



# *Wastewater Treatment in Urban Area*

*Dr. Chrin Sokha  
Deputy Director General*

*Ministry of Environment, Cambodia*





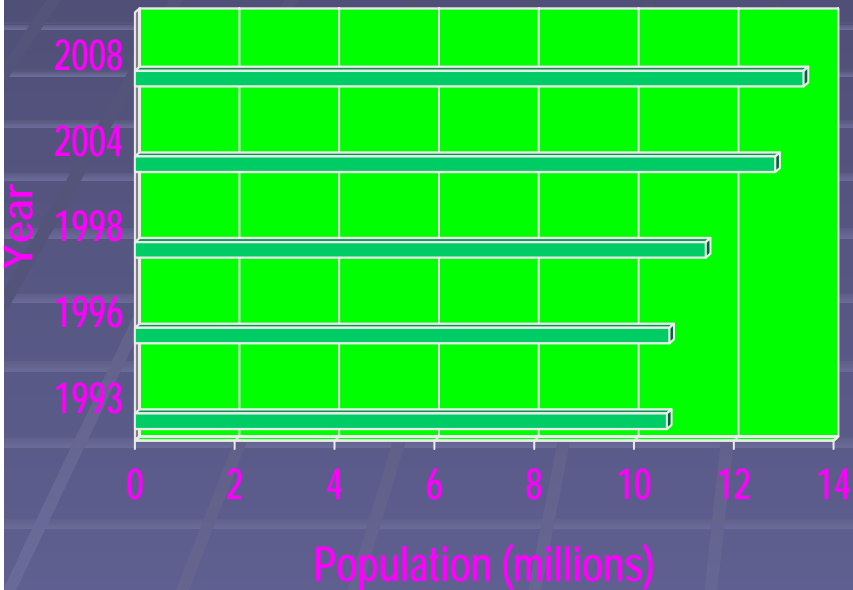
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# 1. Background Information

Population Growth



□ Population, in Cambodia, is increased from year after year, and it accounted for 13,388,910 in 2008 (NIS, MoP 2008).

☞ The growth rate was 2.55% for urban population, and 1.30% for rural population.



# 1. Background Information (cont.)

- Such population increase might be caused more concerns towards the discharge of treated and/or untreated wastewater to receiving sources without complying the environmental standards (e.g. households, business centers, hotels and so on).
  - ☞ Respective urban/town area, generally, does not have a center wastewater treatment plant.
  - ☞ Few wastewater treatment plants is under operation and/or construction in some provinces and cities, e.g. Battambang, Sihanoukville, Siem Reap, Kampong Cham, etc.



# 1. Background Information (cont.)

- ❑ Urban wastewater, commonly, run off to receiving waters through sewage/opened canal systems.
- ❑ Most wastewaters are discharged into receiving waters by natural purification process.
  - ☞ In Phnom Penh Municipality, for example, urban wastewaters are collected by sewage systems and run off into opened channels, retention lake/wetland, and finally, flow directly to the river.
    - Retention lake and/or wetland plays important functions to naturally purify (self purification) such wastewaters in a specific period, and gradually flow to the river afterward.



