



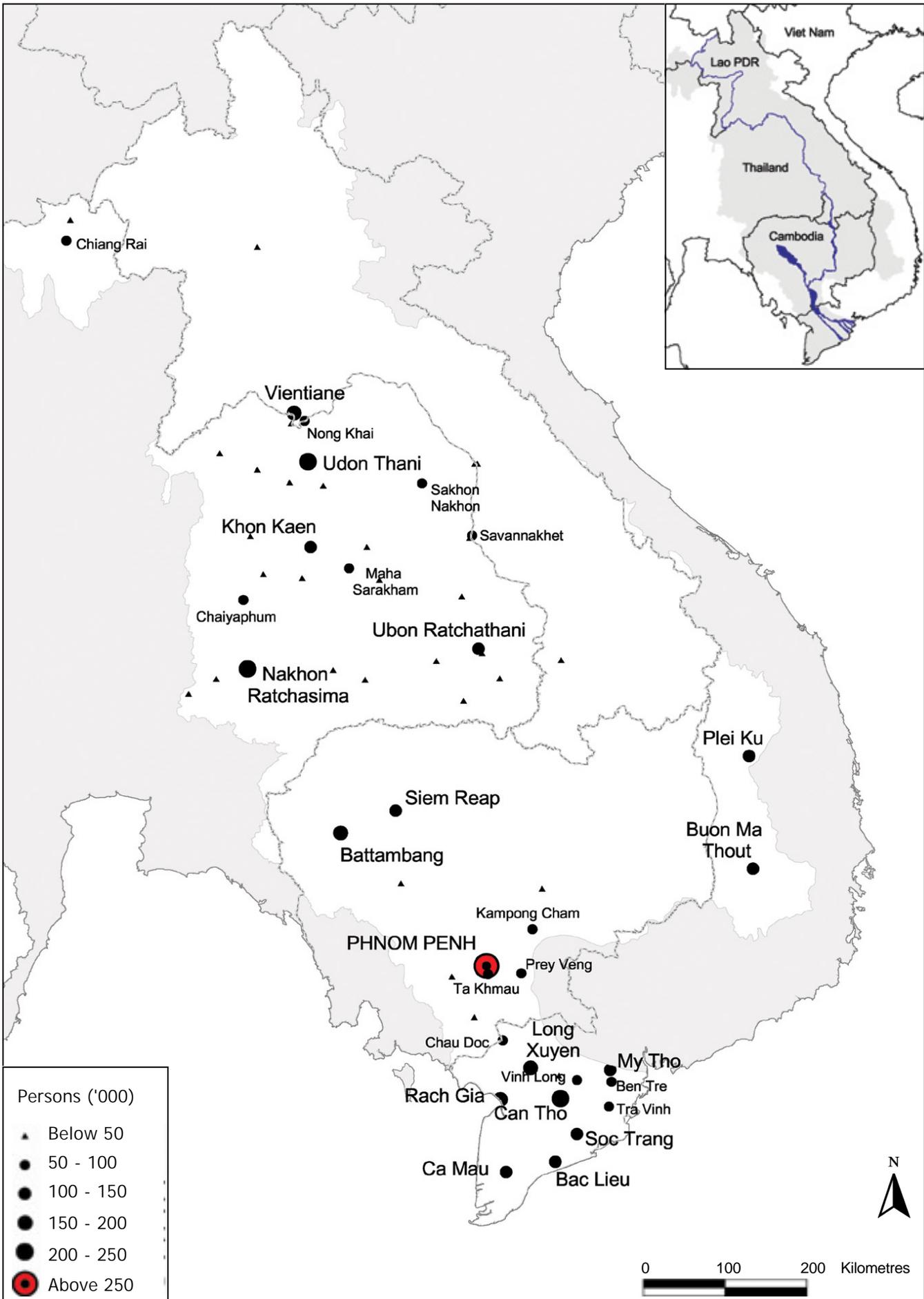
Additional Maps

Additional Maps

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Map 46: Urban Centres

Urban areas by population size



Urban areas by population size

The urban population of the basin is largely concentrated in the capitals Phnom Penh (1,134,000 persons) and Vientiane (190,000 persons), as well as major provincial centres including Can Tho and Rach Gai in Viet Nam, Udon Thani and Nakon Rachasima in Thailand, and Battambang in Cambodia. The secondary centres are growing rapidly and some are already larger than Vientiane.

