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The World Conservation Union

Information Paper

IUCN Contribution to Water Management and Economic Incentives in Drought-Prone Regions

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Executive Summary

The recent drought in Spain has served to focus attention on the scarcity and allocation issues inherent to water in drought-prone regions of the Mediterranean. Historically Spanish water management focussed principally on increasing supply to meet demand, and it was only with the change of government in 2004 that the incoming government modified multi-billion euro investment plans for dams, water diversions and transfers to meet water demands in the arid south of the country, in favour of other measures including more decentralised water management, water recycling and desalinisation plants. Currently, around 80% of water in Spain is used for irrigation so it is here that the management challenge is greatest.

As embodied in the Water Framework Directive (WFD) the economic pricing of limited water resources and allocation to highest value is central to long-term protection and sustainable management of surface and ground water resources. 'Value' may be interpreted broadly and refers to the social, economic and ecosystem functions that water fulfils. Increasing flexibility in water allocation will also yield significant benefits in terms of improving long-term capacity to adapt to climate change. Trends in agriculture and European Union (EU) policy and Common Agriculture CAP reforms will have a large impact on the opportunities for action on economic pricing, water use efficiency and water reallocation in the short and medium term. Water policy will increasingly need to account for the use of water in other sectors – particularly where they are increasing their share in economic output and job creation, for example types of tourism that dependent on a secure and reliable water supply throughout the Mediterranean.

It is timely for all drought-prone countries to look more comprehensively at the economic dimensions of water management. This paper presents steps taken by countries to address water scarcity and allocation issues.

Policy Environment

The Dublin Principles, adopted by the International Conference on Water and Sustainable Development held in Dublin in 1992 recognize a number of important principles for water resources management, among them that water has an economic value in all its competing uses and that water should be recognised as an economic good. Agenda 21 as adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 established the importance of economic pricing stating that once priority uses – satisfaction of basic needs and the safeguarding of ecosystems – were provided for water users should be charged appropriately. The World Water Vision of the World Water Council published in 2000 reaffirmed the international water community's agreement of the importance of considering water as an economic commodity.

The European Water Framework Directive builds on this evolving international understanding of the economic nature of water by clearly stating that member states should undertake an economic analysis of water use, developing water-pricing policies that provide incentives for efficient water use and cost recovery measures for major water services (including agriculture). With the introduction of pricing and cost-recovery policies planned for 2010, this provides an opportunity for all European countries to progress towards these goals.

While the WFD provides clear direction it is important to recall that agriculture – as a major European social and economic activity – is already heavily influenced by a series of supra-national and national fiscal and regulatory systems (e.g. the Common Agricultural Policy and Structural Adjustment funding). Putting in place a system for regulating water that takes into account the economic costs and benefits of water use is therefore a logical step – given that water is a key input to agriculture. Ensuring that the incentives governing water use are internally consistent with those governing agriculture is a large challenge, but one integral to a coherent policy towards natural resources and the environment. However, at this stage water users are often not even aware of the opportunity costs to society of their use of water. Thus, even fledgling steps towards accounting for the economics of water are likely to produce large efficiencies and benefits.

An approach based solely on regulation or disincentives such as penalties for excessive water consumption is insufficient, and in some cases even unsuccessful at ensuring compliance, with illegal water extractions still commonplace. While the enforcement of regulations typically can be improved, economic approaches that provide positive incentives for voluntary compliance are also needed. By financially rewarding efficient water use, for example, these initiatives have the capacity to engage the farming community in seeking constructive approaches to water management issues, While it is important to use regulatory tools to ensure that quotas, limits and standards are observed, comprehensive management will equally rely on payments and market incentives to induce conservation, efficiency and ecosystem restoration – so that water use can be more productive for society as a whole.

