintaining functioning drainage networks, including identification of final points of discharge must be emphasized.

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Public Private Participation

- These relate to the opportunities for stakeholder involvement in decision-making and planning, financial advantages, and benefits of segregation of wastewater at source and the compatibility with local demands for wastewater reuse.
- In general, central elements that shape the institutional setting for environmental management include:
 - The key actors in the public and private sectors whose motives and mandates significantly affect the urban water and sanitation;
 - Management functions that can be used to address environmental issues in the city, including the instruments of intervention and mechanism for coordination; and
 - Existing initiatives that affect efforts to manage wastewater and sanitation problems.

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Wastewater and Sanitation Management Function

- Urban governance often adopts policies to deal with wastewater and sanitation management problems.
- Based on that, the government will formulate a long-term national wastewater and sanitation strategy to guide any future investment in water and sanitation activity.
- The most prevalent tool for environmental management that affects a city is legislation with its regulations.
- The sophistication and effectiveness of this tool is low in Laos, since there are only few environmental standards and an incomplete set of environmental laws.
- Moreover, lack of enforcement is a pervasive problem. However, the environmental impact assessment (EIA) process is being positively promoted and selectively implemented in Lao PDR.

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Planning and Policy Development

- In terms of environmental coordination and decision-making processes, intersected coordination to manage urban environmental affairs has been lacking and has become a problem in Vientiane city, although the coordinating mechanism given below has been established for urban development in Vientiane city:
 - At the central government level, there is a planning body that is in charge of synchronizing interdepartmental coordination for urban activities.
 - At the city level, there is a community to coordinate sectoral program and projects from loans (i.e., ADB loans, WB and etc..).
 - For implementation of infrastructure activities, there is a program to coordinate investment and institutional strengthening (i.e., VUDAA, DCTPC and etc..).

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Conclusion

- In urban areas, poor management of sanitation system generally contributes to wastewater pollution.
- In Vientiane city, outfall from poor functioning central sewage system contaminates water resources.
- Poor system coverage results in serious lagoon and stream pollution, as well as soil contamination from open defecation in slum and around the city.
- Moreover, urban VCC land has also been going through tremendous transformations due to sprawls in agricultural development, industrialization and urbanization.
- As the urban areas develop with new buildings and infrastructure, the wetlands are becoming increasingly isolated and their capacity to perform their environmental functions greatly diminishes.

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Conclusion (Cont's)

- Urban development throughout the city has been growing in an unplanned manner often resulting in aggravating flooding and drainage problems, partly due to the limited capacity at the municipal planning level.
- Moreover, there has been little sustainable built-in project design resulting in discontinued use of wastewater stabilization ponds and limited use of the waste treatment plant in Thatluang wetland.
- Access to and affordability of adequate sanitation is always a problem for the poor, especially in the low-income households.
- Combination of poor management and low-level service to the poor that causes inadequate sanitation has eventually negatively affected health consequences.

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Thank You

