

Equity Implications of Market and Property Rights Mechanisms: gender, Poverty and Indigenous Dimensions

This paper addresses a key theme in assessing development assistance programs from an equity perspective. This involves an in-depth case study at a local level. Gender, poverty and indigenous dimensions of water regulation are addressed with specific reference to the enhanced roles of markets and changing property regimes. 'Pro-poor' interventions and the concept of water as a human right are investigated (rights to water versus water rights).

1. Introduction

Who owns water, what role the market should play in regulating water and whether a monetary value should be placed on it are some of the most contentious questions to emerge in water resources management in recent years. Debate is currently polarised between those who argue that the only way to efficiently manage water is to price it, and others who resist the commodification of such an essential resource, seeing any move to price water as a threat to livelihoods and basic human rights. At the heart of the debate is a concern that as a consequence of efforts to improve water efficiency, integrate water management, allocate water to the most productive uses and avoid water-based conflict, water will flow from the poor to the rich, from the weak to the powerful, from agriculture to industry, and from rural to urban areas with serious implications for social equity and food security. This debate forms the backdrop for this paper's theme of equity implications of key changes in water property rights and the introduction of market mechanisms.

How governance, by both formal and informal institutions, addresses this theme of equity between water uses and users is the central focus of this working paper, and the identification of appropriate principles and processes for ODA to assist with the realisation of equitable and just water governance is the purpose. The paper first introduces the key equity concerns associated with recent trends in water management, before outlining the different ways water equity can be understood. The discussion then turns to the diverse water property rights that exist in the Asia Pacific region, and the tensions between efficiency and equity associated with recent water property rights reforms and the introduction of market mechanisms. The paper concludes with a review of key equity lessons and experiences drawn from several ODA projects, with a view to identify principles for more equitable outcomes in ODA water projects.

2. Approaches to Water Equity

Water Governance, the Market and Water Rights

"The primary responsibility for ensuring the sustainable and equitable management of water resources rests with governments..."

Ministerial Declaration, International Conference on Freshwater, Bonn, 4 December 2001.

Due to the fundamental nature of water as the sustainer of both human life and the health of ecosystems, civil society groups have argued that its management should be kept in the public domain, so that governments can ensure universal access. The influence of neoliberalism and the search for finance for water resource developments (especially in developing countries) has seen an increase in private sector involvement in water resources management as well as the increased application of market mechanisms for water allocation. A consequence of privatisation has been the increased attention on equity issues in water matters. Two forms of water privatisation can be observed: the privatisation of water-related infrastructure, facilities, and services; and the privatisation of water rights. The privatisation of water rights occurs when water entitlements are separated from land, have an economic value placed on them and are traded in a water market. In situations of water scarcity, the introduction of such changes assumes water will flow to more profitable uses. The concern is that water could 'flow uphill to money', as water rights are separated from their social and ecological

context, and subject to market signals. Moreover, the definition of water rights as individual and private, necessary for market mechanisms to be implemented, undermines collective and common property arrangements for water management. Such community based systems are commonly found throughout much of the Asia Pacific region.

Water as a Human Right

The potential retreat of public institutions from the provision of water-related services (distribution, supply, and regulation) and the rise in private sector involvement in water matters has led civil rights groups to argue for the recognition of water as a human right. The recognition of water as a human right and public good is considered crucial to addressing the severe inequalities of access to water, as it impels governments under international law to meet their responsibility to respect, fulfil and protect people's right to water and improve the provision of water for essential needs. It was not until November 2002, however, that the UN Committee on Economic, Social and Cultural Rights formally released a General Comment that explicitly recognises access to water as a fundamental human right. As can be seen from the table in Annex 1, however, the human right to water has been implicit in a number of treaties dating from 1966, including: the International Covenant on Economic, Social and Cultural Rights (ICESCR); the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW); and the Convention on the Rights of the Child (CRC).

Whilst many governments in the Asia Pacific region are signatories to international human rights treaties which enshrine water as a human right (see Annex 2), national legislation does not always clearly articulate water as a human right (see Annex 3). The Asian Development Bank, one of the most important sources of finance for water resources development projects, for instance, does not provide a clear articulation of access to water as a human right in its water policy, and instead defines water in their official water policy document as a 'socially vital economic good' (ADB, 2001). Whilst this focus on water as a human right is seen by some commentators as a distraction, it is actually an important mechanism by which to encourage and hold national governments accountable to meeting the obligations they have to their citizens, for example through re-prioritising national spending and development planning. As such, an emphasis on rights has normative, pragmatic and ethical implications (Cornwall and Nyamu-Musembi 2004: 1416-1417).

The distinction between 'water as a human right' and water rights needs to be clear, as certain water rights systems do not explicitly aim to address basic water needs. Cornwall and Nyamu-Musembi note that the World Bank's promotion of tradeable water entitlements and water privatisation in Indonesia (in a joint water partnership program with the Netherlands) as a 'rights-based water sharing' arrangement, actually undermines their apparent support for achieving basic economic and social rights. Cornwall and Nyamu-Musembi argue that the system of tradable permits in water, in this World Bank program, is designed to favour higher value and more profitable water uses, rather than securing a basic level of service for all (Cornwall and Nyamu-Musembi 2004: 1427).

Understanding Equity and Water

Human intervention, whether through technology or governance, alters the allocation of water. Whilst there is no 'natural' distributive justice in water availability, with significant variations between seasons, upland and lowland areas, and regions, human regulation sees water re-distributed according to the economic and social objectives of those who control structures at a given scale. Associated with the physical control of water is a social, economic, institutional and policy process of governance which greatly determines the extent to which water is distributed in an equitable, efficient and sustainable way. This process of negotiation between various actors, whether they be neighbours sharing a well or countries sharing a large river, is shaped by underlying issues of power, culture and values, and thus differs greatly according to context. Intervention into such a context by ODA organisations, whether in the area of urban or rural water supply and sanitation (WSS), water policy priority setting or river basin management, has the potential to influence the equitable distribution of water, in positive and negative ways.

Water equity has social, economic, spatial and temporal dimensions. Depending on the scale of analysis distribution of water can vary between:

- Sectors of an economy (e.g., industry versus agriculture)
- Countries on a river
- Upstream-downstream communities along a water course
- Households reliant on a common water source

Socially we can understand water equity in terms of differences in access and use between:

- men and women
- ethnic majorities and minorities
- indigenous and non-indigenous
- rich and poor
- livelihoods
- rural and urban people
- present and future generations

Water equity is not just about how much water people have access to for basic needs or livelihoods, but also the ease and security of that access. A full consideration of equity should go beyond matters of the (absolute, relative, marginal) price of water, to also include differences in relation to labour burden, quality of water, security of access, historical contributions to maintenance of water services (through conservation and infrastructure), vulnerability to shocks or risks, the role different groups play in decision making and so on.

Text Box 1: Defining Reasonable and Equitable Water Use in a Trans-boundary Context

When water rights are held by nation states determining what is an equitable arrangement for management of a transboundary resource becomes extremely complex. International norms regarding 'reasonable' and 'equitable' water use are reflected in the *Convention on the Law of Non-Navigational Uses of International Watercourses*¹ which defines equitable and reasonable water use and participation as,

1. Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse.
2. Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present Convention

The convention goes on to define factors relevant to equitable and reasonable utilisation as,

- (a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
- (b) The social and economic needs of the watercourse States concerned;
- (c) The population dependent on the watercourse in each watercourse State;
- (d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;
- (e) Existing and potential uses of the watercourse;
- (f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;
- (g) The availability of alternatives, of comparable value, to a particular planned or existing use.