This brief examines two key aspects of water resources management that emerge from accepting that water is an economic good – as well as a social and environmental good:

? Social, environmental *and* economic factors should guide a State's Policy with respect to the purpose, prioritization and allocation of water use
? Economic approaches and instruments can provide effective and practical means of allocating scarce water and providing financing for infrastructure and ecosystem maintenance.

The underlying argument is that the extent to which water has economic characteristics of attributes needs to be recognized as an opportunity not a threat – and that partnership and dialogues in the water sector need to take up this opportunity if solutions are to be found.

Prioritizing Water Uses and Allocating Water

In setting national policy consistent with external agreements or national legislation the State may prioritize uses of water for different purposes. However, even where such choices are made there remain the potential for conflict within priority areas or between competing demands. Indeed, it is difficult to ensure broad acceptance that administrative allocations are efficient, equitable and environmentally sustainable. Still, the need for such decisions are prevalent in drought-prone regions, and droughts periods only exacerbate this physical scarcity in the face of the social, economic and environmental needs for water. The economic nature of water in such situations assumes an increased level of importance and, consequently, the opportunities inherent in using economic approaches and instruments are never greater.

It is true that taking an economic approach and /or relying on economic instruments to water management has provoked considerable concern and controversy. In large part this has to do with differing perceptions about public and private roles in service provision in the Municipal and Industrial (M&I) sector, particularly with respect to the pricing of domestic water and the financing of water infrastructure. Economic reform in the management of the M&I sector are important. However, in most drought-prone areas and regions otherwise experiencing water scarcity these needs are typically small relative to agricultural and ecosystem needs. Further, existing social and economic needs for M&I supply are typically recognized as paramount. The primary conflict over water resource allocation in these areas is more typically between

- competing agricultural demands,
- competing agricultural and ecosystem demands and/or
- between existing agricultural and ecosystem uses and rapidly growing M&I needs.

Drought periods only serve to provide managers and the public an early warning of how growing demand has crept up on and overcome supply. Dealing with drought conditions is instructive in then planning for the future.

In simple terms conflicts over water can be managed by the State making allocations to each source of demand, by the State delegating this authority to a local body, or by the State setting the rules by which the users work out who uses what water when. 'Working out' who uses the water may mean using economic tools for management such as taxes, subsidies, water pricing, leases, transfers, etc. Or it may mean combining institutional approaches such as water-sharing agreements, water banks or water user associations with these and other tools. Further, the State may employ different allocation methods and mechanisms at different scales, for different uses and in different regions – a key factor will be that the approach suites the hydrological regime.

While this might be difficult under normal circumstances, droughts make it even clearer that all users cannot always be satisfied and that hard choices need to be made about who receives water. The advantage of using economic or market tools to allocate water within specific sectors or geographic regions is that it allows the water user to judge for themselves how much economic benefit they derive from the use of the water. Oftentimes this will lead to more economically efficient allocation than if a central planner attempts a similar valuation and allocation on this basis.

This is particularly true where bureaucracies or officials (whether national or local) make allocations based on selfish interest. In administrative systems of allocation it is not unusual for users to ply decision-makers with favours in order to receive their allocation – what economists call "rent-seeking behaviour". This behaviour can easily result in water being allocated to areas of the economy where it produces little benefit – at the expense of higher value uses. Further, where such behaviour becomes entrenched, the effort applied to curry favour and obtain an allocation can itself greatly detract from economic output.

An alternative to such a system is for the State, in consultation with local users, to set the rules and incentives for such allocations and then for the State to focus on monitoring and enforcement of the allocations agreed upon by the users – operating within the States policy framework. The WFD clearly states that decisions on water should be taken 'as close as possible' to where it is used. Decentralizing allocation decisions to basins and catchments and allowing users the opportunity to develop innovative programs for allocating and managing water is an attractive proposition, but requires a strong institutional presence by the State to oversee compliance. Voluntary cooperation in negotiated solutions and voluntary participation in incentive programs and market allocation process are crucial – and provide a degree of control over the excesses of a bureaucratic allocation system where who the farmer knows is more important than the economic value of his/her crop. The success of water pricing efforts are also likely to depend on local ownership and buy-in of any process to develop charging systems – again highlighting the need for meaningful local participation in enabling these economic approaches to function successfully.

