What Do We Know about Gender and Other Social Impacts of IWS Projects?

A Literature Review

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Table of Contents

List of Acronyms

Acronym	Expansion
CORENCHI	Comité Regional de Recursos Naturales de la Chinantla Alta, Mexico
GWA	Gender and Water Alliance (www.genderandwater.org)
IWS	Investing in Watershed Services
NTFP	Non-Timber Forest Product
PES	Payments for Ecosystem Services
PRESA	Pro-poor Rewards for Environmental Services in Africa
PSA	Payments for Ecosystem Services (Costa Rica program)
PSAH	Payments for Hydrological Environmental Services (Mexico program)
PWS	Payments for Watershed Services
RUPES	Rewards for Upland Provision of Ecosystem Services
SIA	Social Impact Assessment
SLCP	Sloping Lands Conversion Programme, China
UNDP	United Nations Development Program
WUA	Water Users Association

Introduction

The approach of this short literature review is to look firstly at what the literature has to say about wider social impacts of "investing in watershed services" (IWS) projects or programs and, secondly, to examine more specifically the gender issues. The term IWS is used in this paper as a convenient shorthand while realizing that this is a controversial term and that there is a case for using other terms such as "payments for watershed services", "reciprocal arrangements in watershed service provision" or "compensation for provision of watershed services." In the interest of brevity, this discussion is not entered into except to say that the term IWS is used here in a broad and inclusive way similar to "IWS-like schemes" as used in the Bellagio Conversations (Asquith & Wunder 2008).

It is also important to clarify the term 'social impact' which is frequently misunderstood. A widely accepted definition of social impacts is that of Vanclay (2003:5):

> "Changes to one or more of: people's way of life – that is, how they live, work, play and interact with one another on a day-to-day basis; their culture – that is, their shared beliefs, customs, values and language or dialect; their community – its cohesion, stability, character, services and facilities; their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratization that is taking place, and the resources provided for this purpose; their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources; their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity; their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties; their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children."

This definition is important because many reports focus on short or mid-term outcomes such as increased income or capacity building since these are much easier to identify. While these are notable outcomes, an increase in income, for example, cannot be equated to a positive social impact, partly since the latter would depend on how the money is spent. In this review we have generally used the term "social effects" or "outcomes" rather than impacts in view of the meaning of "impact."

This review is particularly concerned with gender impacts. A useful definition of what we mean by gender and gender analysis is provided by Schmink (1999:2):

> "Gender refers to socially constructed differences and relations between men and women that vary by situation and context. Gender analysis requires going beyond statements about "women" and "men" to understand how historical, demographic, institutional, cultural, socioeconomic and ecological factors affect relations between women and men of different groups, which partly determine forms of natural resource management. Gender analysis focuses on the interaction of gender with other socially-important variables, such as age, marital status, economic roles, ethnicity, and migratory status."

A key observation here is the focus on the interaction of gender with a range of other variables or characteristics rather than gender *per se*.

Varied IWS Types and Monitoring Methodologies: Apples and Oranges?

As with previous reviews of the social effects of IWS interventions, such as Porras et al. (2008) and Bond and Mayers (2010), any attempt to collate the data faces problems of huge variation in the types and size of IWS schemes and in the methods of analysis. IWS schemes range from huge national programs such as China's Sloping Lands Conversion Program (SLCP) with 53 million farmers, to relatively small projects between upstream providers and downstream beneficiaries, e.g., 21 upstream providers in a IWS project in Himachal Pradesh, India (Agarwal et al. 2008). As pointed out by Echavarria et al (2004: 29) "assessing socio-economic impacts is a difficult task … particularly so in rural communities, where there are often logistical problems." One reason for the difficulty is that many social effects are indirect or unexpected, and can be difficult to identify and attribute.

