

IMPROVED EQUITY IN WATER ALLOCATION SYSTEMS

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Introduction

The term “equity” in the context of natural resource management refers to a sense of fairness in the allocation of the resource to users. Fairness in the meaning that the spectrum of resource users are treated in the same manner. To achieve equity in natural resource systems like water, where there is a changing community perception over time as to how the resource should be allocated, the use of principles of justice to supplement law may be appropriate.

In the case of water, the resource users are the complete set of water users. The set includes,

- The Environment
 - Riparian Zone
 - Fish Habitat
 - Instream Requirements
 - Wet Lands
 - Acquiifer Recharge
 - End of Stream Needs
- Stock and Domestic
- Urban Water Supplies
- Riparian Users
- Industrial Users
- High Security Irrigators
- General Security Irrigators
- Others

Improved equity in water allocation systems requires a management framework that provides equitable resource access and resource use for the complete set of water resource users.

The Limitations of Current Water Allocation Systems

1. Discretionary Power by Government

- Government agency nominated allocation percentages on an annual basis.
- Limited tenure water licences renewable at the discretion of the authorities.
- Water reform processes which amount to the diminution of access rights proceeding without compensation to the loser of the access facility.

2. Limited Licence Holder Management of Water Access

- Nominated annual allocation systems managed by Government agency.
- "Use it or lose it" resource management. There has historically been little incentive or reward for water users to manage their allocations in a conservative manner.
- Funding of the management system. Although irrigators fund significant portions of the water resource management agencies through the price of water accessed for use, they have little or no control over the expenditure side of the resource management equation.

3. Inadequate Legislation

- An incomplete licence system. From a total resource management point of view, the current licence system is incomplete. Some water users require licences and are subject to varied levels of access yet others are not.
- Licences to access the resource have attained significant monetary value yet there is no clear provision for compensation when Government removes rights.
- The legislation does not provide the framework for a complete resource management system.
- There is no clearly defined property right for access to the resource.

4. Resource Management Issues

- The perceived environmental gains, which are intended to flow from the water reform process underway, will seemingly benefit the whole community, not just the holders of the diminished water use rights, which are providing water for the environmental use.
- Goal convergence. Conservative resource management will be encouraged when the goals of the resource manager and the resource user converge.

The Role of Capacity Sharing in Future Allocation Systems

1. What is 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 of reservoir water with 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 own their own small reservoir on their on small stream. The concept also includes user rights to percentage shares of unregulated tributary flows down stream of the reservoir. Reservoir releases can be managed through time according to particular supply reliability preferences.

This concept can be extended to include the effective management of catchments and aquifers on a priority and time basis as well as on percentage shares. Capacity sharing provides a management framework to manage water resource systems.

Capacity Sharing is a simple, flexible and transparent resource management system, which encourages responsible resource use and provides secure, equitable resource access.



Capacity Sharing Diagram for a Reservoir Stream

1. COAG Principles for Water Reform

The Council of Australian Governments (COAG) water reform principles for developing and implementing systems of water allocations and entitlements established that;

- Water entitlements be allocated and managed with comprehensive planning systems based on basin wide resource assessment.
- Effective operation of water markets and the trading of property rights in water are facilitated.
- Water entitlements be clearly specified in terms of tenure, allocated share of the resource including reliability, agreed standards of associated commercial services, transfer rules, and resource access and use rules.
- Rules on the holding and trading of environmental flow entitlements are resolved.
- Catchment by catchment approaches are developed for the trading of water entitlements.
- Community wide catchment planning processes for the future allocation and management of water entitlements be implemented.
- Governments establish administrative and regulatory arrangements to support the water reform framework.

Capacity Sharing provides the strategic framework necessary to implement the COAG principles.

2. Key Concepts of Capacity Sharing

- The assignment of access rights to all resource users on the basis of percentage shares of the resource available.
- Clear definition of water access property rights and water use rights. Both rights can be traded.
- Water entitlements are clearly specified in terms of tenure and share of the resource. Allows for transfer rules and, access and use rules.
- The reliability of water supply can be managed by individual shareholders in response to their individual attitude to risk.
- The environment is allocated a share of the resource and the custodians of the environmental water right have the responsibility to manage that share.

Benefits and Efficiency Gains From Adopting Capacity Sharing as Water Resource Allocation System

1. Security of access.
 - Assignment of access rights to all users on the basis of percentage shares of the catchment's ability to supply. The existing system operates on the basis of an incomplete set of access rights.
 - Establishes equal player status between all water users in the system.
 - Connection of water access rights and water sharing.
 - A basis for compensation to water users who have access rights removed.
2. Encourages responsible water management.
 - Once capacity shares are established, water users can manage water access.
 - Reduces the political influence on water management.
 - Reduces the "use it or lose it" tendency.
 - Wastage is at shareholder's cost
 - The water resource system management is transparent
3. Rewards efficient resource use.
 - Removes the inflexibility of an annual allocation announcement to water users.
 - Removes the water year concept.
 - Ensures users who manage water efficiently, benefit from those savings.
4. Provides a firm basis for trading water rights.
 - Clearly defines water access rights and water use rights.
 - Allows all water users to participate in the market.
 - Caters for permanent and temporary transfers.
 - Allows the hierarchy of water use between water user types to be sorted by the market, over time.
5. Allows forward business planning.
 - The water user on an individual basis manages some of the uncertainty of future allocations.
 - Removes the reliance on valley announced allocations.
 - A system on which sound planning can be based.

