

WASTE WATER SITUATION in the Urban Area of VIENTIANE CAPITAL CITY

Kick-Off Workshop DEWATS-CBS,
Vientiane 16th June 2009

Christian Heeg
Lao Institute for Renewable Energy



Kick-Off Workshop DEWATS-CBS, 16th June 2009

1

Overview

- Waste Water Situation
- Legislative Framework
- Activities in the Sector
- Actors in the Sector



Kick-Off Workshop DEWATS-CBS, 16th June 2009

2

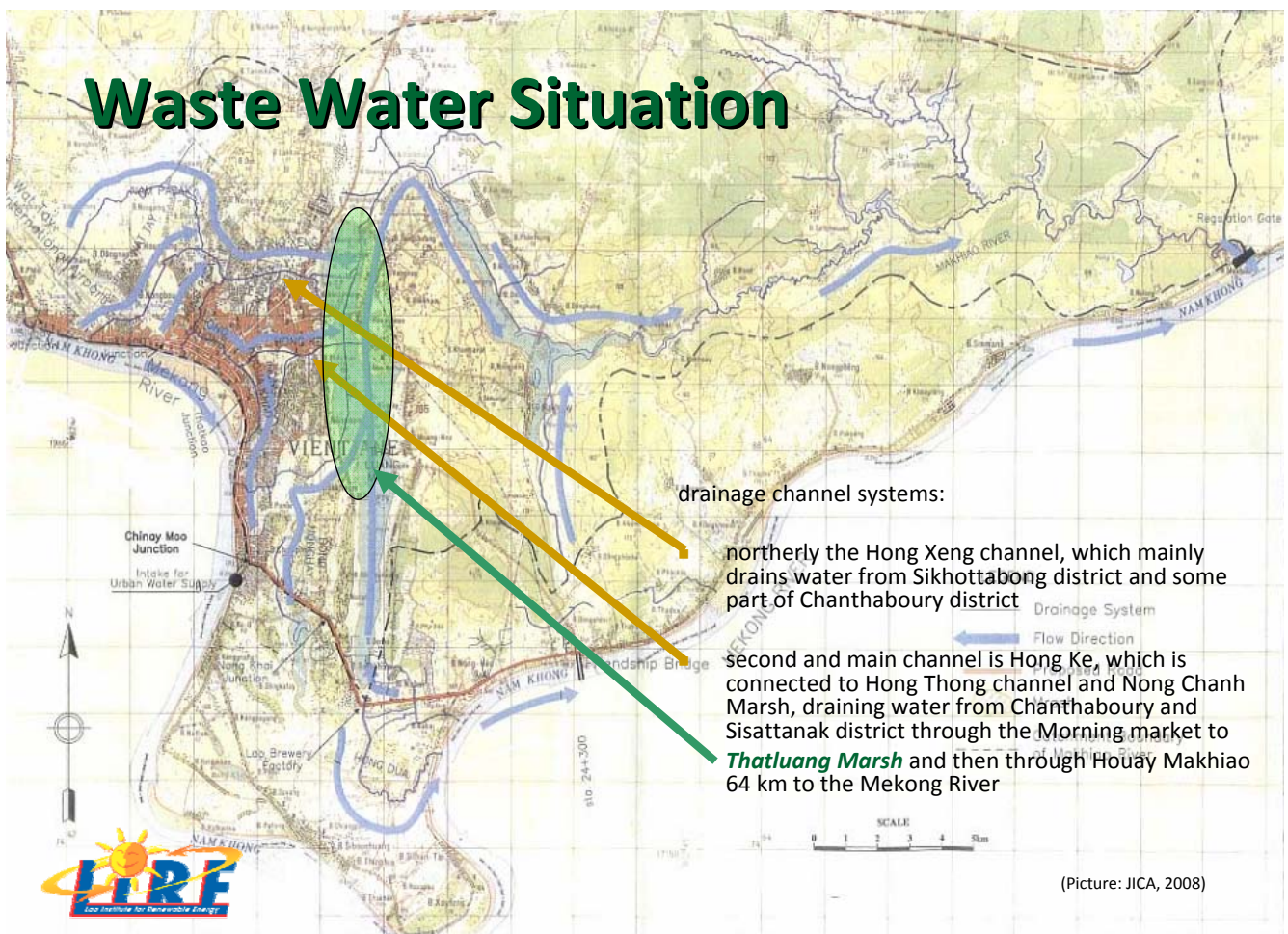
Vientiane Capital City (VCC)

- **Population: 672,912 people. (NSC, 2007)**
 - Core urban population in 2003: ~180,000 people
 - Urban area 189 villages, area approx. 30 km² (ADB, 2001)
 - Area designated for urbanization: 210 km² (Keosithamma, 2004)
 - Population density is increasing at a rate of 4.7% per year (ADB, 2001)
- **Topography:**
 - is situated on an alluvial plain extending along the east bank of the Mekong River
 - relatively flat (from 160 to 170 m above sea level)
 - wetlands to the east and interspersed with paddy fields



Kick-Off Workshop DEWATS-CBS, 16th June 2009

3



Waster Water Situation

Thatluang Marsh:

- provide goods and services including flood control, wastewater treatment, and inputs to local subsistence livelihoods
- biodiversity and ecosystem services make an important contribution to urban welfare and development
- Annual Value of Wetland Economic Benefits from Thatluang Marsh (WWF, 2004)