City dwellers in the LMB tend to enjoy better social conditions than most rural residents. Schools and hospitals are concentrated in the larger urban centres. Public services, such as improved water supply and electricity, are also more extensive in the cities.

Incomes are higher in urban centres than in rural areas. However, many cities also contain large concentrations of poor people, many of whom are migrants from the countryside. The poor in cities have less access to land than those in rural areas, meaning that they are less able to grow food to feed themselves.

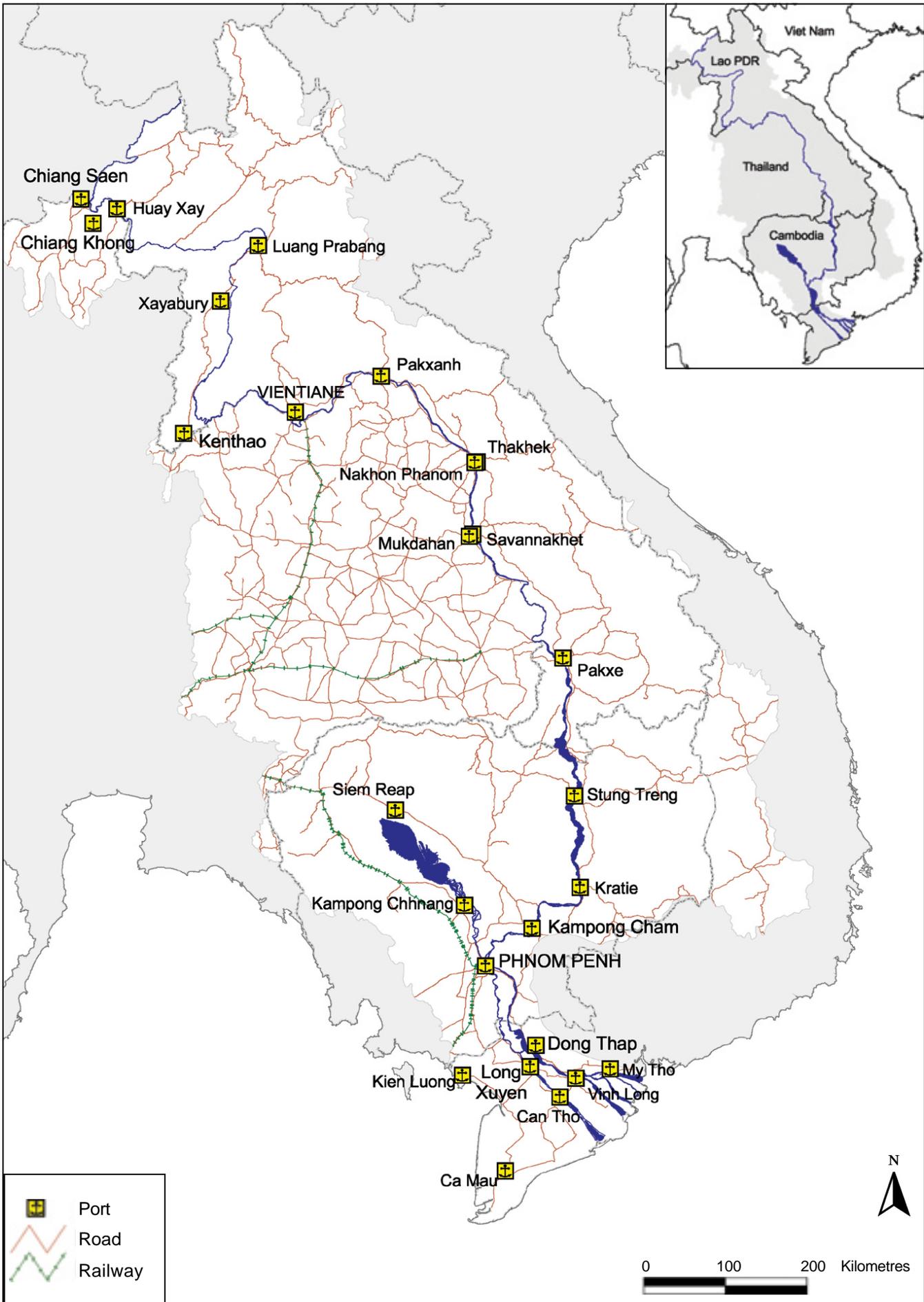
In Thailand there is a strip of comparatively more urbanized provinces running down the centre of the Korat Plateau. These provinces contain larger cities than others in the region and lie along a major highway that runs from Bangkok to Vientiane.

