

2.5 Summary of SLB Problems and Issues

(1) Steady decline of upstream forest: Year 2002 saw only 1,164 sq.km., equivalent to 13.7% of SLB area, of the forest in the upstream area.

(2) Steady decline of mangrove and peat swamp forest: Year 2004 saw only 150 sq.km., equivalent to 1.75% of SLB area, of mangrove and swamp forest.

(3) Soil erosion and sedimentation in waterways and Lake: Large portion of SLB area has been facing erosion problem. Approximately 1.8 million rais, equivalent to 27.3% of SLB area, has an erosion rate exceeding 2 tons/rai/year. Out of this, over 0.7 millions rais has an erosion rate exceeding 15 tons/rai/year, which is considered very severe.

(4) Loss of rare and vulnerable wildlife species: Due to deterioration of various environmental conditions, several rare and vulnerable wildlife species are declining in number and appeared to be disappearing, if no appropriate conservation measures are provided. Notable are: Nieuhof's walking catfish (*Prophagorus nieuhoftii*), Pla Prom (*Thynnichthys thynnoides*) Pla Mein (*Osphronemus goramy*) Pla Toom (*Puntius bulu*) Pla Lampam (*Puntius schwanenfeldii*), as well as some aquatic animals living in the Basin such as Otter (*Lutra* spp.) and Painted Stork (*Mycteria leucocephala*), and most importantly, **Irrawaddi dolphin** (*Orcaella brevirostris*).

(5) Inappropriate and unplanned land use: At present, paddy rice farming area has reduced to approx. one million rais, a decline of 30% during the past 10 years. Approximately 191,400 rais, or 3.6% of SLB area, is facing acidic soil problem; approximately 20,400 rais, or 0.4 % of SLB area, is facing saline soil problem.

(6) Lack of integrated water management: Water demand for domestic consumption, industrial uses, irrigation uses, as well as ecological system, total approximately 1,454 MCM⁶ per year, and gradually increasing. There is thus an urgent need for establishing an effective mechanism for integrated water resource management.

⁶ MCM = Million cubic meters

(7) Freshwater over-pumping / saline intrusion: An average of 58 MCM of freshwater per year is extracted from Songkhla Lake for irrigating paddy rice farms in Ranot district, Songkhla Province, and part of Huasai district, Nakhon Si Thammarat Province. In the dry season, salinity intrudes as far as the northernmost part of Upper Songkhla Lake. In severe dry season, salinity in the Upper Songkhla Lake reaches upto 10 psu.

(8) Groundwater overuse: Safe yield of groundwater extracted from the Hat Yai Basin has been estimated at approx. 35 MCM per year, or approx. 96,000 cubic meters per day; while in Year 2004, 75,600 cubic meters per day of groundwater has been extracted from Hat Yai Basin, which is considered critical. Furthermore, data in Year 2002 suggests that area whose groundwater level is more than 8 m. has expanded to cover approximately 103 sq.km., and expanding. This will affect groundwater basin: it will induce salinity intrusion to the point that the Basin become unusable.

(9) More severe flooding: Flood regimes in SLB differ in different parts of the Basin. In upstream and midstream zone, flash flood is usually associated with heavy rain and overland flow; whereas in downstream zone, inundation is usually caused by either prolonged impounding in lowland area or overflow from waterways.

(10) Over-capacity fishing: Fishery in Songkhla Lake and Phru Kuan Kreng have recently undergone massive changes. Innovative and more efficient methods and fishing gears have been introduced. Many of these employed are destructive, leading to drastic deterioration and decline of aquatic fauna resources.

(11) Insufficient wastewater treatment facilities: There are only two central wastewater treatment plants in SLB: one in Hat Yai City Municipality, another in Songkha City Municipality. The service area, however, does not cover the total area of both municipalities. Only about 100,000 inhabitants, or 7% of the Basin population (approx. 100,000 inhabitants in 1.6 million population), are currently being serviced by the existing facilities.

(12) Wastewater pollution problems: Major wastewater pollution sources comprise (i) **domestic wastewater sources** which discharges approx. 100,000 cubic meters per day, containing approx. 17,000 kg. BOD per day, most of which is generated from large communities, especially Hat Yai and Songkhla; (ii) **industrial wastewater sources** most of which lie along main highways, having total BOD of approx. 3,000 kg. per day; (iii) **wastewater from swine farms** which has total BOD of approx. 1,200 kg. per day; and (iv) **wastewater from shrimp farms** which widely fluctuate, and has total BOD (considering only the portion which is discharged into Songkhla Lake) in the range of 13,600-19,000 kg. per day. Apart from simple organic waste (BOD), these

wastewater also discharges nutrients (Nitrogen and Phosphorus), which contribute to the Eutrophication problem.

(13) Unsanitized solid waste management: Solid waste in SLB is typically disposed of by landfill. Sanitary landfill, which is considered to be among a few appropriate methods for solid waste disposal, is found only in large municipalities, such as Hat Yai and Songkhla. In the remaining communities, solid wastes are disposed of by simple (unsanitized) landfill, or open dumping.

(14) Deterioration water quality in waterways and lake: Major wastewater sources are (i) domestic wastewater sources; (ii) Industrial wastewater sources; (iii) wastewater from swine farms; and (iv) wastewater from shrimp farms. All these contribute to the pollution problems in waterways and Songkhla Lake.

(15) Culture and local wisdom disregarded historical / archeological sites deteriorated: This is because no policy has been formulated to enhance public awareness to understand values of these resources, which in turn is due to lack of good management and probing intensive research.

(16) Lack of network of culture and historical / archeological sites and local wisdom: Networks in forms of associations, clubs, foundations occasionally coordinate in joint-missions, but hardly in a sustained and continuous basis. Such loose coordination does not lend itself to long lasting relationship, empowerment, exchange of information, knowledge and experiences; all of which are necessary in inheriting process of learning and development of culture & historical / archeological sites and local wisdom

(17) Lack of sustainable tourism promotion: SLB is a home to a great number of invaluable tourism resources, but lack sufficient analyses and syntheses to assess their potentials and carrying capacities. Some of these problems include concentration of income and benefits to selected groups, lack of coordination and cooperation between government agencies and local communities.

(18) Lack of effective management: Given centralization-style management which emphasizes individual ministerial and departmental missions, no organizations or agencies have been assigned direct responsibility for SLB development. Most decisions are still made by centralized agencies. There is thus an urgent need to establish the organization which is responsible for SLB management, and which will provide venue for full public participation.