Table 1 summarizes the social and equity-related observations from published IWS studies, and provides notes on the sources and methodologies used. It can be observed that very few used a recognizable impact assessment methodology, such as use of a counterfactual analysis, control observations ("matching methods") or theory-based evaluation. As pointed out by Porras et al. (2008) most evaluations or monitoring studies are case studies written by IWS advocates or project proponents, which also raises the issue or risk of confirmation bias. It appears that little has changed from a decade ago when Landell-Mills & Porras (2002) noted that "the superficial nature of impact analysis extends to evaluations of costs and benefits to poor households." Another observation by Pagiola (2005) is that *ex post* studies tend to focus only on suppliers of IWS rather than all stakeholders, thereby limiting opportunities to learn about the indirect benefits of IWS. This situation is not unique to IWS projects. Reviews of the livelihood or social impacts of Payments for Ecosystem Services (PES) interventions (Jagger et al. 2010; Caplow et al. 2010) reach the same conclusion: weak monitoring makes it hard to make firm statements about social impacts, a situation resulting in contested views.

Summary of Evidence on the Social Impacts of IWS Interventions

Based on the evidence in Table 1 and various overviews (Asquith & Wunder 2008; Porras et al. 2008; Bond & Mayers 2010) the picture seems quite positive as regards social or equity effects:

- IWS schemes have generally had positive welfare impacts on most participants, even where there has been no poverty targeting;
- IWS programs tend to result in a modest increase in household income, including for poor IWS providers who are often numerically important in upper watersheds;
- Indirect social benefits have been more important than the direct effects: most IWS projects involving contractual arrangements between service providers and buyers have had positive social and human capital effects and strengthened their institutions (making it easier to attract other projects and services). Some of them have also empowered local stakeholders and promoted independence or self-determination (Box 1);
- PES projects have tended to strengthen local land tenure, or resulted in a formalization of property rights, since secure tenure is very important for achieving the environmental aims.

Table 1. Evidence from Selected IWS Interventions

Social effects	More positive social or equity observations	Less positive social or equity observations
Direct cash or in-kind payments	Costa Rica: PES represented on average 16% of annual household income Ecuador: PWS contributed about 20-30% household income, probably exceeding opportunity costs; some of this spent on basic needs such as cooking gas and schooling Mexico (1): raised household incomes above poverty levels Mexico (2): 80% of ejido members and73% of small private landholders said Payment for Hydrological Environmental Services (PSAH) was important for annual income	Bolivia: beehive transfers reported as equivalent to 2-10% of opportunity costs – returns to beekeeping are skill-dependent China: evidence that SLCP does not cover opportunity costs (grain crops) and reduced household incomes in some areas Ecuador: payment is below expectations Indonesia (1 & 2): marginal contributions to household income Nicaragua: IWS were less than 10% of annual income, and 20% of average opportunity costs
Effects on social and human capital or institutional capacity	Bolivia: previously marginalized communities empowered, recognition that watershed management is "everyone's issue"; environmental committees and Beekeepers' Association formed; increased cooperation and trust, reduced upstream-downstream tensions; agricultural training received worth $35 per participant Costa Rica: capacity building of landowners, youth and children in technical (farming methods) and environmental education Ecuador: strengthened local organization India: improved inter-village cooperation, and governance by downstream village institutions India: village development committees have included marginalized groups in IWS Indonesia (1 & 2): previously marginalized communities empowered to negotiate with district forest office, state forest company, local government, universities, etc. Mexico (1): social capital & institutions improved (but already strong), confidence in leaders	
Livelihood and employment effects	Bolivia: diversification of livelihoods via beehives; some landless have bought beehives from participants, others are employed in honey processing Costa Rica and Ecuador: increased potential for eco-tourism Ecuador: some job creation for occasional workers, incipient income diversification, e.g., Non-Timber Forest Products (NTFPs) Indonesia (1): some employment for poor in NTFPs (indirect effect), 60% revenue invested in business ventures to diversify livelihoods, including goats, tree nurseries, fodder stores Indonesia (2): some employment; 5% revenue reinvested in business ventures to diversify livelihoods, including goat breeding, vegetable crackers and oils South Africa: 24,000 previously unemployed have been employed	Bolivia: net income from beehives has been negative in some cases Costa Rica: possible adverse affect on smallholders with reduced grazing areas Ecuador: difficult for PWS to compete with ranching, and the payments may be used to buy more cattle India: loss of grazing areas
Other welfare related effects	Costa Rica: increased land security against squatters, and increased land values Ecuador: Improved awareness of environmental regulations Mexico (1): community members think they are better off as regards diet, health care, housing	China: rent-seeking activities of bureaucrats involved in SLCP India: disputes over access to water