Again, the extent to which water has economic characteristics or attributes needs to be recognized as an opportunity not a threat. If the nature of water as an economic good is incorporated into water resource management then the benefits of an economic approach to the allocation of scarce resources can be realized. The alternative is for water to stagnate in economically unproductive sectors and for the distribution of water to be based on success in lobbying rather than success in farming. As with broader economic and financial systems, compensation measures can be envisaged to protect vulnerable members of society if this proves desirable.

Integrated Water Resources Management: Economic Approaches

Economic approaches are an integral part of Integrated Water Resources Management (IWRM) and essential to the successful adoption and implementation, particularly where IWRM recognizes that the entirety of the water cycle is important if water is to serve human and ecosystem needs. There are three levels at which key resource interactions need to be managed if available freshwater is to be used productively by humans and ecosystems:

- Watershed management
- Groundwater management
- Surface water management

Economic approaches can be adopted at each level by similar or different groups of stakeholders. Economic incentives generally refer to the use of market-based instruments, incentive payments, and pricing strategies to alter the economic return from the use of scarce resources to better reflect the full social, economic and environmental value of water in its alternative uses. Typically, where the economic aspects of water's nature have been ignored, water as a resource has been undervalued and underpriced, while infrastructure projects for water resources development have been heavily subsidized. This disconnect has led to water being managed ineffectively for humans and ecosystem services.

Experience shows there are five general strategies being applied around the world to manage fresh water consistent with the objectives laid out above:

1. Demand management: using water pricing to provide water end users with incentives to reduce or limit their consumption of water;
2. Conservation incentives: using incentives and payments to provide water and watershed managers with incentives to conserve water quantity and improve water quality as it is conveyed to the point of use, thereby providing a way to meet additional uses with the same amount of water (such as incentives for agricultural water conservation);
3. Cost recovery: adjusting pricing or institution charges for system and ecosystem provision costs in order to provide for the financing of new supply infrastructure, upkeep on existing infrastructure and investment in watershed protection.
4. Market reallocation: using market instruments to reallocate water from existing, low-value uses to new, higher-value uses, such as from agricultural to urban or instream uses (water transfers and water banking, for example);
5. Cap and trade: developing fixed allocation systems that permit trading in allocations in order to avoid overexploitation of water resources, improve water quality and mitigate for ecosystem degradation (nutrient trading, groundwater mitigation banking, wetland mitigation banking);

The challenge is to create integrated management systems that ensure that the signals from the set of economic incentives offered by the State are oriented towards increasing the productive use of water (in its human and ecosystem uses) and its conservation (quality and quantity). A number of market and institutional approaches in use around the world are described in the Annex.

The first steps along this route, in countries where the approach has been used, have been be to conduct pilot efforts employing a few simple economic approaches where they appear most warranted and appropriate. The first step would be to select a few basins, sub-basins or catchments with the most visible over-allocation problems – viewed as the most rapid rate of decline of static groundwater levels, most visible shortage of water downstream for M&I uses from upstream diversions or pumping, or most evident ecosystem degradation at or below a diversions or point of groundwater discharge. With these selected, stakeholders could be engaged in discussing the feasibility of piloting one of a number of likely alternatives for mitigating the current situation including:

? Creation of a pilot fund for lease, purchase or retirement of surface or ground water allocations associated with legal rights of land owners
? Creation of a pilot agricultural storage water bank and allocating the water through bidding between users – and using the proceeds for infrastructure improvement
? Development of drought year allocation plans and methods, perhaps to include sealed bidding for agricultural water allocations as an alternative to rationing
? Application of water charges within irrigation delivery systems and employing the proceeds to make conservation improvements and/or acquire a more reliable water (as available through above approaches).
? Assessment of the total State-provided financial incentive for the entire irrigated crop and asking whether economic mechanisms exist to encourage a similar rate-of return using substantially less water.
? Development of mechanisms for downstream M&I users to purchase irrigated land water rights from upstream (on the basis of willing buyer, willing seller)

