

Freshwater ecosystem management and practice in Lao PDR

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I. Introduction

- The Lao PDR is a land-locked country in mainland Southeast Asia. It is a historically, culturally and environmentally rich country with diverse landscapes and ethnic populations and is surrounded by China, Vietnam, Cambodia, Thailand and Myanmar;
- Lao PDR had Area: 236,800 km² and 17 provinces;

I. Introduction (Cont.)

- Almost 80% of the country is predominantly mountainous, The country has an abundance of natural resources, namely water, mineral deposits and forests, which cover more than 40% of its total land surface;
- Its resource endowments are varied between the different geographical regions and climatic zones. The central and southern regions are endowed with plains along the Mekong and other rivers, which contain fertile soils and lands that are irrigable. These regions receive up to 2,000 mm of rainfall, annually. In contrast, the north is generally mountainous and rugged, with leached and acidic soils and mountain valleys.

II. Status and trends of ecosystems

- Approximately 35% of all water in the Mekong River originates from watersheds within the Lao PDR. The total surface water standing is at 55,000 m³ per capita annually, the highest among all Asian countries. The GoL expects to tap a substantial portion of this water for hydropower production as a major source of revenue.
- **Ecology.** The water resources support large fish populations, as well as yielding a wide range of other aquatic animals that are harvested for household consumption and trade.

II. Status and trends of ecosystems (Cont.)

- Fish diversity in the Mekong River is estimated to be roughly 3 times that of the Amazon River. With the exception of a small number of introduced fish used for aquaculture, almost all of the fish species caught in the Lao PDR are indigenous species. About 500 indigenous fish species are reported for the Mekong River and its tributaries in the Lao PDR and, of these, 9 species are threatened, and 25 species are suitable for aquaculture (MAF & STEA, National Biodiversity Strategy to 2010 and Action Plan to 2010, 2004).

II. Status and trends of ecosystems (Cont.)

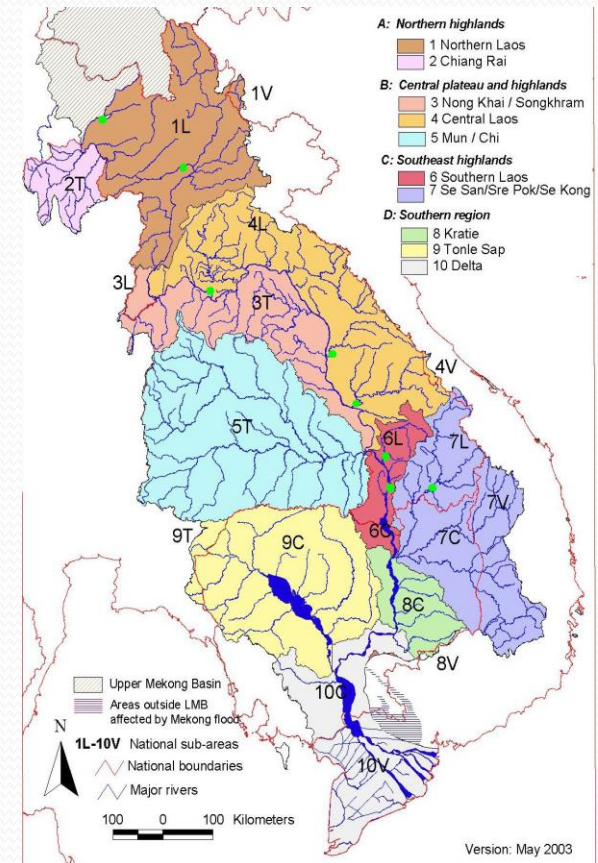
- **Trends.** The major threats to aquatic ecosystems include the construction of hydropower dams, and the wide use of agro-chemicals. Hydropower dams involve major changes in hydrology that affect the behaviour of fish populations. In addition, the aquatic systems are already affected with water pollution (domestic, industrial, aqua cultural and agricultural sectors), over harvesting and introduction of exotic species for aquaculture.
- The GoL is trying to address these issues by adopting the integrated water resources management (IWRM) approach, among others. Moreover, the GoL has recently passed the Fisheries and Aquaculture Law and is also promoting the role of community-based resource management that build on traditional regulatory systems.

III. Ecological health monitoring in year 2017

1) Sampling sites:

They include localities on the Mekong and its major tributaries in Lao PDR. The sampling localities cover a range of river settings from bedrock-confined channels in northern Lao PDR, through the alluvial channel systems of central and southern Lao PDR. The sites also exhibit varying disturbance from human activity. Most are located in or close by villages or towns such as LMX, LVT, LSD, LBF, LBH and some are next to fields where crops are grown, upstream of dams, past 2 year gold collection, and bank erosion (LKL), sand or gravels collection (LPB), fishing and navigation (LDN and LSD).

Abbreviations: *LDN* (Don Ngiew); *LSD* (Sedone River) *LKL* (Sekong River); *LBH* (Se Bang Hieng River); *LBF* (Se Bang Fai River); *LVT* (Mekong River, Vientiane); *LMX* (Xiengkok); *LPB* (Mekong River Luangprabang).



2) Status of monitoring site comparing to previous year

- LBF: no change occurred;
- LBF: has changed occurred such as water level lower than previous year and has some small islands occurred in the river;
- LDN: no change occurred;
- LSD: has changed occurred because of the sewages from household;
- LKL: better than previous year, since this year sand and gravel collection have stopped and navigation decreased;
- LPB: has change occurred due to rail way construction on the right side of the river and people still collect sand and gravel and navigation;
- LMX: better than previous year because navigation and bank erosion decreased; and
- LVT: has changed occurred due to more sand and gravel collection, bottom of the river mostly cover by sand.



IV Conclusion

The field long trip from the Northern to the southern part along the Mekong River and its tributaries of Lao P.D.R. was carried out successfully. All four groups of organisms such as littoral, benthic macro-invertebrate, zooplankton and diatom were collected in the field and preserved in alcohol, formaldehyde and Glucol solution respectively and also in a good condition carried to the laboratory safely.

Thank you very much for your attention
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