Within the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* (1995) of the Mekong River Commission there is a key clause which states that the signatories agree, "To utilize the waters of the Mekong River system in a **reasonable and equitable manner** in their respective territories". The Water Utilization Programme (WUP) is the key process which aims to operationalise these concepts ("give teeth to the agreement") through, amongst other activities, the negotiation of rules on water use and allocation. There are procedural and technical rules, including:

- Procedures for Data and Information Exchange and Sharing (Nov 1, 2001)
- Preliminary Procedures for Notification, Prior Consultation and Agreement (Nov 12, 2002);
- Procedures for Water Use Monitoring (Nov 30, 2003);
- Procedures for Notification, Prior Consultation and Agreement (Nov 2002)

The remaining rules to be agreed upon include:

¹ Available from the United Nations International Law Commission:
<http://www.un.org/law/ilc/texts/nonnav.htm#>

- Rules for water quality;
- Rules for the maintenance of flows;

In this trans-boundary context, equity is largely interpreted in negotiations in terms of protecting *existing uses* rather than the *percentage contribution to flows* by each riparian. Yet, perceptions still persist that water should be allocated according to riparian flow contributions. For instance, Laos contributes 35% of flow but uses just 4% of that flow and some officials still hold the perception that they are entitled to this 35%. Yet, the emphasis within the WUP has shifted from sharing *water* equitably to sharing the *benefits* of water equitably. The emphasis is now on trying to exchange the benefits, for example of upland forest protection for those downstream or the benefits of food production from irrigation for food scarce regions. This has led to a discussion where trade-offs and reciprocity are now guiding principles.

The majority of the basin's 70 million population engage in resource-based livelihoods, such as farming, fishing and agro-forestry, with varying levels of integration into the market economy. The ecological and subsistence values underpinning these livelihoods have been neglected in much water resource planning to date, with, instead, greater emphasis given to the contribution of water to industrialisation and commercial agriculture, as seen in the former dominance of the hydropower and irrigation divisions within the MRC. The integrated basin flow model (IBFM), which draws strongly on the South African DRIFT methodology for calculating environmental flows, is being developed within WUP to address equity issues through a focus on subsistence and ecological values. The IBFM through an adoption of valuation techniques attempts to make the costs, values and trade-offs associated with water resources development more explicit. An expert within the MRC Secretariat notes, however, that whilst equity between countries, regions, sectors, and generations are concepts people are starting to become familiar with, the connection between decision making on water and equity issues associated with gender, different social groups and ethnicity remains poorly addressed (Pers. comm., 2004). This is one of the major challenges associated with the negotiation of equitable water resources in an international basin: to go beyond the national interests of riparians to consider the distribution of costs, risks and benefits amongst social groups within countries. This requires not only a shift in the scale of analysis, but also the incorporation of information on and the perspective of those who engage in diverse livelihoods into decision making through the use of both quantitative and qualitative tools of analysis, and more locally oriented participation processes.

Water Inequity

Though many water resource development interventions have been premised on increasing the supply of water to people and for food, there are rising disparities between the rich and poor within and between countries regarding access to water. Despite there being sufficient freshwater for all people's basic needs one in five people globally are without access to clean water, and close to two and a half billion people lack access to safe sanitation. By 2025 it is estimated that, without a radical shift in policy and re-allocation of resources, some two thirds of the world's population will experience some form of water stress. The table below shows the percentage of people with access to 'improved' drinking water and reliable sanitation for the case study countries.

Table 1: Percentage of Population in Case Study Countries with Access to Improved WSS

	Percentage total population with access to improved drinking water sources		Percentage urban population with access to improved drinking water sources		Percentage rural population with access to improved drinking water sources		Percentage total population with access to improved sanitation		Percentage urban population with access to improved sanitation		Percentage rural population with access to improved sanitation	
	1990	2002	1990	2002	1990	2002	1990	2002	1990	2002	1990	2002
Cambodia*		34		58		29		16		83		8
Indonesia	71	78	92	89	62	69	46	52	66	71	38	38
Laos*		43		66		38		24		61		14
Thailand*	81	85	87	95	78	80	80	99	95	97	74	100
Vanuatu	60	60	93	85	53	52		95		97		95
Vietnam*	72	73	93	93	67	67	22	41	46	84	16	26

Source: Tabled based on WHO-UNICEF data (<http://millenniumindicators.un.org/>)

* Mekong Basin case study countries

0-24%;
 25-49%;
 50-74%;
 -100% coverage;

Whilst the figures above generally show an improvement in the provision of water and sanitation services in the case study countries, except in Vanuatu where the percentage of the population receiving improved water supplies remained stable, the gap between rural and urban areas is stark. In terms of percentage differences between rural and urban populations' access to water, it can be seen from the above data that the gap is particularly wide in Cambodia, Laos, Vanuatu and Vietnam. The gap is even wider when it comes to sanitation, particularly in Cambodia, Laos and Vietnam.

What these macro figures do not reveal is the disparities within communities in regards to access to basic water needs. Inequitable access to water disproportionately affects the poorest in communities, indicating socio-economic and political processes play an important role in influencing water access. Moreover, this inequality is gendered in its impacts, as women and girls in most societies bear the primary responsibility of water collection *and* caring for the ill. The urban poor, particularly those in marginalised areas or slums, are usually reliant on insecure, unclean water supplies, which are often provided by private entrepreneurs at expensive rates. It is well documented that the poor in these circumstances often pay more for their water than those who are more well-off (Gutierrez *et al* 2003; UNESCO 2003: 341).

Gender-disaggregated data on water is hard to locate, yet increasingly donors and governments are factoring such data into the design and evaluation of their projects. This data, together with participatory processes designed specifically to elicit the inputs of both men and women is critical to ensure inequalities are identified and addressed

3. Water Equity Issues in Asia and the Pacific

Text Box 2: Water Equity Issues in Australia

Water equity issues in Australia centre on the allocation of a scarce and unevenly distributed resource. Equity issues arise in the division of water resources between rural and urban areas and between productive and environmental water priorities. The extent to which Indigenous peoples are disenfranchised in natural resources management is a key equity concern as is the provision of water supply and sanitation to remote communities (see Text Box 5). The introduction of market management mechanisms in the water sector has been contentious with the recognition that the most efficient water uses will not necessarily be the most equitable.

The allocation of water between urban and peri-urban agricultural areas has been contentious in the Australian context. Agricultural interests are seen to be marginalised in contrast to urban dwellers who have access to water for domestic uses at comparatively low prices. In the Sydney region, approximately 90% of flows in the lower Hawkesbury-Nepean catchment are diverted for Sydney's water supply with the remaining 10% divided between agricultural environmental flows. With the introduction of water trading in NSW, irrigators in this region are required to compete in the market for a share of available flows while their urban counterparts continue to receive subsidised potable water.

The relative distribution of water between productive and environmental uses is a problematic equity issue in economic and ecological terms. Trading is represented as a means by which to improve water quality and quantity in rivers while providing current water users with the appropriate market value in compensation. However, 'the environment' still has to compete for its water needs with other users operating within the water market and is less represented at the political decision-making level. Furthermore, there is much debate concerning how much water is needed to maintain a healthy river system, and the extent to which the environment can compete within the water market to obtain environmental flows in accordance with changing knowledge of ecosystem requirements remains to be seen. These debates are tied to rights issues with the maintenance of a healthy and functioning ecosystem essential for the sustainability of livelihoods and human health.

The introduction of market management mechanisms in the water sector has inspired debate concerning the ability of a water market to equitably distribute water between different users and uses. It is generally accepted that market mechanisms can benefit Australian water management in that they offer incentives for more efficient water use, however the rationale that water markets can bring about both efficiency and equity has been contested (Pigram 1999) as users and uses of water with lower financial and/or political capacity may be disenfranchised and marginalised within water markets. The maintenance of appropriate regulatory structures to ensure fair distribution of water between human and environmental uses will be central to the achievement of a just water management regime.

The socio-economic status of Aboriginal and Torres Strait Islander peoples is central to equity concerns in Australia and the water sector is no exception. Although the significant role played by Indigenous peoples in natural resources management is acknowledged in international fora, there is a gap between ideals and implementation. This is also true in the Australian context, where the establishment of Aboriginal natural resource participation mechanisms have not resolved Indigenous equity concerns. In the Murray-Darling, for example, Aboriginal communities have been involved in community consultation through the Murray-Darling Rivers Indigenous Nations (MDRIN) and the Living Murray Initiative. However the acknowledgement of rights has not equated with the implementation of measures to address inequity. The establishment of mechanisms to protect and recognise those rights have not yet appropriately addressed the failure of current catchment management processes to consider the cultural knowledge of the Murray-Darling Rivers Indigenous Nations.