The Mediterranean region has a long history of the State supplying water needs through infrastructure development and this has proved a successful national and regional development strategy in many rural areas, focused on irrigated agriculture. Water supply networks are now bumping up against the limits of maximum divertible supply at reasonable social, ecological and economic cost, and increasing demands for other economic uses (e.g. tourism development). Drought and long term climate changes make it inevitable that supply-led allocations can no longer meet growing demands on available water. The issue is not simply to raise the cost of water, which causes justified resentment among farmers (and at times a refusal to pay), but to ensure that all of the State-provided incentives contribute to a flexible demand-driven water management system that can respond to cycles of drought in an economically efficient manner.

The challenge is to ensure the support of the farming community with adequate social communication and to encourage innovation, modernisation and productive economic uses of water. The question is the extent to which the State should continue to allocate water resources, and the balance to be found between economic, social and environmental water uses.

ANNEX

EXAMPLES OF MARKET-BASED MECHANISMS AND INSTITUTIONAL APPROACHES TO ACHIEVE INTEGRATED WATER RESOURCES MANAGEMENT

The World Conservation Union (IUCN)

1. Market-Based Mechanisms

These market approaches are grouped by each element of IWRM (surface water, groundwater and watershed management) and provide illustrations on how they are used to solve specific issues in water management.

1.1 Surface Water Management

A number of economic tools exist for providing incentives to landowners and water managers to do more with less water, or to reallocate water to higher uses. This can be achieved by water pricing, increasing the efficiency of supply (conservation) or through water transfers. The potential gains from applying these methods to agriculture are very large and, hence, the section does not discuss their application in municipal and industrial sectors, although pricing and conservation are equally applicable in these sectors.

Irrigation Water Pricing and Demand Management. Historically, many large irrigation schemes have failed to pay back their construction costs. Even today many such systems do not cover their running costs and are in effect subsidized by public funds. Where delivered water is priced it is often priced based on a fixed allocation and not on the amount of water farmers receive. In order to efficiently allocate water in existing schemes, water should be priced based on water used and an increasing block tariff considered beyond a base allocation level. Where upstream watershed protection is important to water provision additional charges to support beneficial land uses should be considered. For new irrigation schemes full cost pricing should be applied, including any costs to mitigate environmental impacts. In developing pricing systems the goals should be clear and transparent – as charging may be oriented towards cost recovery, demand management and or meeting social/environmental objectives.

The North Unit Irrigation District in Central Oregon, USA provides farmers with a fixed cost for a base allotment, farmers must then opt to pay for additional water on a volumetric basis. Farmers in the District typically turnout half as much water as farmers in other districts in Central Oregon, where fixed charges are assessed by land area irrigated. Price reforms in Chile reduced irrigation water use by an estimated 25% and saved $400 million in costs for developing new water supplies.

Direct Payments for Agricultural Water Conservation. An important (but typically overstated) source of water is the conservation of existing supplies. There are substantial savings to be gained from improvements in municipal, industrial, and agricultural systems around the world. Irrigated agriculture is estimated to be only about 40% efficient on average with the remaining 60% lost through leaky or unlined canals, overwatering of crops, and inefficient technology. However, a portion of this lost water typically returns to a waterway or recharges groundwater and is subsequently available for uses downstream. The potential of conservation to increase overall basin productivity of water use is therefore site-specific and care needs to be taken not to harm downstream users. Likewise, it is important to consider how water saved through conservation measures is subsequently allocated. Direct payments to farmers and irrigation districts undertaking piping, lining and on-farm conservation activities is increasingly a proven method for generating saved wated.