One phenomenon that this map fails to capture is the fact that in major centres such as Phnom Penh and Vientiane, new arrivals tend to settle on the outskirts of the city, in effect converting semi-rural areas to urban areas, although the official zoning may only change slowly. The total population of many cities may thus be underestimated.

Source: World Population Gazetteer 2002

Map 47: Transport Infrastructure

Regional transport network



Regional transport network

The presence of road, railway or waterway infrastructure is an important determinant of the accessibility or remoteness of the various communities of the LMB. As noted in other parts of the Atlas, there is often a correlation between remoteness and social disadvantage.

Northeast Thailand is the most accessible part of the basin. This region is criss-crossed by a network of all-weather roads and highways. Of particular importance is the highway running from Bangkok to Nong Khai, which is joined by bridge to Vientiane.

The Mekong Delta is also served by a number of well-maintained major roads and bridges, supplemented by a dense network of canals. Waterborne traffic in the Delta accounts for 73 percent of all transport of goods and 27 percent of all passenger transport in the region (MRC 2003).

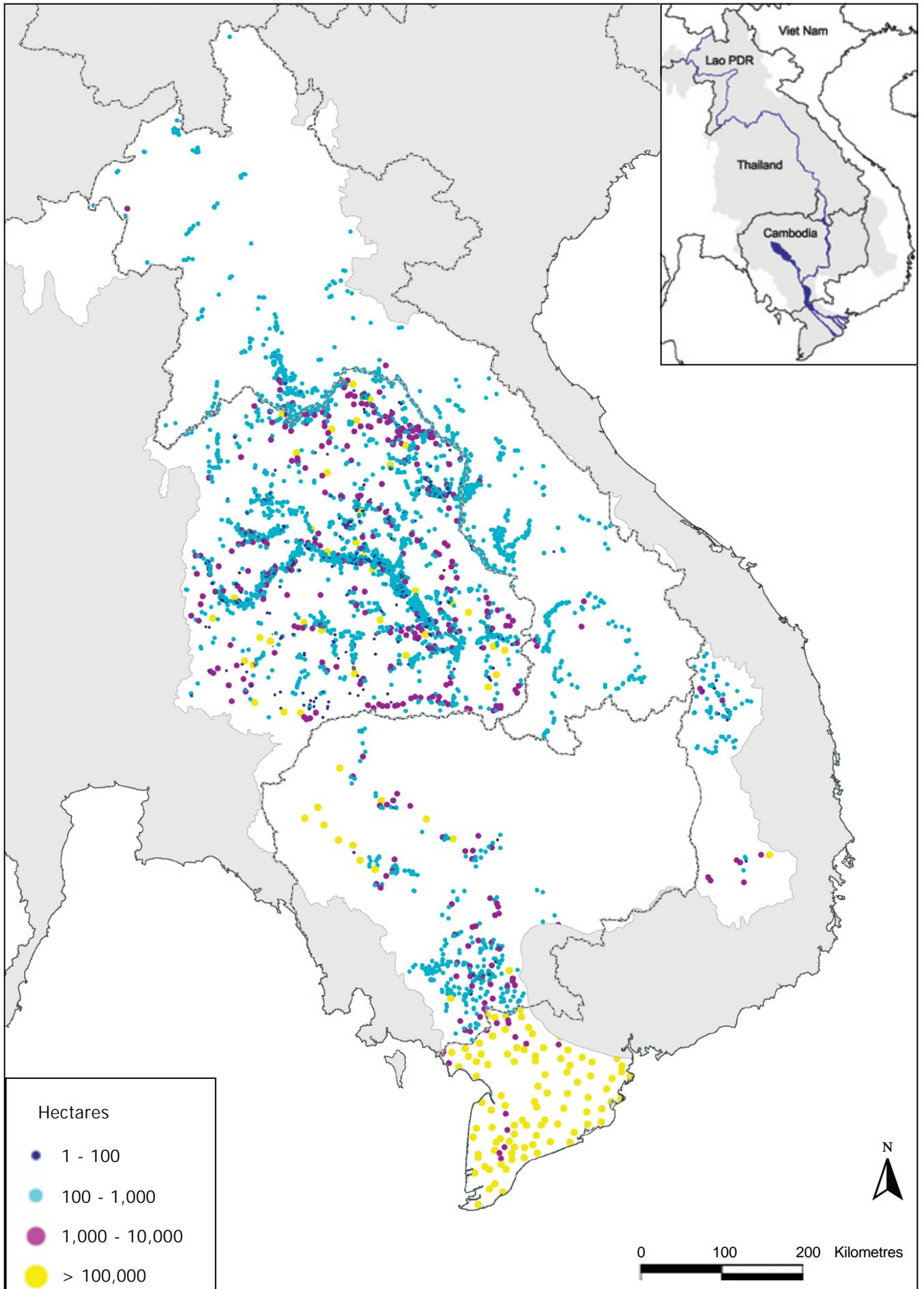
Road coverage is much sparser in Cambodia and Lao PDR. In these countries many roads are in poor condition and are often not passable during the wet season. In both countries, the governments, along with donors, are investing considerable resources into upgrading and maintenance of the road network.

Numerous inland ports serve the mainstream of the Mekong. Most stretches of the river are navigable during the high water season, which lasts for about eight months of the year. During the dry season, several areas are only navigable by smaller vessels. Between Pakxe in southern Lao PDR and Stung Treng in Cambodia, however, lie the Khone Falls, which are impassable.

Source: MRC Navigation Programme

Map 48: Irrigation

Size of irrigation areas



Size of irrigation areas

This map shows the location and size of irrigation areas in the LMB. The map is based on data compiled by MRC from national statistics. Irrigation areas less than 1 hectare in size are not shown.

Irrigation is an important driver of agricultural and economic development in the LMB. Rice is the LMB's main agricultural product, and of a total of 8.6 million ha under rice cultivation in 2000, about 3.7 million ha were irrigated. In addition to supplementing rainfall in the wet season, irrigation allows production of two or even three rice crops a year. As such, irrigation is an important determinant of agricultural productivity. Rice yields have risen rapidly over the last 10-15 years as use of irrigation has increased.