Water Property Rights: diverse mechanisms for water allocation

Equity implies fairness and justice, and as such may differ in its interpretation according to specific contexts. Water rights and water allotments are a key mechanism for water allocation and vary in the manner by which they reflect equitable water allocations through the codifying of rules on timing,

scheduling and amounts (Bruns and Meinzen-Dick 2000). These water rights also include responsibilities, concerning respect of the rights of others, and obligations vis-à-vis water quality, and system operation and maintenance. At a community level, communal contributions to maintain and operate systems are one way that the principle of equity is encouraged through the building of solidarity and obligatory relations between members. In larger systems equitable distribution of water may be regulated through more overt and bureaucratic forms of supervision and enforcement of rights.

Across the Asia Pacific region there is a diverse range of systems for water rights and allocation, as summarised in Table 2. These systems differ according to how rights are defined, whether according to attachment to land or to people or other rights holders (individuals, households, bulk users, communities), the period of time they are valid (in perpetuity, lifetime, seasonal), the amount of water that is specified (volumetric, proportional, time-dependent), manner of decision making on rights (community institutions, bureaucratic institutions) and the method of prioritisation, especially in times of scarcity, and whether water rights are bundled up with other rights (for example land, fish and so on). These systems also vary in the extent to which they are flexible, and accommodate hydrologic variability (Molle 2004; Bruns 1998), a key issue when it comes to maintaining environmental flows and sustaining the ecological integrity of rivers and wetlands.

Table 2: Summary of Characteristics of Water Rights

Characteristic	Options
Rights holders	Individuals, communities, water user associations, bulk users (e.g. companies, SOEs)
Time frame	Limited (seasonal, lifetime), permanent
Allocation principle	Volumetric, proportional, time dependent, land area
Decision making & regulation	Community organisations, bureaucratic institutions
Formality	Informal, customary, implicit rights; explicit rights in registers, permits, licenses
Prioritisation	Uses, users, auction
Associated with other rights	Land, fish, participation
Flexibility	Uniform rules, adjusted to hydrologic variability
Transferability	Tied to land, transferable (tradeable)
Associated responsibilities	Contribution to system operation and maintenance, pollution prevention, relations with others, watershed management

Source: Adapted from Bruns, 1998

In most systems rights also entail obligations, to not only others, but also in terms of the physical and ecological maintenance of water services. The Balinese Subak system is one of the most well known systems which demonstrate the strong link between water rights, communal and ecological obligations, and spiritual practice. Similar examples of this strong connection between water rights and ecological conservation are found in communal *muang faai* systems in Thailand (Rigg 1992), although many of these systems face pressure from more bureaucratic institutions. What has been demonstrated by the study of such systems, and the mechanisms that sustain them, is that rights are not abstract legal constructs but rather they reflect social norms and cultural values. As such the process of negotiation and decision making around the definition of rights is critical to their acceptance. The extent to which such negotiation and decision making includes the interests of men and women, ethnic minorities and indigenous interests is also key to such systems reflecting diverse social values. As Bruns and Meinzen-Dick argue, an understanding of water rights needs to start from the perspectives of those who use water, their daily experiences, the meanings through which they conceive of water and rights, and the options they have available for acquiring water and defending their access to this vital resource (Bruns and Meinzen-Dick 2000: 25).

The nature of water is such that it can be easily captured and diverted, and as such water can be tapped, stolen and systems of regulation subverted. Whether at a community or international scale, for equity to be maintained in a system it requires a high degree of social acceptance in order to minimise the cost of regulation and enforcement. In the same way, reform to any system of water governance also requires a high degree of social acceptance to ensure conflict is avoided. To have some sort of reallocation of water, for example towards a more equitable arrangement, requires negotiation,

compensation, and a transition process that is both iterative and socially acceptable.

Table 3: Summary of key national government objectives in relation to property rights and market mechanism:

	Legislation and Agreements on Water Rights	Water-related Market Mechanisms
Thailand	<ul style="list-style-type: none"> Current draft of the proposed water law states that: <ul style="list-style-type: none"> water belongs to the “public domain” people are entitled to the water on their land, and can trade that water, however, except in times of drought when the government can intervene and limit water use 	<ul style="list-style-type: none"> Water user fees introduced as a condition of an ADB loan (refer to Text Box 3) to the agricultural sector River basin committees are being organised to levy water use fees
Vietnam	<ul style="list-style-type: none"> Water Law (1998) states: <ul style="list-style-type: none"> Water owned by the people through the management of the state Users of water have a responsibility to contribute financially, except those who are particularly poor Licenses are required for bulk water users, but not for individual farmers Civil Code enshrines the right of access to water through neighbouring land if direct access to the water source is not available 	<ul style="list-style-type: none"> Long-established arrangements for labour and financial contributions (e.g. through payment of water fees to SOEs) for irrigation and WS; No plans to introduce a water tax; No official support for full cost recovery SOEs active in irrigation and WS sector; BOT scheme for urban WS in HCMC
Indonesia	<ul style="list-style-type: none"> Constitution states water rights are owned and controlled by the state Three categories of water rights recognised in law: household, traditional irrigation, commercial. 	<ul style="list-style-type: none"> Water law allows for water privatisation Privatisation of urban water supply schemes, such as in Jakarta
Vanuatu	<ul style="list-style-type: none"> Water Resources Act passed in 2002 Provision for customary water rights 	
Mekong	<ul style="list-style-type: none"> The 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin sets out the framework for water rights between the Lower Mekong Basin riparian countries; upper basin countries, China and Burma, remain outside the agreement; WUP (2000-2006) is the key process by which water monitoring, water rights, water sharing, and trading are to be specified, including agreement on procedures and rules concerning: <ul style="list-style-type: none"> Wet and dry season water usage; Inter and intra-basin diversions; Minimum acceptable low flows; Natural reversal of the Tonle Sap River Prevention of excessive flood peaks Use of ‘excess water’ (which refers to water which will be theoretically available from releases from Chinese dams) 	<ul style="list-style-type: none"> WUP to address the option of water trading between riparian countries. Negotiation of plans for Thailand to purchase water from Laos.

Whilst a diversity of water right systems exists throughout the region, distinct convergence in the redefinition of water rights can be observed. These are summarised in the figure below.

Figure 1: Trends in Water Property Rights across the Asia Pacific

Dominant rights holders	Communities	Individuals, bulk water users
Basis of allocation	Permanent	Limited
Articulation of rights	Area	Volumetric
Transferability	Informal, implicit	Formal, explicit
	Attached to land	Transferable

4. ODA and Water Reforms: tension between equity and efficiency

What is remarkable about the current ODA involvement in water reforms across the region is their similarity. Against the backdrop of diversity, outlined above, this ‘institutional mono-cropping’ (Molle 2004), a sort of ‘one size fits all’ approach to water governance, seems remarkably indifferent to context. Such an approach is likely to generate resistance, as seen in the response to the ADB water initiatives in Thailand and Sri Lanka (Chantawong et al 2002; Molle 2004).

The guiding principle for much of the reforms in the water sector is improved efficiency (see Dinar and Mody 2004; ADB 1996; ADB 2001). The basic argument is that clarification and modification of property rights along certain lines will allow for market mechanisms to assist with the reallocation of water to the most productive uses and users. The underlying assumptions of this argument are that: water is currently used in an inefficient and wasteful way; property rights are unclear; and pricing water and allowing rights to be more easily transferred will result in the more efficient and productive use of water.²

Text Box 3: The ADB and Thai Water Reforms

The influence of the ADB on Thai water reforms through conditionalities attached to the Agriculture Sector Program Loan prompted significant public debate on the appropriateness of the proposed measures, most particularly the promotion of water fees.

There are certainly wasteful and inefficient uses of water found in any system, yet this needs to be carefully studied and documented. A ‘waste’ of water may actually result in a ‘gain’ for the environment or other users through returned flows. Rice farmers are often targeted as wasteful water users, yet studies in intensive rice producing areas such as deltaic regions in Thailand (Molle 2001) and Vietnam (Miller 2003) demonstrate that the labour inputs and use of low lift pumps prohibit wasteful use of water, despite the relatively low *monetary* cost of water in these areas.

