

## DRAINAGE

The term 'drainage' refers to the river systems. In Pakistan there are three river systems:

- i) The Indus River System;
- ii) The inland drainage system;
- iii) The drainage of south Balochistan.

### i) The Indus River System

The Indus and its tributaries constitute the Indus River System. The Indus is a mighty river about 2900 km long with a catchment area of 970,000 sq km, of which 26 per cent (264,000 sq km) is on hilly land. From its source in Mansorawar Lake in Tibet to Sazin in Gilgit-Baltistan, the Indus flows from east to west in a valley several kilometres deep between the Karakorams and the Great Himalayas. At Sazin, the river takes a sharp turn south where its most tortuous and difficult journey begins as it cuts deep gorges into the mountains. At Kalabagh it enters the plains where its channel, which was only 0.4 km wide, spreads out to an average width of 16 km. The tributaries combine as one at Panjnad and flow down to Mithankot to join the Indus in its course down to the Arabian Sea through a braided channel in Punjab and a meandering channel in Sindh.

The course of the Indus River has not remained the same throughout history. Although there is no clear evidence of changes taking place in its route through Punjab, it is likely that it changed course several times. In Sindh, old channels and meander beds, oxbow lakes, levees, and ancient deltas prove that the river changed its course at least four times, mainly between Jacobabad and Nabisar, south of Umarkot.