Country	Project name/location	Area (km^2) 1/	Notes on methodologies	Sources
Bolivia 2/	Los Negros watershed service provision project, Fundación Natura Bolivia	250 km^2	34 semi-structured interviews with participants, donors, intermediaries and government officials	Asquith & Vargas 2007
Caribbean 2/	Buff Bay/Pencar catchment, Jamaica Talvan catchment, Saint Lucia	202 km^2 3.2 km^2	Household surveys and reviews of country programs	McIntosh & Leotaud 2007
China	SLCP or Conversion of Cropland to Forests and Grassland program	2010: > 90,000 km^2	2007: sample surveys of participants in 3 Provinces of Yellow and Yangtze river basins; 2008: draws on 2003 household & village level survey, other studies	Li et al. 2007; Bennett 2008
Costa Rica	Payments for Ecosystem Services (PSA) program	2010: 6,920 km^2	Random sample of 35 participants in Virilla watershed, control group of 15 non-participants, using Sustainable Livelihoods Framework for analysis	Miranda et al. 2003
Ecuador	Pinampiro municipal watershed protection scheme	5.5 km^2	2004: Interviews with 11 of 20 participants in Pimampiro municipality, sample of 36 water users; 2008: interviews of sellers & buyers, community workshops	Echavarria et al. 2004 Wunder & Albán 2008
India 2/	Kuhan catchment, Himachal Pradesh Bhodi-Suan catchments, Himachal Pradesh Bhoj Wetlands, Madhya Pradesh	5 km^2 7 km^2 361 km^2	Household surveys	Agarwal et al. 2008
Indonesia (1) 2/	Brantas watershed, East Java Province	n. a.	Household surveys	Munawir & Vermeulen 2007
Indonesia (2) 2/	Cidanau watershed, Banten Province	226 km^2	Household surveys	Munawir & Vermeulen 2007
Mexico (1)	Comité Regional de Recursos Naturales de la Chinantla Alta (CORENCHI)	221 km^2	PhD study of 2 Oaxaca communities in Mexico's PSAH	Nieratka 2011
Mexico (2)	PSAH	2010: >15,150 km^2	Stratified random sample of 376 beneficiaries and 39 rejected applicants of the PSAH	Gonzalez Guillen, 2004
Nicaragua	*Paso de Los Caballos* River Basin, San Pedro del Norte municipality	7.4 km^2	8 semi-structured interviews, 65 household questionnaires	Corbera et al. 2006
South Africa 2/	Sabie-Sand catchment in Mpumalanga Province, Ga-Selati River in Limpopo Province, and national Working for Water Program	7,361 km^2 2,338 km^2	Review of Working for Water program and household surveys	King et al. 2008

Notes: 1/ Area at time of publication unless otherwise stated; 2008 data is from Stanton et al. 2010
2/ The information on Bolivia, Caribbean, India, Indonesia and South African case studies was mainly derived from Bond & Mayers, 2010

Box 1. Empowerment and Self-Determination in *Los Negros* Project, Bolivia

For the *Los Negros* Watershed Service Provision Project the indirect social benefits have been more important than the direct benefits. In spite of modest in-kind payments, the upstream communities have been empowered according to the project proponents, have developed a heightened sense of rights and responsibilities as environmental stewards, and developed a degree of self-determination, e.g., it is reported that they will only receive external support if it is linked to their watershed management and conservation aims.

This experience also provides a good example of the importance of stronger social capital. When the local elite attempted to interfere with the project, representation was made by the upstream communities to the municipality and it was reinstated. Furthermore the municipality then made a financial contribution to the project. This increased the legitimacy of the scheme making it hard for the elite to undermine it.

Sources: Bond & Mayers 2010; Asquith & Vargas 2007.

Do IWS Schemes Reduce or Exacerbate Poverty?