The US Department of Interior operates an annual challenge grant program – Water 2025: Preventing Crisis and Conflict in the West – to provide funds for collaborative conservation. In 2005, $10 million went to fund agricultural water conservation projects in the Western States. Water from these projects is typically available for other water users in order of priority. However, a number of states provide ecosystem restoration groups with incentives for investment in these projects by allowing the conserved water to be protected for instream purposes. Through its Conserved Water Program, the State of Oregon also allows private investors in a project to capture up to 75% of the conserved water and dedicate it to new uses – once 25% has been dedicated to instream flows.

Water Transfers. Creating a regulatory system in which water uses may lease or sell water allocation has an important impact in terms of demand management and reallocation. Without the ability to trade his water allocation and faced with low to non-existent charges for water use the water is effectively free to the farmer and therefore will be used pretty much regardless of its contribution to economic output on the farm. With the ability to trade the farmer faces the decision of whether to use his allocation or trade it. If such a market provides a way for other users to communicate their need and demand for the water then the farmer is much more likely to make a decision on the disposition of his water that reflects what society as a whole would choose, i.e. that use with a higher economic value. The ability to transfer water then will lead to more productive use of water in the agricultural sector as well as provide a source of water to new, economically vibrant uses outside agriculture. Such a system also provides a voluntary and financially rewarding way to carry out streamflow restoration where ecosystems are valued by local communities – without taking water from farmers through regulatory or bureaucratic means.

In California, USA the Imperial Irrigation District signed a 75-year lease to provide up to 250 million m^3*/yr of the district's water to the city of San Diego for M&I purposes. In Idaho, the Bell Rapids Irrigation District sold all of its 10,000 hectares to the Sate of Idaho (for $24 million), which will now lease the water for instream flow to the federal government for salmon and steelhead recovery. In the Klamath Basin the federal government pays farmers not to pump groundwater as a means of meeting its obligations to provide water for salmon. In the Pacific Northwest, a growing number of NGOs use water leasing and transfers to restore tributary flows for fish, recreation and water quality.*

1.2 Groundwater Management

Incentives for Aquifer Recharge Projects. Aquifer recharge projects route excess flood flows or winter flows into existing underground storage. The water then either returns to rivers and streams for later use in supporting human or ecosystem uses, or is available for pumping. Another variation is aquifer storage and recovery (ASR) in which water is injected and extracted through a single well. This may include brackish water as well as stormwater. The State may invest in or offer direct subsidies to firms that invest in the development of these systems. Alternatively, if the State provides a system of transferable rights, permits or credits such that firms may market the resulting water then firms will invest without recourse to direct incentives from the State.

In Belgium, tertiary treated wastewater is infiltrated into dunes, eventually reaching the aquifer and, ultimately, supplying 40-50% of the Veurne-Ambacht region's drinking water. In South Australia, recycled water suitable for irrigation is injected during the off-season for recovery later during the irrigation season. A number of localities in Florida, USA are exploring various financial and tax incentives to promote recharge credits.

Groundwater Cap and Trade Systems, Groundwater withdrawals can have adverse affects on stream flow or simply draw down perched aquifers. Cap and trade systems may be implemented by placing a limit on total groundwater withdrawals, creating and distributing the resulting amount of groundwater pumping credits and then allowing trading of these credits between users. Such a system may also provide incentives to invest in aquifer recharge projects where credits are issued for additions made to aquifer storage.

A groundwater credit trading system is in use in the Edwards Aquifer of Texas, where it has led to an active market in credits. A recharge credit system is being evaluated in Coleambally Irrigation Area in Australia with the aim of improving irrigation-induced salinity management.

Conjunctive Management: Groundwater Mitigation. Another approach is to allow an increase in groundwater use, but only so long as the impact of further withdrawals on downstream surface waters is mitigated by transferring an equal amount of water instream. This enables conjunctive management (the integrated management of surface and groundwater) where surface waters are fully allocated and groundwater is desired by water users. The development impact of new groundwater withdrawals is then off-set, not by reducing groundwater withdrawals, but by restoring stream flow or recharging aquifers.