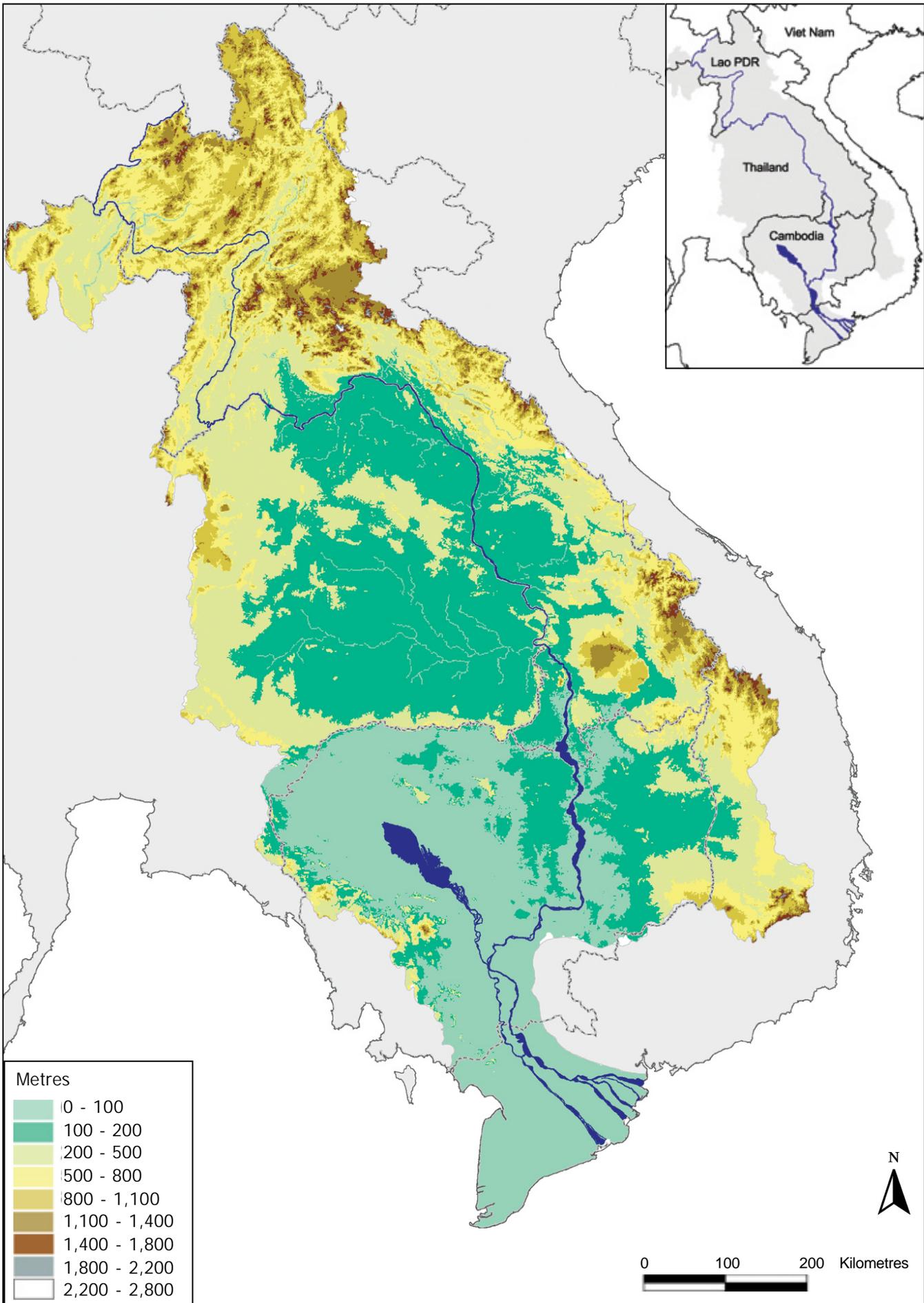
Irrigation is also used for growing fruit, vegetables, and crops such as kenaf, groundnuts, mungbeans and maize. Access to irrigation facilities can assist farmers in diversifying out of rice production and into more lucrative crops.

Types of irrigation vary widely, from simple operations lifting water manually from rivers, to large schemes operating from reservoirs. Large-scale irrigation schemes have been extensively developed in the Korat Plateau and the Vietnamese Delta. About 85 percent of the areas under dry season irrigation in the LMB in 2000 were in the Vietnamese Delta.

Source: MRC 2002

Map 49: Elevation

Elevation above sea level



Elevation above sea level

The topography of the LMB varies from high mountains in the north and east to low-lying areas in the south. The slope and elevation of the land in different parts of the basin is a major determinant of both land use and the accessibility of human settlements.