Natural treated wastewater outflow

Prek Kdam

Mekong River

Kampong Chnang

Boeng Pung Peay

Tonle Sap River

Dyke surrounds the city

Boeng Kak

Phnom Penh Port

Flow into the Tonle Sap River Jul-Sept

Phnom Penh

Flow out of Tonle Sap River Oct-Feb

Boeng Trabek

Natural treated wastewater outflow

Boeng Cheng Ek

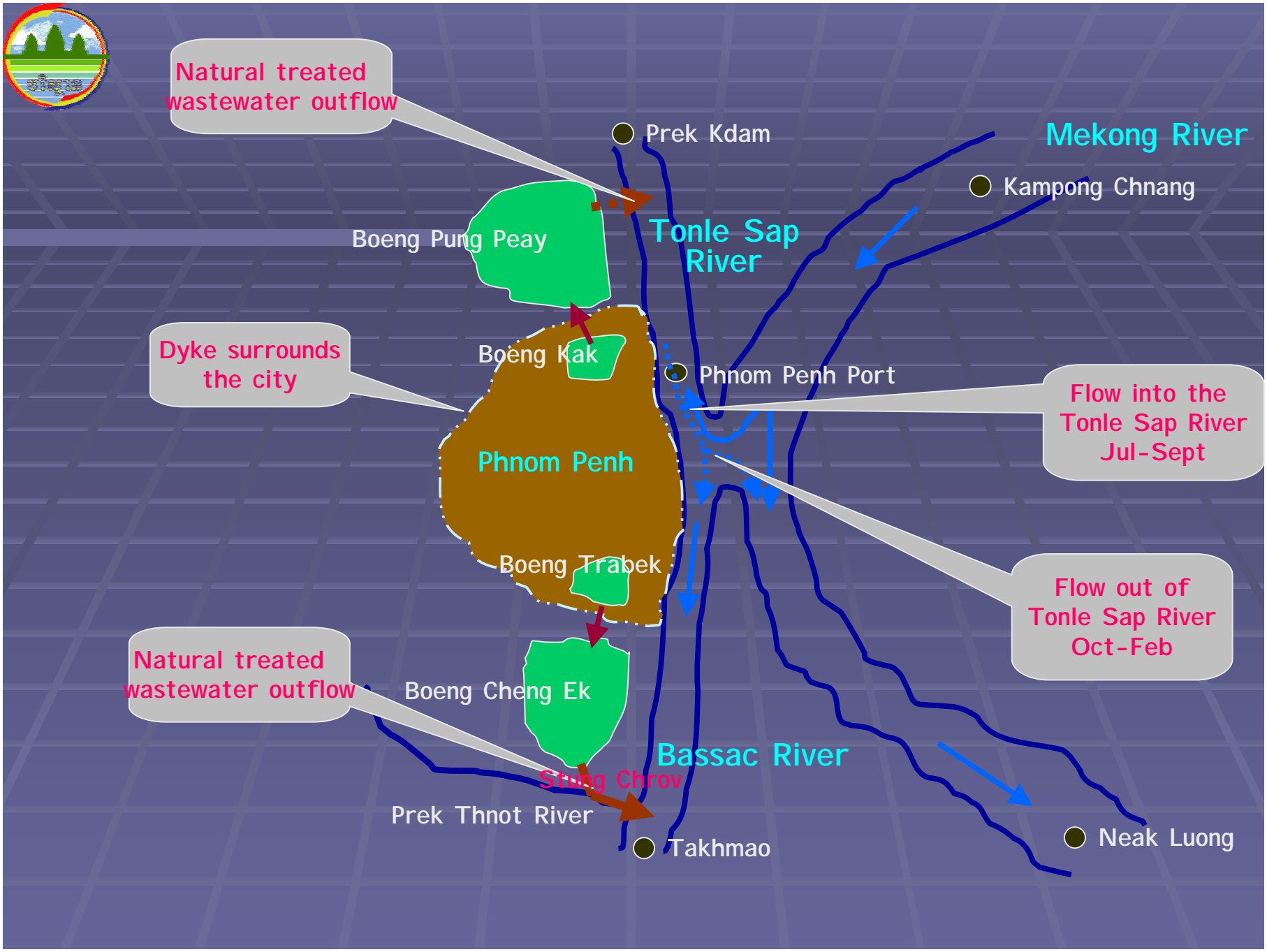
Bassac River

Stung Chrov

Prek Thnot River

Takhmao

Neak Luong





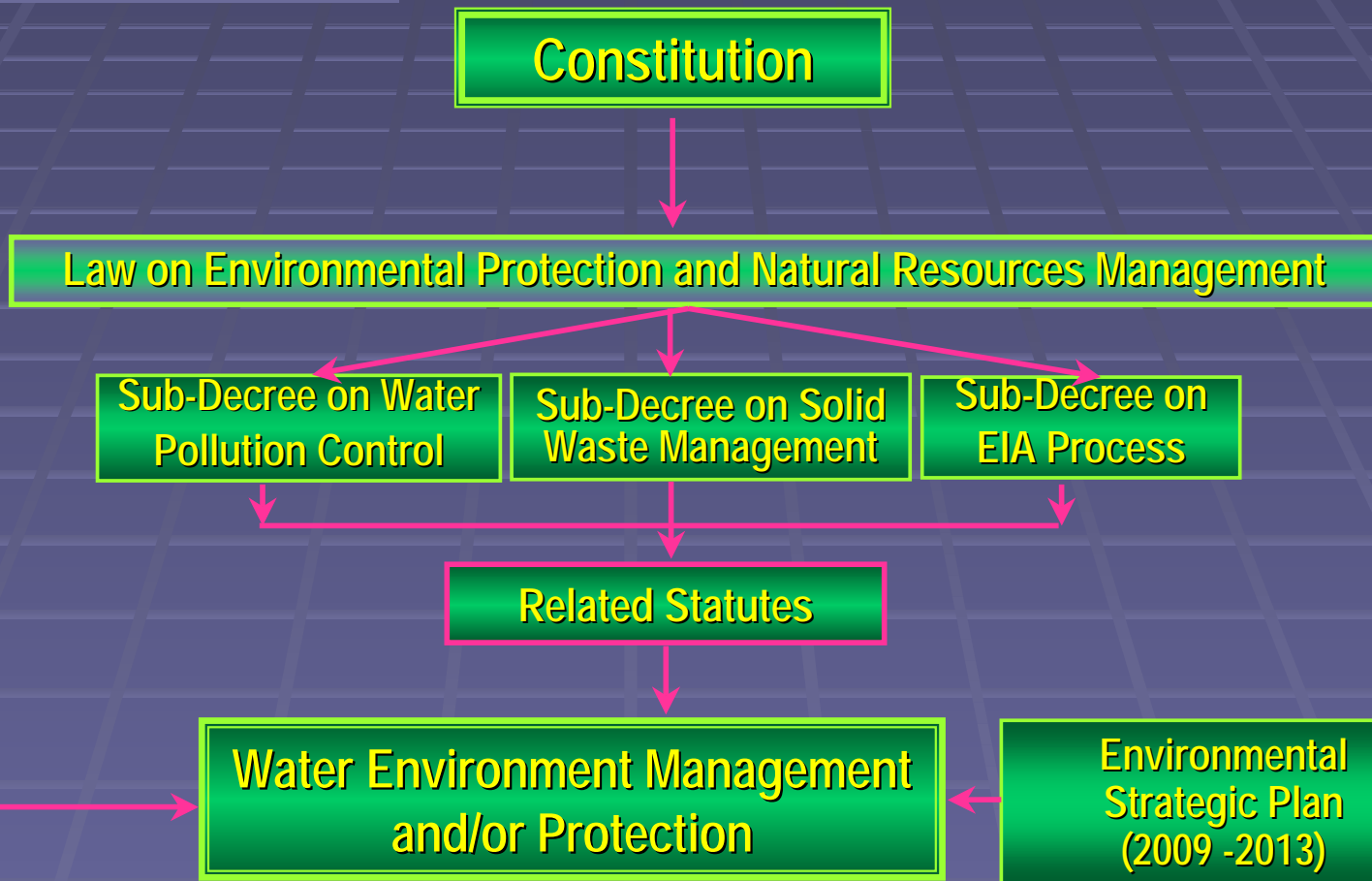
# 1. Background Information (cont.)

