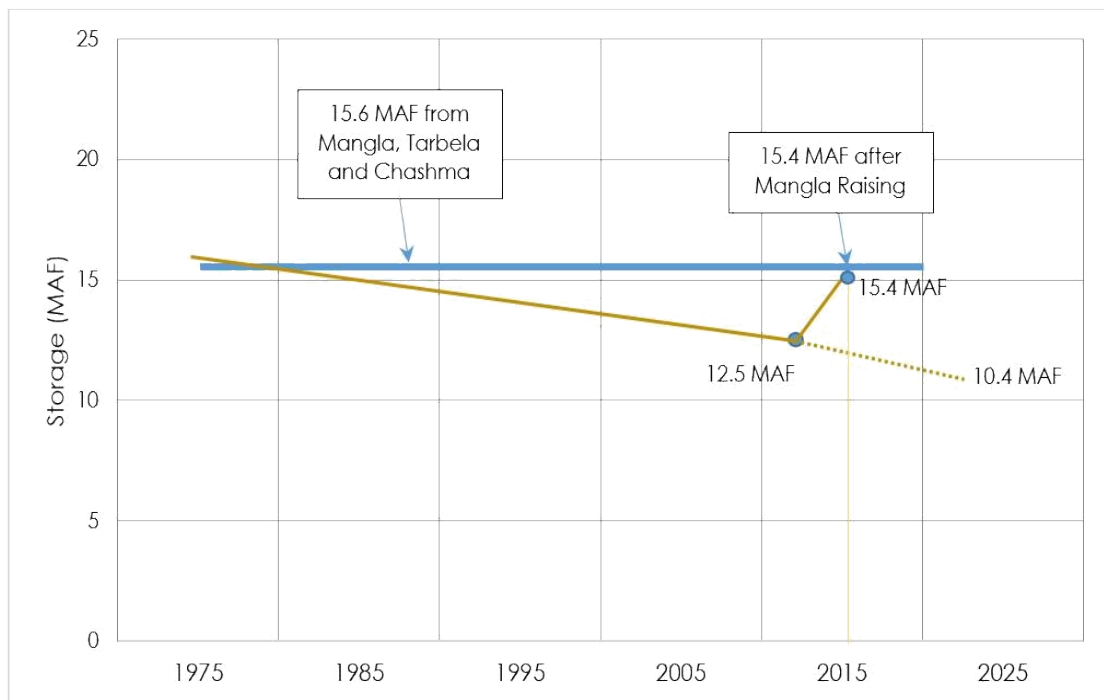


## Irrigated Agriculture Significance of Pakistan

Water is essential for provisions of all forms of life on earth and as such the most critical and precious input for the agriculture. Irrigated agriculture is the lifeline of

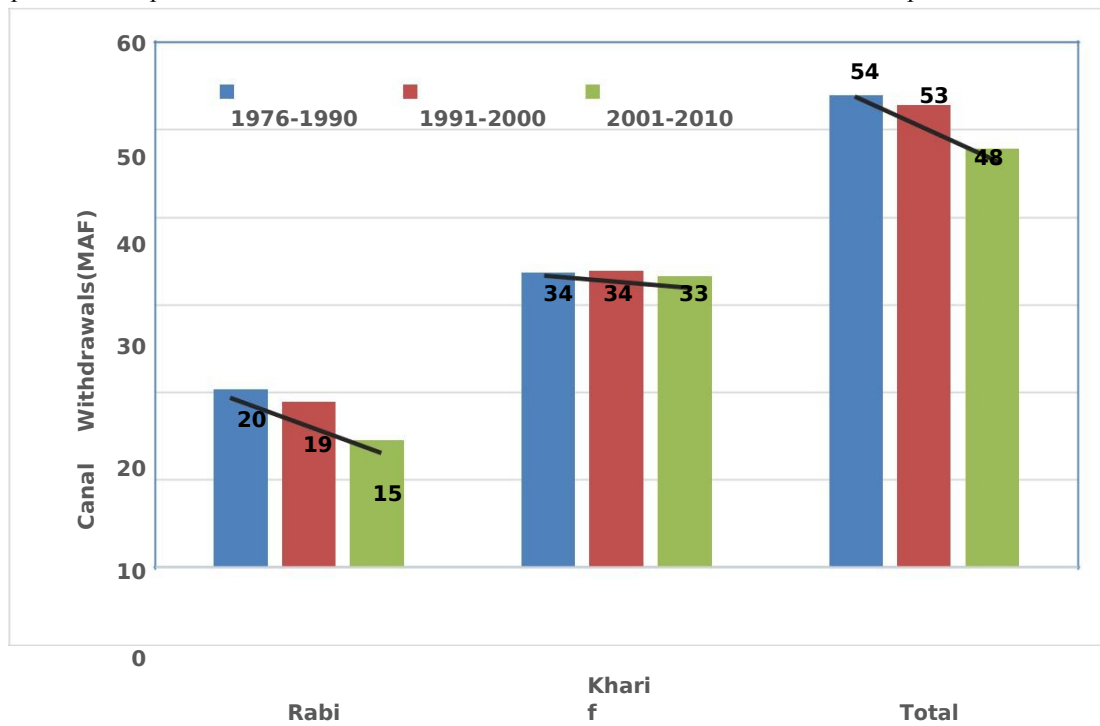
Pakistan's economy as about 80 percent of the cropped area is irrigated and 90 percent of the agricultural output comes from irrigated lands.

