

In using the foregoing annual rates of application of irrigation for consumptive use and leaching to estimate approximately the area under irrigation, it is not implied that these rates are appropriate for obtaining maximum agricultural production. The budget shows the over-all water supply and its distribution in the major regions from surface diversion and from tubewells. The precise rates of water application to be used in each project area and canal command depend upon optimal cropping patterns and local leaching requirements and upon other economic and agronomic considerations. We have attempted to illuminate some of these factors in other chapters of our report. An accurate delineation of optimal distribution of irrigation water for future development will require collection and analysis of the following types of data: (i) land classification maps; (ii) improved and more detailed topographic maps to design the required conveyance channels for gravity service to commanded land; and (iii) more accurate and detailed information relating to cross sections and delivery capacity of existing canals at significant points throughout the distribution system.

Two final remarks are pertinent:

(i) For the reclamation of deteriorated lands, leaching rates considerably in excess of 3.5 feet per year will be attainable in each project area since the tubewell pumping capacity will be at least twice the average pumping rate required for steady-state irrigation.

(ii) In a subsequent section of this chapter, we shall discuss the calculations made (and used in the water budget) to determine the proportion of tubewell water that must be exported by vertical and horizontal drainage to prevent an excessive build-up of salt in the ground water with intensive consumptive use in the future.

#### Hydrological Factors Relating to the Selection of the Optimal Size of Project Areas

Our plan for increasing agricultural productivity in West Pakistan is based upon concentrating human and financial resources in intensive development of a series of large project areas. We believe that as soon as possible the projects should be gotten under way at a rate of one per year. For economic and sound reasons, it may be necessary to space them at wider time intervals, at least in the early stages of carrying out the plan. In each of the project areas there will be a coordinated system of tubewells. In a few regions tubewell construction is not practicable, and it will be necessary to use surface drains to control water-logging and salinity.

In this section we shall examine from the viewpoint of hydrology the advantages and limitations of project areas of different size, and in particular a size of about