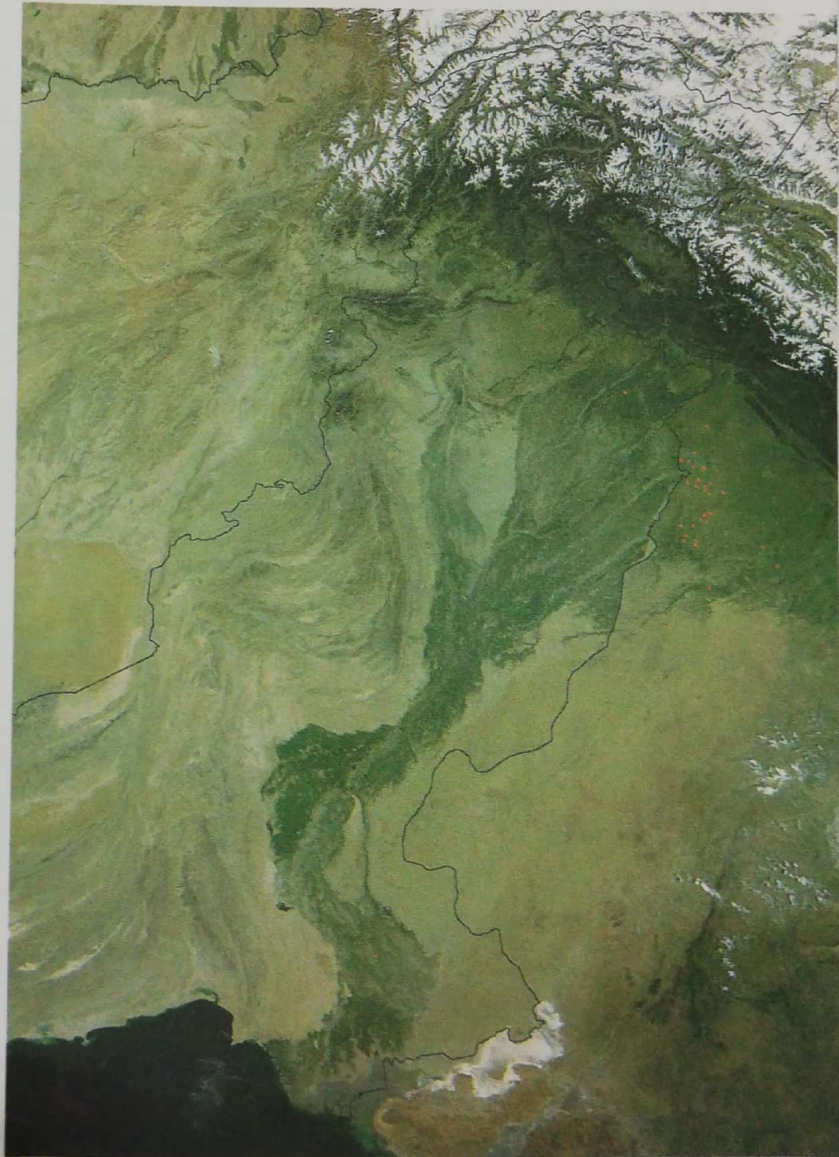


Figure 3.12: The Indus and its tributaries—a view from space

## The tributaries of the Indus

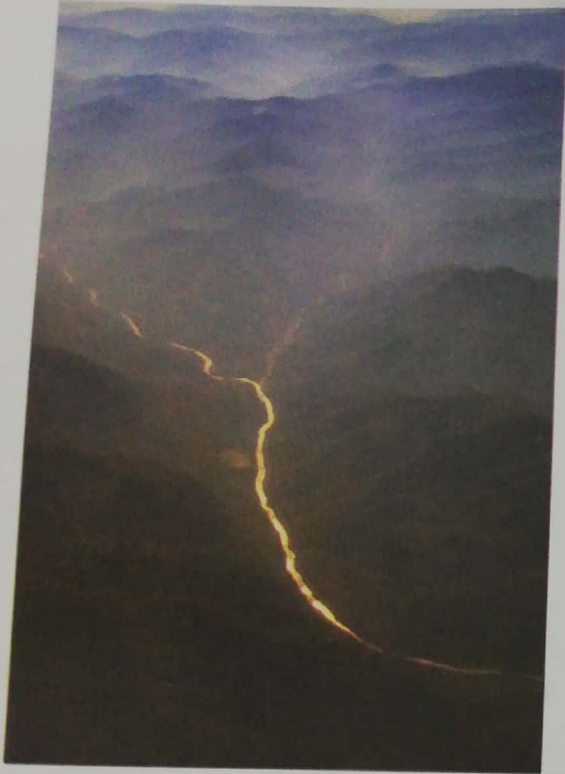


Figure 3.13: Tributaries of the Indus in the Karakoram

The Indus is joined by a number of tributaries from the west and east. In general, the western tributaries are small and carry a lower volume of water; their discharge ranges from 0.3 to 3 million cubic feet per second and the catchment areas vary from 1300 to 10,000 sq km. The important western tributaries are the Gilgit, Kabul, Kurram, and Gomal; the latter three are utilized for irrigation.

The eastern tributaries, Jhelum, Chenab, Ravi, Beas, and Sutlej, are bigger and carry large volumes of water and an enormous quantity of sediment. The Beas joins the Sutlej before entering Pakistan, while the other rivers join at Panjnad from where they flow as one to join the Indus at Mithankot. The Jhelum, Chenab, Ravi, and Sutlej have changed their courses in the past and this shifting has been an important process in the building of the Indus Plains.

### ii) Inland drainage system

The inland drainage system covers the northern part of south-western Balochistan. Its characteristic feature is that the rivers do not drain into the sea; instead, they flow into lakes. The inland drainage area of Pakistan lies between the Chagai and Ras Koh Mountains in the north and the Siahan Mountains in the south. It is a dry area and the rivers do not carry large quantities of water; some of them start flowing only after rainfall takes place, which is not frequent; some disappear into the sands after some distance, while some succeed in reaching playa lakes called *Hamuns*.

Playa lakes have salt water; they do not have much depth and are marshy. Hamun-e-Lora is located between the Chagai and Ras Koh ranges, and Hamun-e-Mashkel and Hamun-e-Murgho are between the Ras Koh and Siahan ranges.

### iii) The drainage of south Balochistan

The rivers of south Balochistan, i.e. Hub, Porali, Hingol, Dasht and others, have independent river systems; they originate from the dry hills and mountains of southern Balochistan and flow into the Arabian Sea. These are seasonal rivers and their joining streams start flowing when rainfall takes place.

Figure 3.14: A view of the Hub Dam



The Hub River flows between the Kirthar and Pub ranges; the Hub Dam has been built across the river to supply water to Karachi and the adjoining areas of Balochistan. The Porali River, flowing between the Pub and Hala ranges, drains the Lasbela Plain which has turned into a good agricultural area. The Hingol River begins from the Central Brahui Range and there is a proposal to build a dam on the Hingol.

The Kech, flowing east to west, and Nihing, from west to east, meet about 35 miles west of Turbat and flow southward into the Arabian Sea. The Mirani Dam is being built on the Dasht at a short distance south of the Nihing-Dasht confluence.