

Future Challenges of Water-Environmental Management in Cambodia

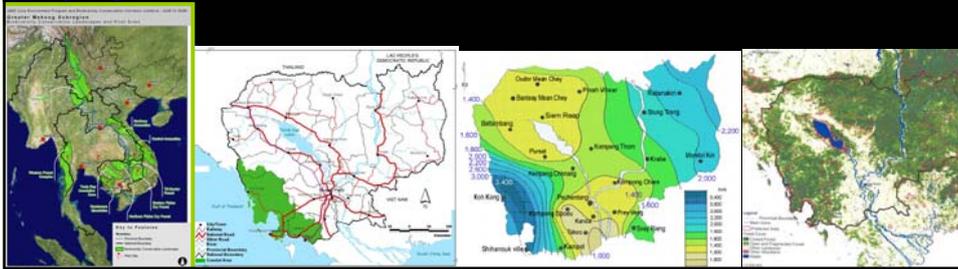
Mr. Chuon Chanrithy
Department of Natural Resources Assessment
Ministry of Environment
Cambodia
E-mail: cchanrithy@gmail.com

Outline

- Introduction: Cambodia-Biophysical
 - *Tonle Sap Catchment Area*
 - *Cambodia at a Glance*
- Scenarios for Future and Challenges
- Issues & Constraints
- Conclusion

Introduction: Cambodia-Biophysical

- Cambodia is more than Angkor Wat – covers 181,035 sq. km
- Mostly flat alluvial plain, but hills and mountains in Southwest and Northeast
- Tropical monsoon climate, with rainfall 1,400-3,000 mm – most rain in Southwest and Northeast
- 14% of the country drained directly to the Gulf, the remainder is in the country shared with the GMS catchment
- Forest cover has decreased from 62% of total LA in 1992 to present with the decline of 0.5% per annum
- Cultivable area is about 26% of TLA



Tonle Sap Catchment Area

Description	Tonle Sap Catchment	Total Catchment of Cambodia	Greater Mekong Subregion
Land Area in km ²	80,000	155,000	795,000
% of Catchment Area/Land Area	44	86	
% of Catchment Area/GMS	10	20	100

Cambodia at a Glance

Water is used for many purposes:

- water for domestic use, drinking water, sanitation, etc. for people;
- drinking water for domestic animals and wildlife;
- special needs for animals and wildlife;
- crops and forests;
- fisheries;
- industry, commercial, institutional;
- navigation;
- hydropower.

Population (estimated 1999)	11.7 million, increasing	Population (projected for 2020)	20 million
Population growth rate (estimated 1998)	2.5%, decreasing	Urban population growth rate	8%/annum
Urban population (1992-98)	16%, increasing	Urban population (projected for 2020)	8 million, assuming current growth rates
Land area	181,035 km ²	Average population density	63 persons/ km ²
Total water available	~500 billion m ³ /yr	Total water developed (estimated withdrawal, 1987)	520 million m ³ /yr

Water use, share of total		Population access to:		
Agriculture ³	56%	Safe water		Sanitation
Industrial ⁴	4%	Rural	23.7%	8.6%
Domestic Purpose ⁵	17%	All urban	60.3%	40.9%
Livestock	13%			
Other	10%			

Source: IWRM 2005: MoWRAM

Scenarios for Future & Challenges

- **By 2020**
 - Great social and environment change driven by mix of demographic, economic, technological and social factors, incl. external factors like globalization and climate change;
 - Population: between 18.5 and 20.3 mil.;
 - Demands for food, water supply and energy as result of economic growth, industrialization and urbanization;
 - Production in both agriculture and fisheries;
 - Over 30% increased irrigated areas and intensification of cropping resulted in increased demand of water, etc.;
 - Increased demand for energy for internal use and export could result in development of large scale of new storage.

Issues and Constraints

- **Policy & Legal Framework**
 - Law on Environmental Protection and Natural Resources Management, 1996
 - Law on Water Resources Management, 2007
 - Draft Law on Regulation of Water Supply
 - Sub-decree on Water Pollution Control, MoE, 1999
 - Sub-decree on EIA Process, MoE, 1999
 - Laws on Forestry and Fisheries, MAFF, (2002; 2005)
- **Institutional Arrangement**
 - CNMC, MoWRAM (1999), MIME, MoRD, MoE, Farmer Water User Communities (FWUCs)

- **Natural Resources - Biodiversity Threat**
 - Herbivores - Kouprey (*Bos sauveli*), Banteng (*Bos javanicus*), Gaur (*Bos gaurus*), Wild Water Buffalo (*Bubalus arnee*), Sambar Deer (*Cervus unicolor*), Eld's Deer (*Cervus eldii*), Hog Deer (*Axis porcinus*), Barking Deer (Muntjac) (*Tragulus javanicus*), Tiger (*Panthera tigris*) and Leopard (*Panthera pardus*).
 - 530 bird species - giant ibis (*P. gigantean*), white-shouldered ibis (*Pseudibis davisoni*), masked finfoot (*Heliopais personata*), and Sarus crane (*Grus antigone*).
 - 12,000 to 15,000 flora species recorded for Lao PDR, Cambodia, and Viet Nam