The clarification of water rights also needs to be carefully considered, as, despite the lack of formalisation of water rights by the state, at a community level water rights are often carefully codified (and regulated) through social norms and attitudes. Conflict often becomes apparent when new users compete with existing users, pre-existing rights go unrecognised, or existing rights are undermined through the imposition of new rules and regulations. Effort to impose new water property rights systems, the very act of “drawing lines” and specifying amounts of water people are entitled to, has in some cases in the region (e.g. Thailand, Philippines, Indonesia, Sri Lanka) generated strong resistance.

The trend towards market mechanisms such as user pays and the goal of full cost recovery in water use is seen in the widespread introduction of agricultural water use fees for farmers and water tariffs for those connected to public (and privatised) water supply systems. The ADB notes in the interim review of its water policy that ‘cost recovery’ is one of the most difficult ‘water policy actions’ to realise in borrower countries (2004: 4-5). Whilst the goal of cost recovery is important to the realisation of financial sustainability (see Text Box 4) this may not be appropriate to all situations.

The assumption that paying increased prices for water will encourage greater water use efficiency and innovation ignores the diverse investments people have made (and continue to make) in water systems (such as in time, labour etc.) which contribute to ensure efficiency. Market tools are often premised on the idea that water will flow towards more economically profitable uses. Whilst water is important to economic activity, it serves quite diverse functions. Market mechanisms may result in water flowing to more ‘productive’ uses but other forms of governance are required to ensure this does not come at the cost of equity, ecological sustainability, food security and cultural diversity.

² The idea here can be captured more simply: if you can’t say who owns something, and if you can’t measure something, you can’t price it and you can’t control it.

Water 'Safety Nets' for the Poor

As mentioned above, improved efficiency in water use is seen as particularly important in the context of rising water scarcity and competition scenarios. Yet, with the increased potential for competition over water, the maintenance of ecologically and socially resilient systems becomes critically important. Resilient institutions are strongly associated with equitable resource systems that display a high level of social acceptance and ownership. Thus efficiency and equity needs to be considered in an interdependent way.

Whilst in the late 1990s official Vietnamese documents and decrees were inconsistent in regards to the goal of full cost recovery, in more recent years there has been a move away from this objective for irrigation and drainage services. Many officials, at national, provincial and local levels, see this objective as neither possible nor desirable. The falling rate of returns for small farmers and rising disparities in wealth between urban and rural areas (and small and large farmers), as well as the considerable political constituency rural farmers form, have contributed to the rejection of further imposition of costs on farmers. Irrigation fees for public systems are formalised in various decrees, though private pumping stations are able to levy their own fees (yet these are capped).

There remains high-level national support for continued irrigation development and expansion to poor and remote areas. The country's PRSP states, that for "areas that do not have water resources for developing irrigation at the local level, especially in remote and isolated areas, the State should provide more support and assistance (Government of Vietnam 2002: 79). Yet, here in lies the dilemma. The state continues to support and encourage investment in the expansion or construction of new irrigation systems for rural development and poverty alleviation yet the decline in efficiency of existing systems undermines poverty alleviation in these areas. This decline in efficiency of systems has direct implications for the poor, who usually have poor access to water, and is related to low prioritisation of funds for system maintenance (see Text Box 4).

Text Box 4: Tension between Equity and Sustainability in a Vietnamese Irrigation System

Water control systems in the poor province of Tra Vinh in Vietnam reflect in practice the tension between the development objectives of equity and sustainability. Tra Vinh is one of the poorest provinces in the Mekong Delta, with a high proportion of its population classified as poor. It also has a high number of Khmer people who are poor in relative and absolute terms. The Australian government has long supported water resources development activities in the province, including: water supply for the town of Tra Vinh and the Tam Phuong water control scheme. The Tam Phuong project aims included: salinity intrusion control; acid sulphate soil control; drainage; and rice intensification. The project was constructed between 1985 and 1990, and covers an area of 7 000 hectares, reaching over 30 000 people.

According to gross measures of productivity the Tam Phuong water control project is regarded as a success by provincial and local officials. Rice production from the area has increased beyond projected levels, with the target production of 42 000 tonnes of rice exceeded by 6 000 tonnes in 1998. The local population, however, is faced with considerable challenges, including poor returns from rice, decline in environmental quality due to agro-chemical use, high cost of rice inputs, difficulties of water access and control, inequitable water access, and barriers to diversification.

There are numerous costs associated with local water use, including: pumping costs, government irrigation fees and contributions, and private water-access fees. The primary cost is associated with water pumping, which is highly variable yet increases significantly for those without direct access to canals.³ There are also extra costs incurred by those who hire pumps, usually the poor and female headed households.

Irrigation fees constituted a small but significant cost of production. Fees are set by provincial water resource authorities according to national guidelines. These fees form a crucial income source for provincial irrigation authorities since they have been reorganised as a state owned enterprise and seek to be financially autonomous of the central level. Irrigation fees in 2000 represented just 5-7 per cent of the average crop production, with total fees collected constituting less than half of funds required for basic operation and maintenance (Barker 1994:133; Personal Fieldnotes, 1999-2000).

Until recently, there were two tiers of irrigation fees in the province, one for the area with tertiary canals (40-50 kg of rice per ha per year), and another for areas with less developed water resources infrastructure (20-30 kg). Within this fee structure there is little scope for differentiation of land with good or poor access to irrigation and drainage services. Collection rates were low, about 50-60 per cent. This was, according to district irrigation officials, because farmers were too poor and not yet used to paying an irrigation fee. Low collection may also be due to dissatisfaction with the quality of the irrigation system and inadequacy of system gate operation.

There is generally a low level awareness amongst farmers of irrigation fees, amount and purpose. When asked about the irrigation fee, most people had great difficulty answering the question, unlike questions on agricultural tax or other fees. As the

³ The ease of access to water (as well as proximity to settlement areas) is a key determinant of land prices.

irrigation fee is paid at the same time as agricultural taxes it is possible the fee is not clearly differentiated from other fees. A similar observation was made by Fontenelle regarding irrigation fees in the Red River Delta (2000: 9). This low level of awareness of the irrigation fee purpose, raises questions over the potential for irrigation companies to be held accountable for the quality of their services, as the fee is the closest approximation of a 'contract' between water user and service provider.

Irrigation fee revenue previously comprised the primary income source for the provincial water company, representing an important shift in its income base as "the fee now makes it directly responsible to the community (Pers. Comm., 10/6/99)." Yet, in 2004 in the interests of equity, the province requested an exemption for farmers from paying irrigation fees as they were considered to be facing especially difficult circumstances. So now the irrigation enterprise is reliant on continued provision of funds from central and provincial government.

Over the 15 years since completion of the Tam Phuong project, due to the low income base of the irrigation enterprise officials were faced with the disheartening prospect of overseeing the irrigation and water control scheme slowly degrade and fall apart before their eyes. Poor design, as well as neglect of the dynamic nature of local environmental conditions (flux of tides, seasons and silt laden water) contributed to the rapid siltation of canals and the failure of sluice gates. The local tertiary canal system is seriously inadequate in coverage and capacity, and results in problems of access for close to half of those interviewed. This results in people having to pump-through their neighbour's fields. The Evaluation Report of the Tam Phuong project identified this poor design of the tertiary system, stating there was a "gross underestimate of the density of the [required] on-farm irrigation and drainage systems" (Asian Institute of Technology and Mekong Secretariat 1991:21). This is compounded by a general lack of maintenance of all aspects of the system, most particularly the tertiary canals and gates on secondary canals – most of which no longer operate. Gate operation is required to store water in the system during times of low tide or low rainfall, and to assist with drainage.

However, in 2004-2005 the Japanese government supported the rehabilitation of the canals and canal gates of the local area of the Tam Phuong system. This reliance on aid to undertake basic maintenance and system upgrade undermines the potential of local authorities together with local communities to identify sustainable solutions to system maintenance. An implication of this long-term study for aid is that greater emphasis needs to be given to promoting internal financial sustainability within project operation to ensure project sustainability and equity.

