

## **INTRODUCTION TO CAPACITY SHARING**

Capacity Sharing is an institutional arrangement and property rights structure for allocating water among multiple users of water resource systems which include storage reservoirs. It provides each user, or group of users, of reservoir water with perpetual or long-term rights to a percentage of reservoir inflows and a percentage of total reservoir capacity or space in which to store those inflows, and from which to control releases.

Capacity Sharing is as if each user (individual or group) own their own small reservoir on their own small stream. The concept also includes user rights to percentage shares of unregulated tributary flows downstream of the reservoir(s). Users' reservoir releases, perhaps to supplement their shares of unregulated downstream tributary flows, can be managed through time according to their particular supply reliability preferences. Under Capacity Sharing, each user's demand-side and supply-side decisions are made by each individual decision-making entity, and the probabilities of (not-traded) water supply can be calculated directly from historical or synthesised streamflow data alone.

Capacity Sharing is designed to foster the integration or coordination of supply-side and demand-side management decisions. Supply-side decisions include when and how much water to release from existing storages, as well as the timing and extent of their expansion. Demand-side decisions include those which affect the timing and quantities of water demands. For example, for irrigation, such decisions include which crops to grow, in what quantities and when to plant, as well as when and how much water and other inputs to apply to them.

The integration of supply-side and demand-side irrigation decisions - both operational and planning - was a feature of early water resources computer modelling work for the case of a single decision maker controlling both water supply and farm management decisions, that is, for situations like a big farm dam and irrigation system. Dr Norman Dudley and Professor Warren Musgrave developed the concept of Capacity Sharing and extended it to the supply-side and demand-side integration in multiple user situations.