In 2002, the state of Oregon developed a mitigation cap-and-trade system for the Deschutes Basin, which has led to the development of markets for both temporary and permanent groundwater mitigation credits (see www.wrd.state.or.us). Municipalities and irrigators desiring to develop new groundwater rights must first acquire credits that are created through the retirement of existing surface water rights.

1.3 Watershed Management

A number of tools exist that provide water users with incentives to better husband rainfall in arid areas or during drought. The amount of water that is either evaporated or transpired from land and vegetation is a use of water (called 'green' water). When water is scarce, society may benefit from regulating this use and providing economic incentives so that farmers and landowners take this important hydrological function (e.g. reduced evapotranspiration via tillage practices and vegetation cover) into account in managing their land.

Rationalize Agriculture Incentive Programs. Production subsidies and income payments to farmers can inadvertently provide marginal farmers with perverse incentives to irrigate when they (and society more broadly) would be better off if there was a way for them to be compensated for transferring the water to a higher value use. Ensuring that farm programs do not promote water intensive crops at the expense of low water demand crops is of particular importance. This is linked to recent concepts of virtual water trade. If water needed to produce crops is clearly measured and valued then the net financial benefits to the farmer of crop choice should reflect the marginal value of water in other uses. Poorly designed farm incentives or tax/subsidy policies for other farm inputs may obscure these signals.

Hydrological and economic research from Texas, USA demonstrates that the federal commodity programs caused farmers to require less water, leading to higher aquifer recharge rates and higher discharge from springs in the area. However, the existence of farm support programs can keep marginal irrigators in production when they would otherwise free up the water for other uses.

Direct Payments to Landowners for Watershed Conservation. Popular for some time in developed and developing countries alike as means of undertaking soil conservation and riparian conservation, direct payments to landowners may also be used to induce water saving land use, vegetation and cropping choices. These may be used in catchment headwater areas to preserve water quality for downstream M&I use, or they may be used to reduce evaporation or plant transpiration (i.e. through incentives for water infiltration technologies, low water crops or for soil cover with low evapotranspiration rates).

In the United States the federal Conservation Reserve Enhancement Program provides funds to farmers to cover capital and maintenance costs for the restoration of riparian habitat critical for fish. Under this program, farmers are also eligible for a competitive payment rate for leasing water associated with these lands back to the river. In Mexico, a Payment for Hydrological Services program compensates landowners for conserving critical cloud forest in upland areas. In Costa Rica, a similar program combines hydrological, biodiversity, climate and scenic beauty payments into a single incentive for landowners.

Evapotranspiration Taxes. An alternative to payments is to actually tax landowners for land uses that lead to evapotranspiration at higher than normal rates. As such land uses effectively consume water that otherwise would return to the ground or streams for use downstream or through groundwater pumping, such users.

In the Republic of South Africa, Streamflow Reduction Activities lead to the imposition of water resource management charges. These include charges for afforestation based on calculations of the net increase in water use they incur and for storing water in dams based on expected level of evaporation.

Incentives for Rainwater Harvesting.
One method of increasing the availability of rainwater to human uses is to capture and store rainwater. This is typically done in settled areas through the use of roofs to collect water and cisterns for water storage. Such systems may be mandated – for example they are required by law in new construction in Bermuda and the U.S. Virgin Islands – or their installation may be promoted through incentive programs.

California offers a tax credit for rainwater harvesting systems and financial incentives are offered in Germany and Japan. Hays County in Texas, USA was the first county to create a Rainwater Collection Incentive Program (including a $100 incentive and a property tax rebate) and the City of Austin, Texas provides homeowners with half the cost of the system and a variable incentive per unit volume of storage up to a $500 incentive. The US Environmental Protection Agency reports that about 200,000 cisterns are in use in the USA.