The mountains of northern Lao PDR and northern Thailand are characterized by rugged terrain, with peaks of over 2,000 m, and valleys at about 250-500 m. Much of these areas remain under forest and woodland, with agricultural development in the valleys and shifting cultivation on the slopes.

The mountains stretch south and east as the Annam-Cordillera chain, which forms the border between Lao PDR and Viet Nam. The peaks of this mountain range are over 2,500 m. Altitude gradually decreases as the range runs southwest and terminates in the Central Highlands of Viet Nam and the eastern uplands of Cambodia.

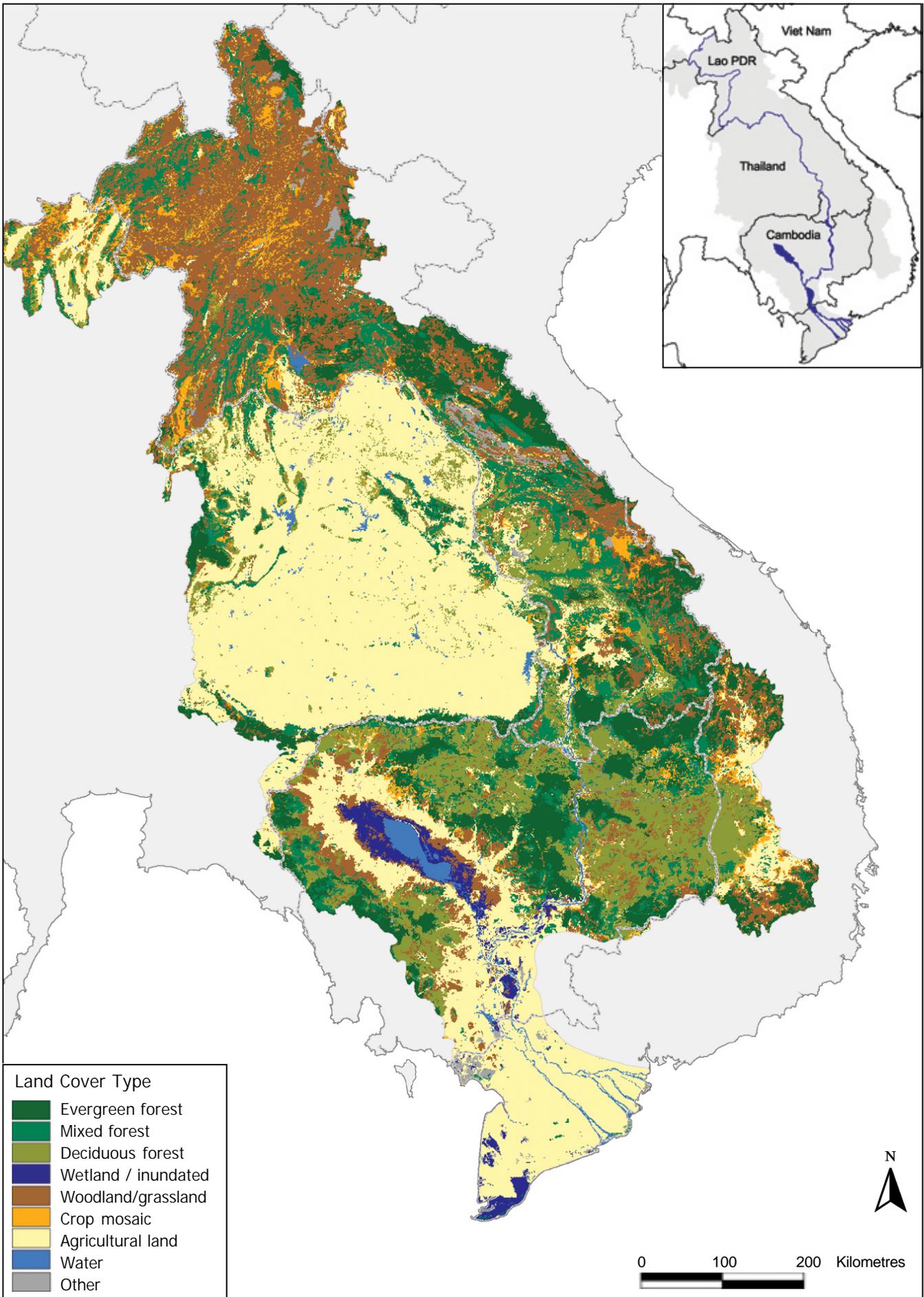
In the west, the Korat Plateau of Northeast Thailand is predominantly flat agricultural land at around 2-300 m, rimmed by mountains rising to about 1,200 m in the west and south.