6. Allows water users to manage individual reliability and risk profiles.
 - Individual users can manage water use to reflect their own attitude to risk.
 - Allows individual interpretation of the probability of flow events.

Government Views on Changing Water Allocation Systems

1. NSW Department of Land and Water Conservation

NSW Department of Land and Water Conservation proposes a Continuous Accounting trial for the Namoi and Gwydir Valleys for the 1998/1999 year. The proposed scheme has the following elements;

- A valley limit on water made available to irrigators in total during the accounting period.

Comment. The concept of carry over seems to be maintained, so that if “carry over” was 30% of entitlement, the total of allocation increments for the year could not exceed 70%. As carry over is accounted on an individual licence holder basis, then those water users without carry over would be disadvantaged, as their allocation could not exceed 70% even when headwater storage levels allowed.

- Individual limits will be set at 150% entitlement for water stored.

Comment. The full capacity of storage is not shared so that the ability of all water users to manage their share of the resource is restrained. The useable capacity of the storage to all water users is artificially lowered.

- Carry over discounting. There will be no discounting of water in individual accounts for evaporation.
- Forward draw. There will be no facility for forward draw on future accounting periods.
- Losses. Operation and transmission losses will not be apportioned to individual accounts.
- Essential Supplies. High security licences, town, stock and domestic supplies and effluent stream replenishments will be managed by the Department of Land and Water Conservation to a 100 % limit for a time period.

Comment. Conceivably, there could be reserves for 2 years contingency held in storages. This could reduce storage capacity available to hold water reserves for other water users.

- Allocation Process. Dam inflows will be prioritised to essential requirements, storage evaporation, environmental contingency allowances then general security allocations up to a 100% combination of carry over and announced allocation.

Comment. Similarly, this could lead to a reduced storage capacity for general security allocations.

- **Incremental Allocations Increases.** Incremental increases to general security allocations will be made only after essential supplies and other allowances are topped up to 2 years supply, and then only to the valley limit. Any stored water beyond this limit will be a reserve for future years.
- **Demand Management.** Diminished storage reserves held by water users may be released in pulses to minimise losses.
- **Water Year.** The accounting period may change from October to September.
- **Spill and Fill.** Water user accounts will be allocated any share of inflow events that cause a storage spill in accordance with the priority assigned to regular storage inflows.
- **Transfers.** Temporary transfer will be permitted on allocated water up to 150% of entitlement.

2. Queensland Department of Natural Resources

Queensland Department of Natural Resources have developed a Draft Announced Allocation Policy, and have a Sector Capacity Share trial in progress in the Boondooma Dam system and propose implementation of Individual Capacity Sharing in the St George project for the 1998/99 Water Year.

The Capacity Sharing model permits each water user group access to a percentage share of reservoir capacity and inflows based on vertical slices of the storage. The policy does not extend a property right or an ownership share of the water storage and is not intended as a replacement for the nominal allocation system.

In the Sector Capacity Share policy storage shares are allocated to water use sectors, low security irrigation, high security irrigation, industrial, urban and environment, with the usage, losses and inflows for each sector being managed separately.

The volume of water in each share will determine the announced allocation for their share. Facility is available for carry over, advanced draw and temporary transfer. Each section will have a common level of reliability.

Accounting procedures will track releases from storage to each sector daily, balance each sector account regularly, conduct overall storage balances and each sector's storage balances. Losses will be deducted from each account on a projected basis monthly.

The Individual Capacity Sharing trial for the St George Irrigation Project will incorporate a resource cap and the nominal allocation concept will remain unchanged. Carry over and forward draws will not be available

Projected operating losses will be deducted from accounts monthly. Temporary transfers will be available in the form of trading between individual capacity shares.

Conclusion

Existing water resource allocation systems are not aligned with the concept that the complete set of water users in a catchment are shareholders in the resource.

Capacity sharing provides a management system, which allows shareholders to manage the use of their share, and to benefit from any gains delivered by that management.

It encourages common goals among resource users, which has the potential to deliver conservative resource management.

The process in establishing Capacity Sharing is to;

1. Identify the resource to be shared.
2. Identify those with resource access.
3. Allocate proportional shares of the available resource access with property rights.
4. Establish parameters for sharing.
5. Establish an independent and auditable resource accountant.
6. Establish parameters for trading resource access rights and resource use volumes.
7. Allow the system to operate with an appropriate review mechanism.

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