Basic system maintenance is critical to ensuring water access is fair and equitable, as those with poor access or with land far from water sources are the first to suffer when systems begin to break down. The prioritisation of funds for maintenance of existing irrigation systems by government at the central and provincial level remains seriously inadequate. Instead, whilst the existing system was woefully inadequate and inequitable in terms of water access, the government undertook to allocate central funds and borrow from the World Bank for a vastly expanded water control system for elsewhere in Tra Vinh and neighbouring provinces (World Bank Mekong Delta Water Resources Project). There is a clear implication here for the way ODA is used to support poverty alleviation. The resolution of equity concerns, in terms of ensuring there is not an unfair burden of water access placed on the poor, needs to be considered in line with sustainable financial, operation and maintenance strategies. Such strategies need to be worked out by local authorities in partnership with local communities to find lasting solutions applicable to projects and the broader policy context.

Poverty Reduction Strategy Papers (PRSPs) and similar national initiatives are gaining increasing significance as national guides to poverty reduction plans. They are influential documents in terms of guiding national government, donor and NGO activities, and in providing support in the area of poverty alleviation. Whilst PRSPs are not available for either Thailand or Vanuatu, if we compare the Interim PRSP for Indonesia (Republic of Indonesia 2003) with that of PRSP for Vietnam (Government of Vietnam 2002), we can see quite different approaches and consideration given to water. The Indonesian Interim PRSP gives no particular attention to water issues. The Vietnamese PRSP, in contrast, gives comprehensive attention to water issues, including WSS, waste water treatment, prevention of water pollution, state support for irrigation in poor areas, and watershed management. Numerous water related policies, actions and targets are identified, including:

- Clear identification of policy and programs to address WSS;
- WSS targets identified and costed:
 - Ensure 80% of the urban population, 60% of rural population have access to clean water, 50% households have basic sanitation standards by 2005.
 - Ensure 85% of rural population has access to clean water (daily supply of 60 litres per person), 75% households have basic sanitation standards by 2010.
- Statement of commitment to necessary legal framework

Yet the absence of detailed sub-national data and information on the particular water needs of different regions, livelihoods and social groups limits the usefulness of PRSPs in permitting clear targeting within WSS and water resources management. In addition to these national planning documents there are, however, various tools and initiatives supported by aid agencies that seek to address poverty issues in the water sector. Some of these are listed in the following table.

Table 3: Examples of “Pro-poor” Policy and Financial Tools

Policy Tools
Targeted “water for the poor” programs
Participatory policy development
Participatory decision making involving real power sharing
Gender mainstreaming
Training and capacity building amongst the poor
Integrated disaster mitigation with water management
Prohibitions on disconnections
Financial Tools
Cross subsidies
Grace periods
Caps on maximum fees
Waivers
Differential rates
Financial assistance
Payment in instalments
Rebates
(See the <i>Water for All Series</i> of the ADB for further details)

Gender and Water Governance

Gender refers to the socially constructed patterns of relations between women and men, and cultural beliefs about these patterns. It includes the division of labour, decision making, and access to resources and power. As such, gender, like water, cuts across many critical development challenges and areas of natural resources management. Not only do women and men differ in the ways they manage environmental resources, but they are also differentially affected by the degradation of natural resources, such as deforestation, water scarcity, water-related risks and so on. Because of their socially-constructed roles, women generally experience larger negative impacts from water-related risks than men due to their relative lack of resources, and reduced role in decision-making and capacity to take advantage of social, political and economic opportunities (Momsen 2004). It has long been recognised that women and girls, in both rural and urban areas, bear an inordinate responsibility for the collection of water for domestic purposes. This inhibits women and girls’ involvement in other activities such as education, income generation, cultural and political involvement, rest and recreation (WEDO: 3). Poor sanitation has clear gender impacts, as privacy and security concerns affect women differently to men. Poor sanitation services at schools, for instance, may restrict young girls attending class whilst menstruating. Gender equality is thus intrinsically linked to finding lasting solutions to poverty and injustice, considering it is estimated that women make up 70 per cent of the global poor.

The literature on gender and water is dominated by locality studies as well as manuals, guidance notes and directories on how to identify, assess and address gender differences in water resources management, especially WSS.⁴ What is less well addressed in the literature is how governance of water resources affects gender equality, and is affected by gender inequalities. Key gender challenges in the water sector identified in the literature include: persistence of traditional cultural norms as a rationale for gender inequity in the water sector; participation (in public forums) is often impeded by low self-esteem amongst women; gender inequality in employment in a range of institutions; and link between status, income and water access, such that women’s culturally based inequity is linked to their low incomes (GWA 2003). Common elements of the strategies proposed to improve gender-aspects of water resources management include: promotion of gender mainstreaming in water resources management, greater participation of women in the design, implementation and evaluation of water projects, greater collection of gender differentiated data, and training of water professionals in gender analysis (GWA 2003; Thomas 2000; Zwarteveen 1994).

In practice, there remains a fairly strict gender division between water in the domestic sphere, and public water resources management. The attention given to gender issues associated with WSS in

⁴ For good examples of gender and water guides and directories, refer to: Fong et al, 1996; UNDP, 2003; AusAID, 2005; IWMI, no date; GWA, no date;

recent decades has improved considerably, whereas the attention given to gender issues related to irrigation, catchment management and public water resources management remains inadequate. This is perhaps because the women/private and men/public dichotomy tends to accord better with dominant views on gender relations. Yet, in many ways this distinction public/men – private/women is a false one, and often breaks down in many situations.

Gender differentiation in irrigation management exists in many countries where women play a significant (or increasingly dominant) role in irrigated agriculture but are not well represented in management structures (e.g. water user associations) or in technical training (GWA 2003; Zwarteveen 1994). In contrast to the domestic sphere of WSS, in rural areas men tend to be seen as having primary responsibility for agricultural-water use and are often over-represented in formal resource agencies and irrigation management bodies. This is despite women playing significant roles in agriculture, as labourers and also in regards to household gardens and livestock. The under-representation of women in formal water resources management has direct gender impacts, as planning for water resources developments tends to prioritise activities where men are seen to have a dominant role. Water supply for rice production, for instance, may be prioritised over other productive uses such as household gardens and livestock, which women may have greater responsibility for. This may result in women having to rely on manual transportation of water for gardens, orchards and livestock, thus increasing their burden of responsibility.

Access to water largely depends on access to land, control of resources, and social networks. Such access is often more severely restricted for women than men. In situations where women are no longer able to gain access to land directly or through their husbands, they often have no other option but to seek employment as agricultural workers under exploitative and insecure conditions. Male biases in labour market regulation, in property rights and inheritance laws continue to restrict and shape the activities of women (GWA 2003b:30-31).

The discursive characterisation of women as house-wives and not farmers, bellies the fact they are active in many aspects of water resources management, as captured in the extract below from a study of gender participation in an ADB water sector program in Thailand

Women are farmers and water users by virtue of their daily tasks and responsibilities. However, they are being discursively referred to as housewives, sometimes traders, while men are recognized as farmers and water users. It follows that women may have legitimate interests as water users and farmers and thus, a holistic approach to water resources management requires recognition of such interests. These interests may complement men's, but it is worthwhile to note that poor women's interests may differ from all others, and these also deserve attention and action if water resources management and service delivery is to be labelled inclusive and "participatory."

Women are not only excluded in water resource management at the community level, but their participation in public spaces within the village is also very limited. Since they are mostly identified as housewives, the only public space for them is the Housewives' Association organized in each village. (Pantana, Real and Resurreccion, forthcoming: 7)

There is a danger though that women, who are already burdened with numerous duties attached to their multiple roles as workers, mothers, wives, daughters, housewives, carers etc., may see opportunities for them to participate in committees and decision making forums as yet another burden imposed on their busy lives. Therefore, participation can not be seen in isolation from these wider processes, and the creation of opportunities for women's participation needs to also offer some relief for women from their heavy workload. This can be done through practical measures such as care in selection of the time meetings are held, the provision of crèches at committee meetings, and payment of sitting fees.

Whilst most development institutions have clear gender equity and participation guidelines and policies it is rare for gender issues to receive the necessary attention they require in the design,

implementation and review of projects. On a practical level, the make up of water project design or evaluation teams may structurally marginalise gender issues. For instance, ‘social’, ‘poverty’ and ‘gender’ issues may be lumped together in the job of a single social scientist, yet the other ‘technical’ dimensions of a project may be the responsibility of 4 or more team members.