● **Water Utilization Issues**

- ការគ្រប់គ្រងធនធានទឹក គឺជាបញ្ហាបរិស្ថានគន្លឹះ ទាក់ទងដល់ភាពក្រីក្រ ។
- ទឹក-កំរូវការជាមូលដ្ឋាន រីឯគុណភាពទឹក និងអនាម័យទាក់ទងដោយផ្ទាល់ ទៅនឹងភាពក្រីក្រ ។
- ការផ្គត់ផ្គង់ទឹក និងអនាម័យ ពុំត្រូវបានអនុវត្តគ្រប់កន្លែងនៅឡើយទេ ។ ប្រជាជននៅជនបទតិចតួច មានទឹកស្អាតប្រើប្រាស់ ។

ប្រជាជនក្រីក្រនៅទីជនបទ អាស្រ័យរស់នៅនឹងការប្រើប្រាស់ទឹកសំរាប់កសិកម្ម និងជលផល។ ៨០% ធ្វើស្រែអាស្រ័យទឹកភ្លៀង ដែលធ្វើឱ្យពួកគេប្រឈមនឹង ការប្រថុយ-ហិនហោចផលដំណាំ ទិន្នផលតិច រាំងស្ងួត ទឹកជំនន់ ។ល។

- Arsenic Contamination in underground water in some areas.

● **Management Issues**

ផែនទីវិថី បានលើកឡើងនូវតួនាទីនៃវិស័យទឹកក្នុងការកាត់បន្ថយភាពក្រីក្រតាមរយៈ:

- លើកកម្ពស់ការរស់នៅប្រជាជននៅជនបទ សន្តិសុខស្បៀង និងអាហារូបត្ថម្ភ (ការគ្រប់គ្រងទឹកសំរាប់កសិកម្ម ការអភិរក្សវិស័យជលផល)
- លើកកម្ពស់ការផ្គត់ផ្គង់ទឹកស្អាត និងអនាម័យ ដោយកាត់បន្ថយជម្ងឺរាតត្បាត មរណភាព និងការបាត់បង់ឱកាសធ្វើការ និងរៀនសូត្រ
- ពង្រឹងសន្តិសុខទប់ទល់នឹងមហន្តរាយធម្មជាតិ ពិសេសទឹកជំនន់ និងរាំងស្ងួត ដែលបង្កឱ្យខាតបង់ទ្រព្យសម្បត្តិ និងដំណាំ
- ការពារ និងអភិរក្សឱ្យមានចីរភាពនូវប្រព័ន្ធអេកូឡូស៊ីក្នុងទឹក និងដីចម្រុះ ដើម្បីបានជាប្រយោជន៍ដល់អ្នកជំនាន់ក្រោយផង ។

- **Roadmap also points out water-related issued and constraint such as:**

- គោលនយោបាយ ច្បាប់ និងសមត្ថភាពស្ថាប័ននៅខ្សោយ
- តំរូវការក្នុងការគ្រប់គ្រងប្រព័ន្ធទឹកភ្លៀង និងធារាសាស្ត្រ
- ការកាត់បន្ថយហេតុប៉ះពាល់បណ្តាលដោយទឹក
- គ្រប់គ្រងការប្រពែងក្នុងការប្រើប្រាស់ទឹក និងការបង្កចគុណភាពទឹក
- ធ្វើការអភិរក្សប្រព័ន្ធអេកូឡូស៊ីក្នុងទឹក និងជលផល
- គ្រប់គ្រងធនធានទឹកជាអន្តរជាតិ និង
- ហិរញ្ញប្បទានដោយនិរន្តរភាពសំរាប់ការអភិវឌ្ឍន៍ និងគ្រប់គ្រងធនធានទឹក ។

- **Issues & Constraints (Contd.)**

- Water pollution – wastewater treatment systems poor and non-existent in major areas;
- Solid waste – open dumps still common;
- Climate change – global issue with massive implications for Cambodia (Flood & Draught)
- Environmental quality on the brink – choices must be made NOW to protect the environment as economy continues to grow so strongly.

Conclusion

- Cambodia's environmental quality underpins a successful diversification of sectoral development;
- Water quality monitoring and evaluation;
- Enforcement of existing natural resources-related laws;
- State and non-state institutions dealing with water-related issues is to be improved in terms of coordination and collaboration sustainable use of water resources, i.e. both quantity and quality is well protected for generations;
- National Capacity and Institutional Strengthening is in need, still.

THANK YOU