While there is considerable evidence of indirect social benefits, it is not easy to identify situations where poverty has been exacerbated or reduced by IWS schemes. On the one hand the poor are often numerous in upper watershed areas, and there seems to be potential for a distributional effect from wealthier and often urban based consumers of watershed services to rural providers, not to mention agricultural productivity benefits due to improved management practices and longer term benefits from more resilient ecosystems and better quality local watershed services (Asquith & Wunder 2008). On the other hand the poorest have very little or no land, and in most IWS schemes service providers own land or at least have *de facto* rights over it. Although landless or resource poor families may benefit from the indirect effects, the distribution and ownership of land is the most important determinant of who benefits (Pagiola et al. 2005). Aside from Mexico it seems that little of the land involved in PWS schemes is communally owned or used by the poor, although some newer schemes such as the Rewards for Upland Provision of Ecosystem Services (RUPES) program in Southeast Asia, Pro-poor Rewards for Environmental Services in Africa (PRESA) and *Cuencas Andinas* (Colombia, Ecuador and Peru) are more actively targeting poor farmers (Bond & Mayers 2010).

Notwithstanding the limited evidence, poorly designed IWS projects or programs may exacerbate poverty, e.g., a situation in which watershed degradation is associated with over-grazing or slash and burn farming by resource poor farmers on commons land, and there are no compensating livelihood activities (such a project may also be poorly designed as regards its social sustainability).

Payment type can also determine poverty effects (Asquith & Wunder 2008). Payments can be in cash or kind, e.g., beehives (as in the Bolivia case), technical assistance and sometimes entitlements and property rights, e.g., in Sukhomajiri, India, the landless were able to sell their water rights to compensate for reduced grazing access (see Box 2). In-kind payment systems may also be better for women since cash payments usually go straight to the men.

A bigger poverty issue for IWS programs has been the problem of the "non-participating poor." This happens in situations in which land title is a condition for participation[1] or where application procedures are complex and project outreach insufficient (Pagiola et al. 2005). In Costa Rica requirement of land title as a condition has contributed to low

[1] It should be noted however that a requirement of secure land tenure, which may or may not imply the need for a land title, can be important since insecure tenure increases the potential for land conflicts and the risk (to the buyers) of non-delivery of the ecosystem service.

participation of the rural poor in the PSA program, although other factors have been important[2]: a study by Miranda et al. (2003) in the *Virilla* watershed found that most PSA recipients were relatively wealthy landowners, and 65% of them were professionals, employed or retired, and were not economically dependent on their land. Similarly in some of the IWS schemes in the Caribbean, payments for sustainable land use practices were in the form of tax rebates, so that the non tax-paying poor were left out (McIntosh & Leotaud 2007). High transaction costs can also be a key entry barrier for the poor (Asquith & Wunder 2008).

Another potential poverty effect is on the buyer side - the poor may not be able afford to pay for watershed services that they are often disproportionately dependent on compared to wealthier water, firstly since they have less alternatives, and secondly because they live in riskier environments that are more prone to floods or landslides resulting from poor watershed management (Asquith & Wunder 2008). In Nicaragua, safety nets have been developed to protect the poorest consumers from the adverse impacts of the increase in water fees: the poorest receive free water or in some cases can contribute labor instead of cash payments (Bond & Mayers 2010). Other efforts to reduce the impact on poor users include the "lifeline tariff system" in Ecuador and a system of voluntary contributions in some Mexican schemes.

How Do National and Project IWS Schemes Compare?

Some of the national publically funded IWS programs such as those of Mexico and South Africa have explicit poverty objectives, and so it is unsurprising that Table 1 reveals some significant poverty reduction effects, in the case of Mexico's Program for Hydrological Environment Services (PSAH) in the form of cash income for poor households, and in the case of South Africa in the form of employment of the previously unemployed. On the other hand, China's Sloping Land Conversion Program (SLCP) appears to have exacerbated poverty in some areas (see Table 1) as well as the reported issues of coercion and rent-seeking (Li et al. 2007; Bennett 2008). And while in Mexico's PSAH most payments are to people living in highly or "very highly marginalized" locations, it is reported by Muñoz Pina et al. (2008:733) that there has been a bias against the "poorest of the poor: the very highly marginalized are under-represented relative to the highly marginalized".

Small projects, on the other hand, can better target the poorest or landless than national programs. This is because of their capacity for local adaptation and innovation, as shown in Box 2. Another example is from the Pinampiro project in Ecuador where an informal social monitoring system was set up to check that the payment was assigned to the person managing the land regardless of the title. Using this system project managers were able to ensure that funds reached a household even following divorce or separation (Porras et al. 2008).

[2] Low participation of poor landholders in Costa Rica's PSA was also due to other entry restrictions, including ineligibility of households receiving state benefits and of land reform beneficiaries, and because it was more difficult for small farms to set aside land from food or cash crops (Miranda et al. 2003).