- ❑ Industrial wastewaters (*factories those used chemicals/chemical compounds*) have to do onside treatment particularly in the industrial premise prior to discharge into receiving sources, to abide by environmental related legislations.



# 1. Background Information (cont.)

Relevant legislation/Strategy/ Policy & Action Plan, International Agreement, Conventions and Mekong Agreement





## 2. Common Practices of Wastewater Management

- Monthly freshwater monitoring at designated public water areas (through sampling points) – it is done by the Ministry of Environment; and Ministry of Water Resources and Meteorology (ref. to their mandate and existing legislations)
  - ☞ Water quality at public water areas (rivers) is generally in a good condition (*Ref. to the Annual Environmental Conference – Feb 2010, MoE*).
  - ☞ Water quality, few areas, is noticeably degraded in dry season, where such areas have a high dense of population and related activities, for example, along the Mekong River and its main tributaries, including the Tonle Sap Great Lake.



## *2. Common Practices of Wastewater Management (cont.)*

- ❑ Routine control/monitoring at pollution sources (e.g. industrial, health and business sectors,) and evaluating the environmental pollution level – based on analytical results of wastewater samples.
- ❑ Permitting and licensing to factories those treated their wastewaters abided by the environmental legal tools, and vice versa, it is strictly to violators whose committed opposing the stipulations of law and related statutes.



## *2. Common Practices of Wastewater Management (cont.)*

- ❑ The celebration of National Environmental Day on 5<sup>th</sup> June for every year, which participated by key stakeholders, local authorities, students and pupils and the like.
- ❑ Environmental education and dissemination towards environmental pollution control and management programmes for officers of the Environmental Provincial/Municipal Departments and other key stakeholders, especially, local authorities (Commune/District Council).



### 3. Gaps and Opportunities

Gaps	Opportunities
Expertise knowledge of government officials dealing with wastewater treatment and management is required to improve	Capacity building, R & D is prioritized in the national development plan and the environment strategic plan (2009 – 2013)
Insufficiency of related data and/or information – a basic to develop effective wastewater management mechanism	Relevant legal instruments are enter into forces, including enforcement concept
Few central wastewater treatment plants, for urban areas, have developed at selected provinces – it is not respond to a certain requirement as a whole	Water pollution control is highlighted in the environmental strategic plan (2009 – 2013)
	Collaboration among inter-ministries and local authorities, communities, in monitoring and inspection of pollution sources, contaminated sites



## 4. Conclusion

- ❑ To promote these constraints, Cambodia, especially, the Ministry of the Environment paid more attention to improve the capacity building and institutional strengthening, including the promotion of stakeholders collaboration.
- ❑ It requires technical assistance/supports from international organizations and donors who engage in the environmental sector.
- ❑ Private partnership is another key tool to improve the environmental sanitation, e.g. investing on development and running a center wastewater treatment.



*Many thanks for your kind attention...*