The hills of northeast Cambodia (50-200 m) remain largely under forest, with limited agricultural development.

The Mekong lowlands and plain of the Tonle Sap Lake are flat rice-growing areas at elevations below 50 m, much of which is prone to inundation in the annual wet season floods. The river enters the sea through the Mekong Delta, a low-lying area (mostly below 10 m) which supports intensive rice cultivation.

Source: MRC 2001

Major land cover categories



Major land cover categories

This map shows land cover in the LMB. The data is based on interpretations of remotely sensed Landsat TM imagery from 1997 and is a simplified version of a land cover map held by the MRC.

Extensive areas of agriculture (mainly rice cultivation) are dominant on the Korat Plateau, in the Vietnamese and Cambodian delta regions, and around Tonle Sap Lake. An intricate mosaic of agricultural cultivation and forest (including agro-forestry and shifting cultivation practices) is typical in upland areas such as northern Lao PDR.

More than a third of the LMB remained under forest cover in 1997. Much of this area was low-density deciduous forest in the north and east of the Cambodian plain. The main areas of tropical forest are in the more mountainous areas of Cambodia and southern and eastern Lao PDR. Northern Lao PDR is characterized by mixed forest with large areas of woodland, often associated with shifting cultivation.

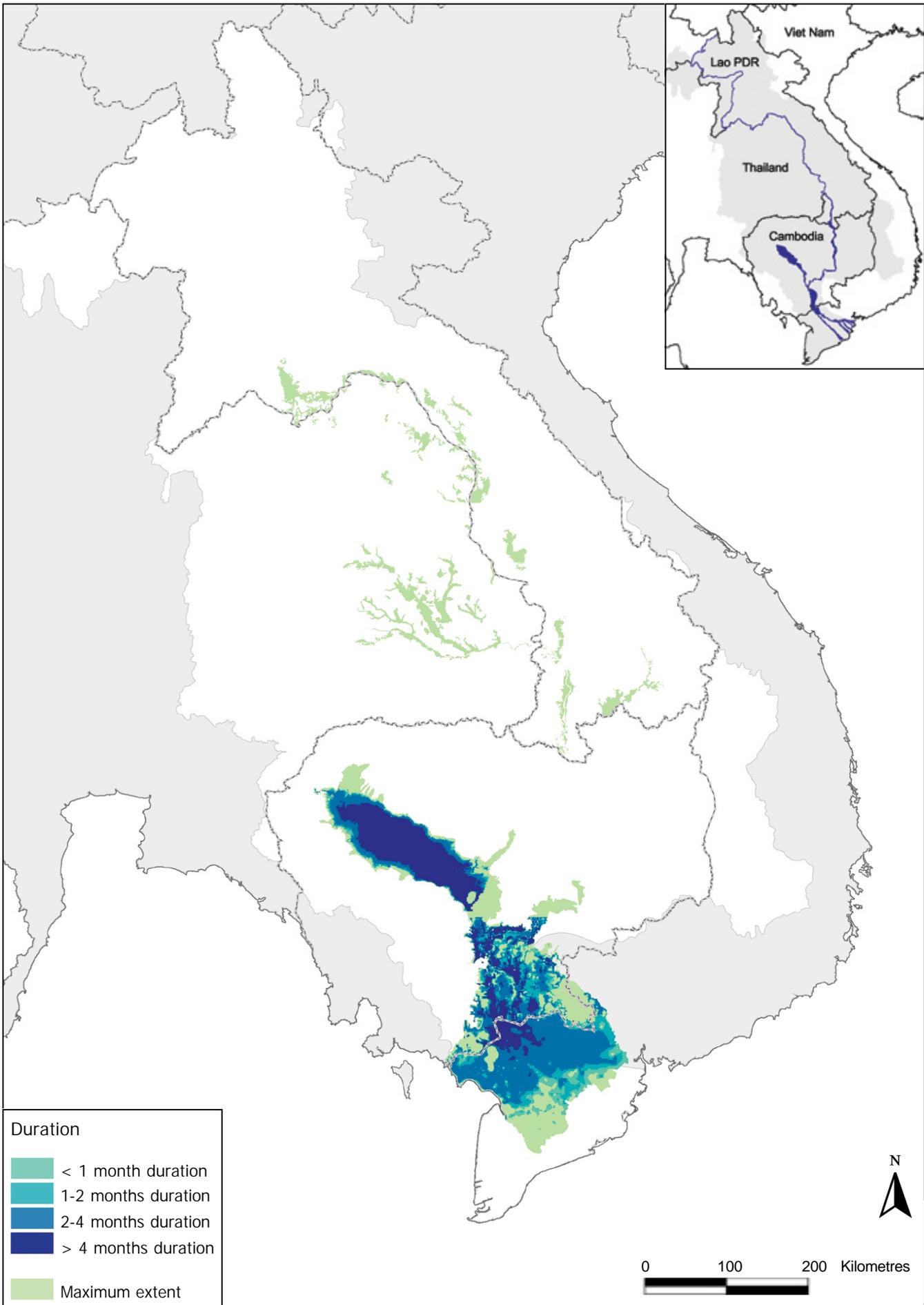
Extensive wetlands and flooded forests are found around the Great Lake. Most of the mangroves of the Delta have been cleared, although some replanting of mangroves is under way.

The forests of the LMB - including flooded forests and mangroves, which are important habitats for fish - are under increasing pressure. Clearing continues despite government bans, and it is likely that the area of forest has decreased substantially since this study was undertaken in 1997.