Box 2. Adaptive Participatory Watershed Management in Sukhomajiri, India

In the 1970s residents in Chandigarh, downstream of Sukhomajiri village, were severely affected by water scarcity caused by siltation, much of it originating from poor land practices in the Sukhomajiri area. In response, a Water Users Association (WUA) was set up in Chandigarh in 1982 to collect fees from water users in order to fund upstream watershed management. In order to secure participation of Sukhomajiri land users, the funds were used to construct a reservoir for irrigation. But while landowners below the reservoir benefited from this, the landless who depended on common lands above the reservoir did not – and also lost their grazing rights.

In order to get support for watershed protection from landless households, the WUA then introduced a tradable water rights scheme in which every household had the same right to water, so that the landless, who had no use for irrigation water could sell their rights on condition that they cooperated with watershed protection. However, fluctuations in water availability made the system of water rights difficult to sustain, so the scheme was adapted again. The WUA returned to collecting fees from water users for watershed protection. However, one of the aims of the scheme became to employ landless people to implement watershed protection as a means of gaining their support.

Source: Kerr 2002.

What Are the Trade-Offs Between Watershed Service and Social Objectives?

When poverty objectives are prioritized, a trade-off with the environmental objectives is almost inevitable. It just becomes a question of how large the trade-off is. In the case of the national programs of Mexico and Costa Rica increased emphasis on poverty objectives (due to political pressures) will have reduced environmental additionality.

On the other hand there is evidence of some good win-win opportunities. In many areas of Mexico the environmental additionality has probably been quite high due to the geographical convergence of high poverty, degradation risks and the importance of watersheds (Muñoz Pina et al. 2008). South Africa's Working for Water program has explicitly targeted the landless and unemployed, thereby obtaining strong political support which has helped it secure its financial sustainability, and can also boast some impressive environmental achievements (Turpie et al. 2008).

Gender Effects of IWS Interventions

There is very little mention of gender in the IWS literature, and not much in the PES literature. Gender effects have not been monitored, and therefore there is no information about how women have been affected except some reference to their low levels of participation. There is on the other hand a voluminous literature about gender issues in water resource management.

The only references to gender in the IWS literature are on women's low participation in IWS programs. Porras et al. (2008) report on women's low participation in the national programs of Costa Rica and Mexico, although the data is not recent. During the first five years of Costa Rica's PSA program women held 11.1% of the contracts and 7.3% of the area enrolled, while men held 41% of the contracts and 28.3% of the area. Female participation probably increased after 2000 following promotional measures.

In the case of Mexico, female participation was reported as very limited by Gonzalez Guillen (2004). Even when women were the land right holders or *ejidatarios* (16% of total), the rights were usually exercised by their non-right holding husbands. Women also had little involvement in community institutions. A survey of successful and rejected *ejido* and other community applications found no female representatives in 65% of cases, and that only a half of female *ejidatarios* knew about PSAH whereas nearly all the men were aware of it. A recent report also notes that while women do most of the environmental protection tasks, they receive a small share of the payments since they

compose only 20% of landholders among Mexico's 3,000 forested *ejidos* and other communities receiving the payments (http://ipsnews.net/news.asp?idnews=107284).

There are also a couple of references to women as buyers of watershed services. One study found that women in one area of Zimbabwe had a 40% higher willingness to pay for an improved water supply than men (Briscoe & de Ferranti 1989). However women's ability to pay does not usually match their willingness to pay, and a high price of water can bar them from access and drive the water carriers to more distant and less safe water supplies (van Wijk et al. 1996).

Why Does Gender Matter for IWS?

The first reason why gender matters is that the outcomes are more likely to be positive when women participate. Women have different skills, knowledge and objectives which complement those of men and result in more favorable outcomes in environmental or natural resource management situations (see Box 3). They are often more organized and responsible when it comes to water, e.g., research from Mali reports that women were more organized at collecting and pooling regular payments for water (Jones 2011), and in the Philippines women's greater interest in health led them to be more effective at monitoring water quality than men (GWA 2006).