Pakistan has the largest single gravity flow irrigation system in the world. The Indus Basin Water System (IBWS) comprises three major reservoirs, 16 barrages, two headworks, two syphons across major rivers, 12 inter river link canals, 44 canal commands, and more than 140,000 watercourses. The surface water supplies are almost stagnant since Tarbela commissioning in 1976 as there is no major water resources development taken place afterwards. The storage capacity is rather continuously declining due to silting up of reservoirs. The lost capacity water is, however, somewhat recovered after Mangla raising in 2013 (**Figure-1**).

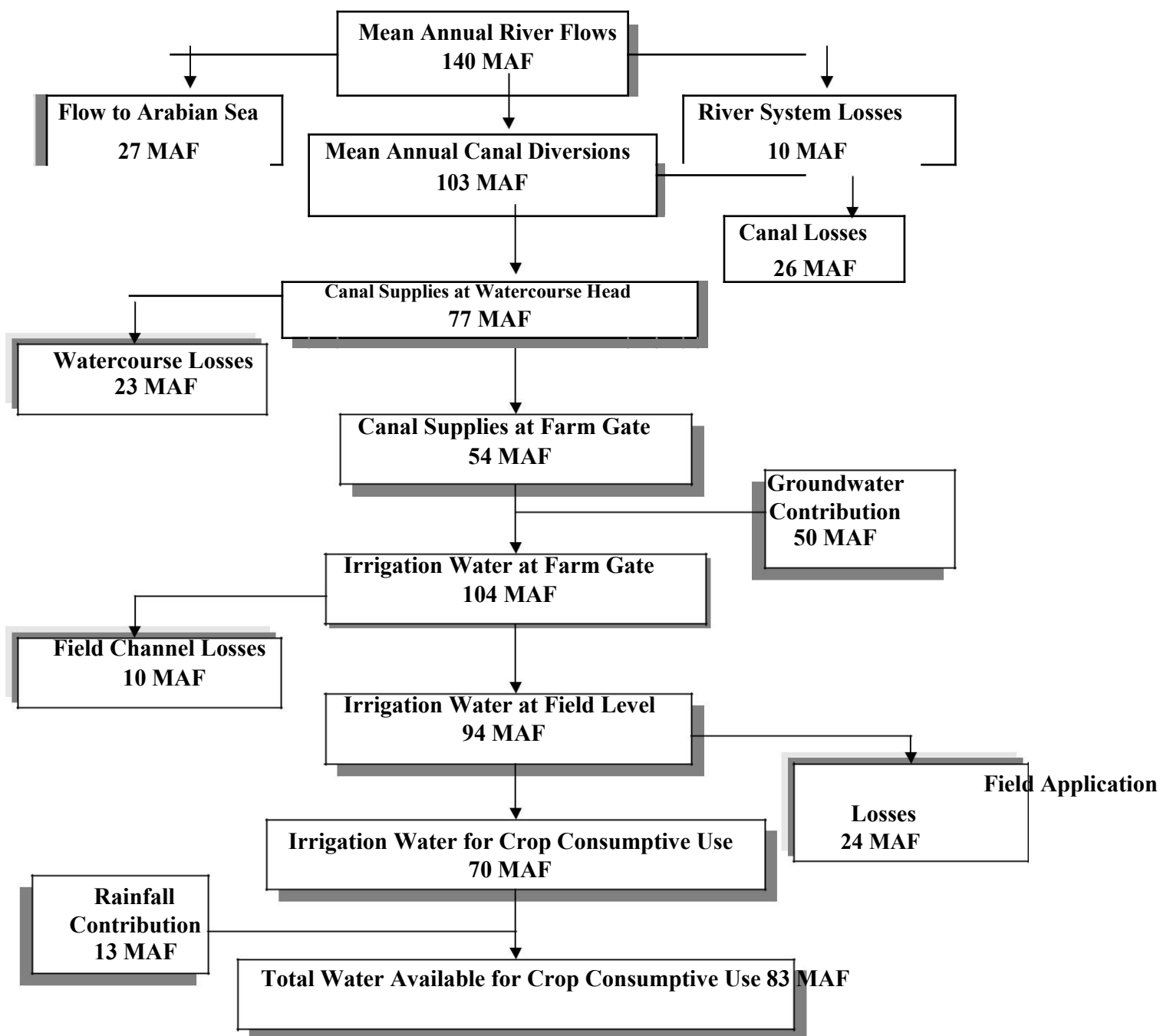


**Figure-1: Sedimentation and Storage Capacity**  
(Source: Pakistan Water Economy Running Dry, the World Bank Publication)

The total annual canal diversion for the Punjab has significantly declined to about 48 MAF in the last decade against 54 MAF of post Tarbela period. The historic canal water withdrawals of Rabi and Kharif of the province are shown in **Figure-2**.



**Figure-2:** Average Canal Diversions in the Punjab



**Figure 3. Water Budget of the Indus Basin Irrigation System, Pakistan, based on 50% Probability of both Annual River Flows and Annual Canal Diversions**

The main source of irrigation is from vast canal systems but available surface supplies are inadequate to meet the crop water requirements under present cropping intensity. The total surface water allocation for the Punjab as per Provincial Water Accord of 1991 is 55.54 MAF. There are, however, huge water losses in the distribution network comprising of main/branch canals, distributaries, minors, and tertiary conveyance systems of about 59,000 watercourses. In addition, a substantial amount of irrigation water (21 MAF) is also lost during its application due to uneven fields and poor farm designs. This deficiency is, however, compensated to a great extent by groundwater abstractions of almost 33 MAF, which is in fact over exploitation of this vital resource as recharge to fresh groundwater areas is only 23 MAF. In nutshell, about 47 MAF water remains available for use against 65 MAF of actual crop water requirements. As such, there exists a gap of nearly 18 MAF to meet irrigation requirements for present cropping intensity exceeding 130 percent.

The Punjab water trail is shown in **Figure-4**.