Source: MRC 2001

Map 51: Flood Prone Areas

Duration and extent of major floods



Duration and extent of major floods

Flooding is a part of the natural cycle of the Mekong River. The annual monsoon rains flow down the river with such force that the Mekong pushes the Tonle Sap River backwards to expand the Great Lake to approximately four times its dry season size. Further downstream, the Mekong spills over its banks in the Delta, flooding large areas for several months at a time. In the northern parts of the LMB, flash floods that rise and fall quickly are common on the Mekong mainstream and its tributaries. In the lowlands around the Great Lake and the Delta, large areas are inundated for between one and four months.

Flooding is an important part of the ecology of the region - flooded forests and seasonal wetlands are important habitats for fish and support much of the region's biodiversity. Flood waters are used to irrigate the rice crop, and also replenish soil fertility. However, flooding can also cause great damage to agriculture, infrastructure and human life. In 2000, exceptionally serious floods caused 800 deaths and \$400 million worth of damage.

The map shows flood prone areas, based on the maximum extent of inundation during a major flood, (a 1 in 20 year event) as well as the estimated duration of inundation during a medium intensity flood (a 1 in 5 year event.) The flood extent data was derived by the MRC from Radarsat images at three dates in 2000 and from field surveys. The duration estimates were developed using an hydraulic model simulation of the flooding that occurred in 2001, and were verified with Radarsat imagery and field surveys. Data were not collected for eastern Cambodia, but it is known that flooding occurs in this area.

The MRC website at www.mrcmekong.org provides 3-day flood forecasts during the wet season and other data on flood depth and duration.

Source: MRC 2002