<i>Wetland Resources -</i>	<i>Direct Use Values (\$US)</i>
<i>Rice Cultivation</i>	350,681
<i>Garden Cultivation</i>	55,017
<i>Aquaculture Production</i>	179,671
<i>Capture Fisheries</i>	1,092,095
<i>Non-Fish Wetland Products</i>	354,106
<i>Wetland Services -</i>	<i>Indirect Use Values (\$US)</i>
<i>Flood protection</i>	2,842,000
<i>Wastewater Purification</i>	70,088
Total	4,942,658



Kick-Off Workshop DEWATS-CBS, 16th June 2009

5

Waster Water Situation

Drains:

- not adequately interconnected → no network
- lined in the centre area and covered in front of commercial establishments
- water in the drainage system is invariably contaminated with faecal matter from latrines

→ high water table and low soil permeability creates further difficulties for drainage

beside the drains:

- partial small-bore piped sewerage systems in some areas of the town → is not functioning
- septic tanks in large and more modern properties → mostly leaking, maintenance by public and small private companies using a vacuum desludging vehicle (URI, 2005)
- older and lower incomes houses are using pit latrines - the responsible belong to individual household

→ absence of overall urban drainage plans with a functioning integrated network combined with lack of clear arrangements for maintenance causes flooding and stagnant water pools over large parts of the urban centre



Kick-Off Workshop DEWATS-CBS, 16th June 2009

6

Legislative Framework

1994 Regulation for Industrial Waste Discharge (No. 180/MIH):

- defines effluent standards like e.g. BOD and TSS for different types of industries

1996 Law on Water and Water Resources (No. 126/PO):

- Article 42: "...Polluted water, waste water, [and] waste that exceed the discharge standard must first be treated before they may be dumped or discharged into water sources ..."

1999 Environmental Protection Law (No. 09/PO):

- Article 23: "...It is forbidden to discharge waste water, or water that exceeds the prescribed standards into canals, natural water bodies or other places without proper treatment. ..."



Legislative Framework

1999 Management and Development of the Water Supply Sector (No. 37/PM) – Prime Minister Decision:

- Article 2: "...Provincial Governments will be responsible for: ...; collaboration with the Department of Communication Transport Post and Construction (DCTPC) of the province concerned in finding out suitable solution to assist low income households which cannot afford the cost of sanitary facility;... direction of water supply and sanitation sector project implementation in the province concerned; ... ; institutional arrangements for the implementation and management of centralized wastewater management systems as for water supply when these systems become economically and financially viable, but until such time onsite treatment will be pursued and the implementation and management of the facilities shall be the responsibility of the: individual owner; ... "

2001 Law on Hygiene, Disease Prevention and Health Promotion (01/NA):

- Article 17 – Hospitals, Dispensaries and Clinics shall be equipped with a system for waste-water treatment, and a system for waste separation, storage and disposal in accordance with the principles of hygiene
- Article 19 – Hygiene in Production: "... It is forbidden to release waste, chemicals or waste water from factories, including other production sites, into water bodies or elsewhere without undergoing a treatment process."



Activities in the Sector

1991-1997 – Rehabilitation of Sihom Area, UNCDF/UNDP

1993 – Wastewater Management of Thatluang Marsh, EU

1996-2000 – Vientiane Integrated Urban Development Project, ADB

2002-2008 – Vientiane Urban Infrastructure and Services Project, ADB

2003 – 2008 Livelihood Challenges of the Communities in Catchments Area of and along the Hong Kae Semi-artificial Drainage Channel in Vientiane Capital, Lao PDR

2004 – Implementing a decentralized sanitation system for the underserved urban community of Thongkhankham Nea Village, Lao PDR - Study

2004 – Urban Environmental Sanitation Project for the improvement of the Vientiane urban environment (supported by DANIDA) – Project established in 2000

2006-2009 – Thatluang Marsh - waste water treatment through effective wetland restoration , WWF



Kick-Off Workshop DEWATS-CBS, 16th June 2009

9

Actors in the Sector

Multilateral organizations:

- UN-HABITAT – project development for HH-treatment and maybe treatment for markets or other SME's in Oudomxay Province
- JICA – improvements of the drainage system in VCC and at the moment conducting a study to analyse the water environment in VCC (2008 – 2010) as baseline for a governmental strategy development
- WSP/World Bank – gives technical and strategic advice to relevant GoL agencies



Kick-Off Workshop DEWATS-CBS, 16th June 2009

10

Actors in the Sector

INGO's:

- ❑ GRET – Feasibility study for wastewater collection/disposal/treatment in the city Hin Hoeup (appr. 100 km northerly of VCC)
- ❑ WWF – conducted studies about the Thatluang Marsh and implemented pilot projects for natural treatment in the wetland areas



Recommendations and Conclusion

- Environmental and health pressure increases due to increasing Urban Population **NOW!**
- Centralized system is difficult to fund at the moment
- Thatluang Marsh → if the flood control and wastewater purification functions are compromised by reduction in wetland size, Vientiane Municipality will be forced to provide alternatives at a considerable cost (WWF, 2004)
- **Recommendation: Stronger attention for waste water management and alternative waste water treatment systems**
- Follow-up projects for decentralized models were recommended (Keosithamma, 2004)
- Lao PDR urban development and environment policy favors more and more decentralized solutions (Atsanavong, 2004)
- People are willing to contribute for group systems (Atsanavong, 2004)
- **Decentralized Waste Water Treatment Systems** are suitable solutions to serve these problems



Thank you very much!