The lack of representation of women in key decision-making positions is central to the continuation of gender inequalities in relation to water. The recent establishment of river basin committees and new apex water bodies throughout the region has seen women’s interests in water and their right to participate in decision making further marginalised, as evident in the low representation of women in these influential bodies. In order to achieve gender equality, poverty eradication and improved access to WSS, there needs to be greater acknowledgement of women as not only users and beneficiaries of water projects but also as people who have the right to shape decisions on water matters across sectors and institutions.

Indigenous and Ethnic Minority Water Interests

As demonstrated by the above discussion of gender issues, we can see that decision making on water reflects the distribution of power within society. Socially marginalised groups, such as indigenous people, and religious and ethnic minorities, are often excluded from formal decision making processes. Consequently their interests and the particular values they place in water can be ignored or undermined by majority interests.

Text Box 5: 100 per cent coverage?

The quality of WSS services can differ along racial lines, reflecting social cleavages of injustice and discrimination. In many high-income countries, such as Australia, Canada and the US, indigenous communities often lack basic WSS services the majority population takes for granted. The provision of such services to, for example remote Aboriginal populations, comes from finances earmarked specifically for indigenous communities rather than being accounted for within basic local government services. Poor environmental conditions and lack of access to safe water and sanitation are key causes of poor health in remote communities (Baillie 2004).

The woeful situation of access to WSS in Aboriginal communities was meticulously documented by a study commissioned by the Human Rights and Equal Opportunity Commission report of 1994 – *Water – A Report on the provision of water and sanitation in remote Aboriginal and Torres Strait Islander communities* (HREOC 1994). The report found: up to a third of remote Aboriginal and Torres Strait Islander communities were regularly subject to water restrictions; 34 percent of the communities’ water supply did not comply with (NH&MRC) national water quality guidelines; 33 percent were subject to water restrictions in the last 12 months; and 45 percent had insufficient water for the next five years (HREOC 1994: 13).

This is not a micro-scale or isolated matter of concern. A multi-scale response to this problem and the need for greater community control over water-related services was seen as a critical to addressing water inequality, as reflected by one of the recommendations of the report, that “Government at all levels [should] recognise the vital element of community control in the effective provision of services and reviews relevant legislation and structures to provide for the establishment of Aboriginal and Torres Strait Islander service provision authorities.”

A review of the report, some 7 years later in 2001 found that whilst there had been some advances made since the 1994 study, there remains “a large backlog of unmet need still to be addressed” (HREO, 2001: 69). Since this time the situation of many remote communities has not improved, with their reliance on water of poor quality contributing to the lower life-expectancy and the high incidence of water-borne diseases within Aboriginal communities. The securing of people’s right to water, like land rights, is central to the material and spiritual well-being of Aboriginal people.

Clearly scale is a significant issue in regards to improving our understanding of the problem of inequality of access to water, and to reduce inequality action is required at different scales. Improving community control and appropriate responses to the problem by all levels government remains crucial to achieving equitable outcomes and meeting Australia’s international human rights obligations.

Where mechanisms are established to incorporate the interests and views of minority groups in the decision making process they may often be culturally inappropriate to permit their meaningful participation, or fail to account for the differential access to power of these groups. This is demonstrated by the case of indigenous participation in river basin management in Southeastern Australia. The boundaries for particular catchments within the Murray-Darling Basin cut across a number of different Aboriginal nations. For each river valley there is one water management committee made up of a number of representatives of key stakeholders, including farmers, environmentalists and others. There is often only one place allocated for indigenous representation on these committees. This presents significant problems when there may be two or more Aboriginal nations located within each river valley. Whilst formal agencies have been more sensitive to this issue

in recent years, often considerable negotiation is required if the number of indigenous representatives is to be increased. Moreover, there are extremely important rules within Aboriginal society regarding the matter of who can speak for or represent the community, affecting the manner in which decisions can be undertaken. The institutions of non-indigenous Australia have generally been unaware of Aboriginal laws and customs on this matter, and consequently the interests and voice of Aboriginal people have been poorly represented or neglected within natural resources management.

There are other significant barriers to the participation of marginalised groups in formal water resources management structures. Often minority groups such as indigenous peoples and ethnic minorities are faced with structural discrimination and are often worse-off socio-economically than the majority population. For instance, ethnic minorities in South and Southeast Asia have lower levels of formal education compared with ethnic majorities. This places them at a significant disadvantage when it comes to participating in committees, attending meetings, or responding to requests for information or input into policy matters or project assessment. The language meetings are conducted in, including the use of technical or academic jargon, is just one of the more obvious barriers to the participation of marginalised groups. Other matters such as the predominance of written communication, the timing of meetings, the cost of getting to or from meetings, the opportunity cost (in terms of foregone employment) associated with attending meetings, issues of self-confidence in the face of subtle (and more overt) forms of discrimination, and so on all effect the participation of marginalised stakeholders in natural resources management decision making. Too often the trust marginalised groups place in the decision making process is broken by the failure of institutions to properly address such barriers. To define more sustainable and appropriate water futures for society as a whole, water resources management institutions must begin by addressing past injustices and inequalities through the implementation of inclusive and appropriate decision making processes.

Sectoral Water Equity

Agriculture globally and in the region remains the largest water user. Yet despite its importance to subsistence and rural livelihoods its contribution to national GDP and employment is declining in most countries. Moreover, global agricultural commodity prices and trade systems provide low and unstable returns for most farmers in the region, thus affecting household food security through impacts on purchasing power. Those engaged in agriculture, and other natural resource based livelihoods (see Text Box 6), may be vulnerable to re-allocations of water to other sectors, or changes in the timing or quality of water availability.

Whilst agriculture may not be the most economically profitable use of water, the provision of adequate supplies of water for agriculture, for both rainfed and irrigation systems, is critical to food security. The significance of the region's staple crops, such as rice, taro and sago, for food security at multiple scales (from the household to international scales) is considerable. Agriculture is also central to the livelihoods of much of the region's population, and forms an important source of national employment and foreign income earnings. Yet water supply for agriculture is coming under increasing competition from other water uses, such as industry and urban water supply, as societies and economies change. The productivity of existing agricultural land is also under threat from the impacts of unsustainable agricultural practices, such as salinisation from poor drainage and irrigation practices (Barker and Molle 2002).

Text 6 – Vulnerable Livelihoods in the Mekong

The perception that the Mekong Basin is a relatively 'undeveloped' region, with 'plentiful' resources belies the fact that over 60 million people are directly dependent on the natural resources of the Basin for their livelihoods. These livelihoods exhibit features adaptive to the dynamic ecology and hydrology of the region.⁵ The diversity and dynamism of the system underpins much of the productivity of these agro- and aqua-ecosystems. Certain groups are particularly vulnerable to a decline in ecological resilience, due to changes in water flows, sediment and nutrient loads, erosion/sedimentation, water quality deterioration, and habitat modification:

⁵ Examples of such systems include: diverse swidden agro-forestry systems, extensive rainfed, flood recession, floating and deepwater rice systems, integrated farming systems (such as rice-fish in flood zone, rice-shrimp in brackish zone), integrated garden and agro-forestry systems, traditional fisheries and aquaculture systems, and others.

- Ethnic minorities, notably those in remote mountainous areas of Southwest China, Laos, northeastern Cambodia and the Khmer in the Vietnamese Mekong Delta.
- Fishers and others dependent on living aquatic resources, especially in the lower Mekong Basin in Southern Laos, the Tonle Sap Lake region and the Mekong Delta.
- Those who derive a significant part of the livelihood from riverbank gardens and cultivation on seasonally exposed islands.
- Communities proximate (both upstream and downstream) to proposed reservoir areas and others who may be directly affected by modifications in flow regimes. Anticipatory logging and resettlement in these areas has already created major environmental impacts, social dislocation and uncertainty.
- Remote communities located near proposed transport routes and other infrastructure developments who will be exposed to highly mobile communities (increasing the risks of HIV/AIDS and prostitution) and extractive resource industries.
- Whilst surface water is heavily utilized for drinking, bathing and washing throughout the basin, the close to 20 million people in the delta are particularly vulnerable to declines in water quality due to agro-chemical, industrial and domestic pollution. The cumulative and synergistic impacts as well as the seasonal and tidal effect on the concentration of pollutants, and the interaction with groundwater flows, is still little understood.
- Those already exposed to the hazards of water excess and water scarcity face increasing uncertainty from future development and impacts of climate change. The rise in population, economic activity and infrastructure development in the lower basin has led to an increase in the humanitarian and economic impacts of the increasingly frequent severe floods. The rising competition over dry season flows has also exposed some communities, especially those reliant on impermanent water sources or located far from water-courses, to the risk of water scarcity (and concentrated pollutant levels). Groundwater resources are also subject to increasing pressure from over-withdrawals and contamination, especially in the delta.

