

2.3 The Tonle Sap System

The Tonle Sap Lake in Cambodia is the largest body of freshwater in Southeast Asia and a key part of the Mekong hydrological system. Its mean surface area changes from 3,500 km² during the dry months (January to April - May), to a maximum of up to 14,500 km² during the wet season. Maximum depths of 6 to 9 metres can be measured in late September to early October and minimum of around 0.5 metres in late April. The seasonal changes in the amount of water stored in the lake are from as low as 1 - 2 cubic kilometres (km³) in the dry season, rising to 50 to 80 km³ in the flood season.

Differences between the water level in the lake and the water level in the mainstream Mekong cause the unique flow reversal in the Tonle Sap River. During the flood months, water flows up the Tonle Sap from the Mekong mainstream into the Lake. As the water level in the mainstream falls in late September, water flows out of the lake down the Tonle Sap back into the Mekong mainstream. Nowhere else in the world is there a flow reversal this large.

The lake retains about 80 percent of the sediment and nutrients carried into it by the flow reversal. This annual natural fertilisation of the floodplains in Cambodia has been a key factor in thousands of years of successful wet rice cultivation. The flooding of huge areas of forest provides an abundant food source for fish. Fishing or fishing related activities are the major economic activity for up to 80 per cent of the labour force in Cambodia and the fishery depends directly on this seasonal flooding. The seasonal storage of water in the Great Lake also acts as a huge natural regulator for water flows downstream of the Tonle Sap - Mekong confluence at Phnom Penh. This has some significant advantages in terms of the seasonal distribution of flows in the Vietnamese delta.

As stored water flows out of the lake back to the mainstream during the dry season, the low flows in the Mekong are increased and are therefore higher downstream of Phnom Penh than they would be otherwise. The benefit is more water for irrigation and a reduction in the amount of saltwater intrusion in the delta.