2. Institutional Approaches

2.1 Water Exchanges
Water exchanges vary in size and activity from full service operations offering brokerage, water rights information, and consulting services to small, nearly virtual bulletin board systems providing a place for buyers and sellers to connect. Bulletin board systems are pervasive wherever there is an agency (such as an irrigation district or company) that provides centralized services (in particular water delivery) to water users. However, it is in the Murray-Darling Basin of Australia where water exchanges have seen the most rapid pace of institutional development for trades between water users. Two distinguishing features of the exchanges in the Murray-Darling Basin are that they serve to transfer water outside of the traditional confines of a specific administrative or geographic area and they have pioneered the use of electronic auction techniques. These exchanges operate for the purpose of easing the transfer process and facilitating short-term trades that might not take place otherwise. While most trades that take place are temporary—and in some cases nearly instantaneous—the exchanges are beginning to place a few permanent trades.

Water exchanges emerged in Australia in response to a cap placed on water use within each state of the Murray Darling Basin. The cap was established in 1997 and limited surface water usage to 1994 levels, but left it up to the states to decide how to achieve the reduction. Trading has been active since 1997, particularly in drought years when all allocations are cut back. While water exchanges do not require a cap-and-trade system per se, it is worth emphasizing that, ultimately, markets evolve only in the presence of scarcity.

2.2 Water Banks
The term "water bank" has many interpretations but, in general, refers to an institutional arrangement for temporarily moving water from one use (or user) to another that involves the participation of an intermediary. Water banks are a feature of the American West most notably in Idaho, Texas, California, Oregon, and Washington. The first formal rental pool in Idaho was set up in 1937, following a decade of informal water leasing between agricultural users. The term "bank" may well reflect the fact that most large water banks are based on water stored in a reservoir. The water is therefore "banked" or stored until such time as it is purchased and used.

Water banks have become a preferred option in the western US, as they operate within a confined area – often an irrigation district – and the water is unlikely to travel very far. Since irrigation districts have a vested interest in retaining the right to delivery water and, therefore, ensuring their customer base, they are more likely to find the temporary and limited nature of water banking an amenable option for storage management. The distinguishing feature between water banks and exchanges is that an exchange simply brokers water rights, whereas a bank will either hold rights or retain a role as a lessee of the rights.

2.3 Ecosystem Water Acquisition Programs

The acquisition of water for instream flow restoration on the part of state agencies and local water trusts and conservancies has become a popular tool in the western United States, where rivers are affected drastically by summer withdrawals for irrigation, which often leads to the listing of species as threatened and endangered under federal law. Water leasing is particularly popular with water right holders because it avoids the permanent dedication of the water right instream. It may also be useful in extending the lifetime of a water right given that if a water right is not being put to a “beneficial” use, it can be subject to forfeiture (typically after five years). Leases also provide considerable flexibility as they may take many forms, including fixed terms, dry year options, forbearance agreements, conservation off-sets, and exchange or barter agreements. As in general with efforts to “purchase” water for instream flow restoration, leasing is typically found off main stems and may be particularly useful in small tributaries where a small quantity of water may make the difference between a stream that goes dry and a minimum flow level to support fish and recreational uses.

Organizational forms of these acquisitions are numerous. In the Pacific Northwest of the USA they include State programs (in Washington and Idaho, private non-profit statewide Water Trusts (Oregon, Washington, Montana) and basin-specific non-profit organizations (Deschutes River Conservancy, Klamath Basin Rangelands Trust, Walla Walla Watershed Alliance) and branches of national river organizations (Trout Unlimited, Trust for Public Land). Funding and capacity-building for such efforts can also be centralized. Many of the above groups are qualified entities for the Columbia Basin Water Transactions Program, a regional program funded to $5 million per year by Bonneville Power Administration and executed by the National Fish and Wildlife Foundation. Similar, ecosystem-restoration oriented programs are developing in other States across the Western USA.