Yet, beyond these generalizations there are some groups who are particularly vulnerable to a decline in ecological resilience in the region, including: those who are landless or land-poor and derive a significant portion of their livelihoods from common property resources like wetlands, fisheries and non-timber forest products; single-headed households (both women and men⁶); recent immigrants or newly established households unfamiliar with local environmental conditions and others who are weakly integrated into social networks; and those who are not able to pursue diverse livelihood strategies to spread economic and environmental risks (e.g. rice monocroppers). Other factors including effectiveness of institutions, economic inequality, gender, ethnicity, age, political marginalization, indebtedness, education, and remoteness influence the extent to which ecological changes will have socially differentiated impacts. The combination of economic risks (such as decline key commodity prices and/or rise in cost of inputs) may also exacerbate the impacts of environmental changes.

Population projections and anticipated rises in living standards are expected to result in increased food demand in the future. Such demand, combined with rising competition for water from other sources, is likely to put increased pressure on existing agricultural systems to produce more food, with the same (or even less) water. Considering the currently low economic productivity of agricultural water use, to ensure food security and sustainable agriculture water governance needs to regulate water allocation to take account of these essential needs.

5. Conclusion: Implications for Development Assistance

International aid for WSS has fallen in recent years, despite growing international awareness of the critical nature of this issue. Between 1999-2001 aid was estimated to be US\$3.1 billion (annually), compared with US\$3.5 billion in 1996-98 (Camdessus 2003:7). A great portion of this aid comes from the World Bank and regional development banks. Total investment in WSS in the developing countries is estimated to be US\$30 billion, with 7 per cent of this from aid sources (Luke 2003:3).

The figure below presents the proportion of aid to developing countries for water projects from different sources in the 1990s. Much of this aid is delivered in the form of non-concessional loans, with the proportion of aid in grant or soft-loan form decreasing in more recent years. The World Bank has been one of the largest providers of finance, usually as loans, for WSS, irrigation and hydropower development. Lending to the water sector accounted for 15 per cent of the Bank's total cumulative lending up until 1993 (Moore and Sklar 1998:345). Their lending in this area declined in the 1990s, however, regional development banks have continued to lend in this area (Camdessus 2003).

⁶ In the countries of Laos, Cambodia and Vietnam there is a high proportion of single-headed households due to the effects of past conflict, UXOs and (increasingly) migration.

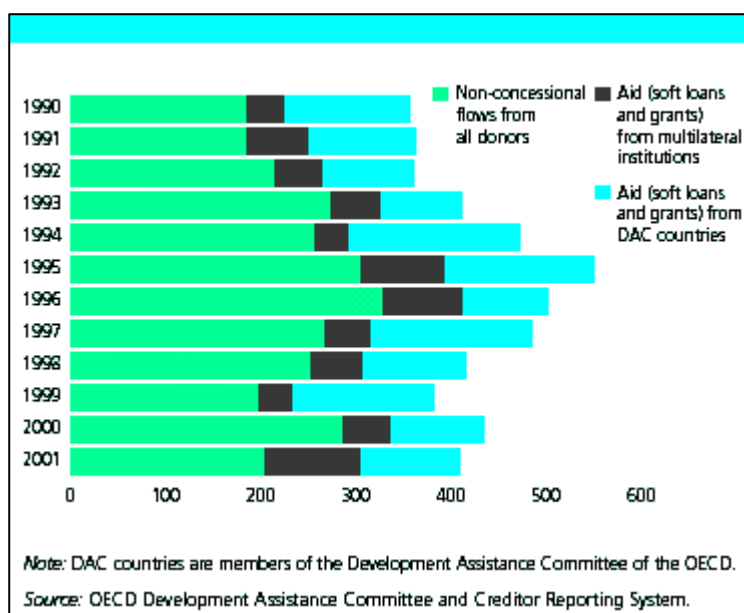


Figure 3: International Aid to Water Sector by Source, 1990-2001 (millions US\$)

Source: Guerquin *et al* 2003, p. 84

Aid in the water sector could more effectively target the poor and address regions of critical need. Reasons why this has not occurred so well in the past, include:

- Many WSS projects are large-scale, urban based projects yet the greatest need exists amongst dispersed rural populations or the urban-poor living on the margins of cities.
- Aid to the water sector has generally relied upon expensive, high-tech infrastructure rather than building on local, more appropriate forms of technology.
- Large-scale dams and irrigation schemes have dominated international finance in the water sector.
- Small scale irrigation, small-holder farming, community-based water projects, watershed and environmental conservation projects have received less support compared with infrastructure.
- Capacity building which targets local water management agencies and associations and which aims to build partnerships with communities have received a low priority.
- Women have not been recognised as central to the success of water projects and programs.
- The debt burden associated with multilateral development bank loans decreases the capacity of governments to invest in water projects and essential services for the poor.
- Only about 10 per cent of aid goes to water governance, such as water resources policy, planning, education, training, or data management (Guerquin *et al* 2003: 84).

The above discussion of equity implications of markets and property rights raises some important issues for the manner in which development assistance can support more inclusive, fair and equitable water governance.

- a) The application of market instruments to meet water efficiency goals needs to be highly sensitive to the context of their application in order to ensure essential water needs and the environment are protected. The market has consistently proven ineffective in addressing equity issues, with 'safety nets' often promoted to re-dress this issue. In specific cultural and economic contexts payment for water services or compensation to water providers can encourage conservation and community ownership of systems, yet in other contexts it can erode people's right to water if not implemented in a manner that gives due respect to basic needs and equity issues.
- b) The limitations of a market approach to water management are particularly apparent when considering the water needs of the environment. The maintenance of healthy ecosystems,

environmental services, and biodiversity can not be adequately quantified for market purposes and thus requires progressive regulatory interventions by government in the interests of the common good.

- c) In order to address underlying social inequities in the design and implementation of projects a good understanding of vulnerable and marginalised groups is required. Where information and knowledge of these groups is lacking the collection of this information should be prioritised. For example ethnically and gender-differentiated water data at multiple scales is still lacking in many of the case study countries. Importantly, more than just good information is required; clear mechanisms for the inclusion of socially marginalised groups into long-term decision making should be supported.
- d) As water systems have become more regulated and even over-allocated, as in the Australian context, water resources management is moving into a new era of priority setting in allocation and articulation of trade-offs. To ensure non-productive values, such as ecological, spiritual and subsistence values, are properly accounted for greater support for qualitative and quantitative analysis of the values attached to water are necessary to ensure equitable water resource allocation.
- e) Public consultation and participation in decision making on matters concerning water allocation and environmental management have become increasingly important as competition over water resources has grown. The allocation of water between different users and uses in regulated systems has the potential to create conflict within countries, and between countries in transboundary contexts. This underlies the importance of open and transparent decision making, and the necessity of stakeholder involvement in water matters. Aid in the water sector needs to prioritise capacity building in this area in the future as projects require not only high quality technical expertise but sound knowledge and experience in management, and community consultation and participation.
- f) Greater use of vulnerability analysis is required to identify potential inequalities between water users and uses associated with particular interventions in water-related sectors. Vulnerability of particular groups in certain situations to worsening water-related risks (pollution, scarcity) and food insecurity are important issues of priority concern.
- g) Equity issues do not only concern uses between people, but also between people and the environment. Australia has come some way in advancing the science and mechanisms for decision making on environmental flows. Greater decision support on environmental flows in the context of regulated rivers and water markets is an area of potential assistance throughout the region.
- h) Rights are not abstract and can not be defined from afar, but rather are the product of a social process, reflecting social norms and values. Reform of water rights needs to be embedded in a strong consultative process. This makes them likely to have greater social acceptance. Whether at a community or international scale, for equity to be maintained in a system it requires a high degree of social acceptance in order to minimise the cost of regulation and enforcement. In the same way, reform to any system of water governance also requires a high degree of social acceptance to ensure conflict is avoided and to minimise costs of regulation.
- i) Whilst PRSPs are important guiding documents for donors targeting poverty alleviation, they vary considerably in how well they address water and poverty issues. This is influenced greatly by the extent to which a broad based dialogue informs the PRSP and the extent they differentiate between the needs of different regions, livelihoods and social groups (men, women, ethnic minorities) within countries.

