

the long run about 10 percent more water be applied in irrigation and drained off than the amount needed for consumptive use by crops.

Although there are no reliable estimates of net river losses (i.e. the difference between evaporation and seepage losses from the rivers and return underground drainage above the Ghulam Mohammad Barrage), we have assumed in Table 1.2 that these are 15 million acre feet per year (11.5 on Indus, Jhelum, and Chenab, and 3.5 on Ravi, Beas, and Sutlej), and that the outflow to the sea is close to 70 million acre feet. Both figures could be in considerable error; their sum, about 85 million acre feet, is, however, a relatively firm figure. The net river losses could lie between 15 and 25 million acre feet and the outflow to the sea between 60 and 70 million acre feet.

Because of conveyance and application losses, a major fraction of the water diverted from the rivers into canals never reaches the root zone of the crops. The over-all river-to-crop efficiency has been estimated to lie between 45 and 55 percent for West Pakistan canals. This means that only 34-41 million acre feet is available for evapotranspiration and soil drainage in the farmers' fields. During recent years, the sown area irrigated by canal water has been close to 23 million acres, and consequently an average of between 1.5 and 1.8 acre feet of canal water per acre has been available for use by crops. With this small amount of water, extensive double cropping is impossible under the conditions of high evapotranspiration in the Indus Plain, and even with a single planting, most fields do not receive enough water for the crops, let alone for salinity control. Part of the 34 to 41 million acre feet lost from the canals and water courses leaks into the ground water reservoir, and the remainder is lost by non-beneficial evapotranspiration.

In the Former Punjab most of the canal leakage could be recovered and used for irrigation if a system of wells were installed. In Former Sind, the major part of the underground water is too salty to be used economically, even after mixing with water that has leaked into the underground aquifer from the canals and from fields.

## The People

### Size of the Present Population

No one knows for certain, but it is probably true that the population of Pakistan is now the fifth largest in the world, being exceeded only by China, India, the Union of Soviet Socialist Republics, and the United States of America. Until very recently, both Japan and Indonesia were larger. In the