- j) Neglect of basic operation and maintenance of WSS and irrigation systems tends to more severely affect the poor. The financial sustainability of projects targeting very poor communities needs to be addressed in partnership with communities to ensure appropriate solutions are identified. There is no 'off the shelf' option appropriate to all situations, and a mix of different tools is required to ensure the interests of the poor are addressed.
- k) The most effective poverty reduction interventions may not necessarily be in the extension or construction of new systems, but may be through assistance with appropriate operation and maintenance systems, and the upgrading of old systems (WSS and irrigation). Concurrently, careful attention to sustainable financing options can ensure dependence on aid is reduced in order to find long-term solutions to water-related poverty.
- l) Whilst development assistance has come some way in recognising the crucial role women play in underpinning success of 'domestic' water supply and sanitation projects, the attention given to gender issues associated with other aspects of 'public' water resources management, such as catchment management and irrigation is less well addressed. Increased involvement of women in formal water resources management is likely to result in different priorities for water allocation and resource development, reflecting the different roles men and women play in society.
- m) Inequalities in regards to water access within communities, for example between indigenous and non-indigenous Australians, requires clear documentation and action at multiple scales as well as high-level leadership for real change to occur.

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Annex 1 - International Treaties that Refer to Water and Human Rights

Treaty	Year and Status	Water Reference	Regional Signatories
International Covenant on Economic, Social and Cultural Rights (ICESCR)	1966 (in force)	Provided the basis for recognition of the human right to water. Article 11 details the right to an adequate standard of living and the right to freedom from hunger. Article 12 recognises the right of everyone to enjoy the highest attainable standard of physical and mental health.	About half AusAID Asia Pacific partner countries have signed. Thailand and Vietnam have ratified. Indonesia and Vanuatu have not signed
Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)	1979 (in force)	Article 14 (2) Concerns rural women and described their right (c) To enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply, transport and communications.	Most countries in the Asia Pacific region have signed. All case study nations have ratified.
Convention on the Rights of the Child (CRC)	1989 (in force)	Article 24 (1) States Parties recognize the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. States Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services. (2) States Parties shall pursue full implementation of this right and, in particular, shall take appropriate measures: (c) To combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution.	All regional countries have signed and ratified.
International Convention on the Non-navigational Uses of International Watercourses (Watercourses Convention)	1997 (not yet in force)	Convention to frame basic rights and obligations of watercourse states. Not specifically concerned with human rights to water but mandates that special regard be given to the requirement of "vital human needs" (Salman and McInerney-Lankford 2004).	No regional countries have signed or ratified. China objected to the Convention.
UN Committee on Economic, Social and Cultural Rights General Comment No.15	2002 General Comments are not legally binding but they provide a mechanism for developing a normative and contextualised understanding of the provisions of the ICESCR (Salman and McInerney-Lankford 2004).	Details the human right to water including national legislative implementation and the obligations of non-state actors. Paragraph 2: "The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent death from dehydration, to reduce the risk of water-related diseases and to provide for consumption, cooking, personal and domestic hygiene requirements."	

Annex 2: Status of International Human Rights Treaties that Refer to Water in AusAID Asia-Pacific Partner Countries

	ICESCR	CEDAW	CRC
Australia	x	x	x
Papua New Guinea		x	X
Cook Islands			X
Fiji		x	X
Kiribati		x	X
Marshall Islands			X
Nauru			X
Niue			X
Palau			X
Samoa		x	X
Solomon Islands	x	x	X
Tonga			X
Tuvalu		x	X
Vanuatu		x	X
Myanmar		x	X
Cambodia	x	x	X
China	x	x	X
Chinese Taipei (Taiwan)			
East Timor	x	x	X
Indonesia		x	X
Democratic People's Republic of Korea	x	x	X
Republic of Korea	x	x	X
Lao People's Democratic Republic	x	x	X
Malaysia		x	X
Mongolia	x	x	X
Philippines	x	x	X
Singapore		x	X
Thailand	x	x	X
Vietnam	x	x	X
Afghanistan	x	x	X
Bangladesh	x	x	X
Bhutan		x	X
India	x	x	X
Maldives		X	X
Nepal	x	X	X
Pakistan		X	X
Sri Lanka	x	X	X

Annex 3: National Water Legislation and References to Water as a Human Right in Case Study Countries

Case Study	Water Legislation	Water Rights
Australia	Various State and Territory Acts	
Thailand	People's Irrigation Act N. 2482 of 1937 State Irrigation Act N. 2485 of 1942 Provincial Water Works Authority Act of 1979 Enhancement and Conservation of National Environmental Quality Act N. 2535 of 1992 National Water Law is still in the process of being drafted.	These Acts deal mainly with irrigation rather than water extraction. Water is not mentioned in terms of rights within these Acts. Irrigation permits are divided into "private irrigation" permits and "people's irrigation" permits. The former are granted when diversion works are constructed by any person for exclusive use in cultivation. The latter are granted when diversion works are jointly made by the people of a locality for communal cultivations.
Vietnam	The Law of Water Resources No. 8 of May 20, 1998 Decree No. 179/99/ND-CP of December 30, 1999 stipulating the implementation of the Law on Water Resources and 1993 Law on Environmental Protection	Article 1 of the 1998 Law of Water Resources recognises a right to water: Organizations and individuals are entitled to exploit and use the water resource for living purposes and production. "Living purposes" are defined as the use of water for cooking, drinking and sanitation (Article 3). The preamble of the Law of Water Resources also states that "water is the essential component of life and the environment". The regulation and distribution of water must ensure the principle of fairness, reasonability and priority is given to the quantity and quality of water for living (Article 20). Small scales water users are not required to have water use permits, although larger organisations (e.g. pumping stations, companies) are required to obtain permits for use and waste-water discharge Water rights are not linked to ownership of land.
Indonesia	The Law of the Republic of Indonesia No. 11 of 1974 on Water Resources Development; new Water Resources Act passed Feb 2004 Government Regulation No. 22 of 1982 on Water Management Regulation and Regulation No. 23 of 1982 on Irrigation Instructions of the President No. 2 of 1986 on the Promotion of Water User Farmer Association Regulation No. 49/PRT/1990 on the Procedure and Requirements for the Use of Water Regulation No. 20 of 1990 on Water Pollution Control	Article 16 of Regulation No. 22 of 1982 on Water Management states that every person has the right to use water for her/his "basic needs" or for her/his domestic stock. For the purposes of the 1974 Water Law, "basic needs" are defined as the use of water for drinking, cooking, bathing and other household requirement. Article 16(2) Of Regulation No. 22 of 1982 on Water Management limits the use of water for these purposes by describing that water use should not cause detriment upon the water source, the related public facilities and the environment. Water rights are not linked to ownership of land.
Vanuatu	Water Supply Act: Laws of the Republic of Vanuatu Revised Edition 1988 Chapter 24 Water Supply Water Supply Apparatus Act: Laws of the Republic of Vanuatu Revised Edition 1988 Chapter 87 Water Supply Apparatus Water Supply (Amendment) Act No.9 of 1993 Water Supply (Amendment) Act No.28 of 1993 Water Resources Management Act No. 9 of 2002	Most legislation concerned with water supply and abstraction regulation. Water rights are linked to land. Section 4(2) of the Water Resources Management Act states "The occupier of any land can use any water on, adjacent to, or under that land for domestic and stock purposes, if no other lawful users are adversely affected by that use."
Mekong	Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin	Does not deal with water as a right. Refers to "reasonable and equitable utilization" and "sovereign equality" between countries.