Box 3. Studies on Gender and Water Resource Management

A World Bank review of 121 rural water supply and sanitation projects found that women's participation was among the variables most strongly associated with project effectiveness, and that failure to incorporate gender issues could result in failed projects. For example, in India, compost pits located outside villages went unused, and women continued to deposit waste near their homes - even when fined for doing so - because they did not wish to be seen carrying loads of refuse to the outskirts of the village. If there had been consultation with women, this problem could have been avoided.

A study by the International Water and Sanitation Centre (IRC) of community water supply and sanitation projects in 88 communities of 15 countries found that projects designed and run with the full participation of women were more sustainable and effective than those that did not involve women as full partners.

A United Nations Development Program (UNDP)/World Bank research study of 44 water schemes in Asia and Africa called 'Voice and Choice for Women' concluded that water services are more likely to be sustained and used by the communities if institutions and policies enable the communities (men and women, rich and poor) to initiate the service and take informed decisions, facilitate service management and financing systems, and build local capacities to maintain and manage the services so that the burdens and benefits are equitably shared.

A more micro level example is the Philippines Communal Irrigation Development Project which exceeded targets around irrigation intensity and paddy yields. Project success was attributed to the full participation of beneficiaries, recruitment of community organizers, two-thirds of whom were women, membership of both spouses in water user associations, and encouragement of women to assume leadership roles. It was also noted that women's membership facilitated payment of fees since women controlled the family finances.

Source: GWA 2006.

A second main argument is the role of women in poverty reduction. Research from several countries shows that "women are more likely to channel the income they control into the nutrition, health and education of their children. Thus improving the status of women within the household and at the community level would deliver significant improvements to agricultural production, food security, child nutrition, health and education" (Action Aid et al. 2012:2). Conversely, where gender inequities are greater, growth and poverty alleviation tend to lag (World Bank 2005).

Thirdly, if a gender passive approach is adopted there is a high risk that the project will be doing harm at least as regards gender inequities. As pointed out by Schmink (1999) there is no such thing as a gender neutral project or policy: without specific attention to gender there is a tendency for existing gender inequities to deepen, and for the

gap between rich and poor women to increase according to who makes the decisions, who has access to project resources and inputs, who has access rights, who gets the money, etc.

Key Gender Challenges

One of the most important gender challenges is low participation of women in governance and decision-making (GWA 2006). Poor women are least likely to participate. They face various obstacles to participation, e.g., they are less likely to be elected to committees since they don't have the time, resources, education, confidence or transport to attend meetings (van Wijk et al. 1996). Social norms can often be unsupportive, e.g., women feel they should not speak out in the presence of their husbands or fathers, or issues such as relative workloads are inappropriate to air in public and are family matters. If women begin to participate more fully, this can be very challenging for existing social norms and hierarchies. While women are the main decision-makers over water at home, men dominate community decision-making. A study from Mali reports that even when women are officially listed as committee members, they are not very active and do not take part in decisions since it is the job of the men to "bring water to the village" and the job of women to "bring water to the home" (Jones 2011).

Other challenges noted in the "water and gender literature" include (GWA 2006; World Bank 2005):

- Women are more vulnerable to falling into poverty, for example female headed households tend to have fewer adult workers, lower levels of education and less time to earn money beyond the household chores in comparison with households having male heads.
- Women usually have very limited de jure land rights, while they are often more important as de facto resource managers. This limits women's access to credit since they cannot use a land title as collateral, and can lead to land use conflicts.
- Women are not a homogeneous group – different women have different interests. Therefore as well as gender differentiation, when designing projects or policies there is a need to consider differences in women's interests and behavior according to such factors as age, income, assets, religion, ethnic group, and marital status.

What Can Be Done to Empower Women and Reduce Gender Inequities?

A range of measures and actions to tackle gender inequities and empower women, several of them aimed at improved understanding, are mentioned in the literature on gender and water or natural resource management (e.g., GWA 2006; World Bank 2005; Poats 2000):

- At the project identification and design stage, a rapid gender assessment should be carried out based on a combination of primary and secondary data (see Table 2 and Box 4). This helps identify gender risks and problems at an early stage;
- If gender analysis is to be taken seriously, the next step is a more detailed social assessment of gender issues (see Annex 1) which would provide a "gender baseline." A vital part of this is a gender-differentiated stakeholder analysis. Useful participatory research tools include community mapping, women's activity profiles and calendars, life stories, time lines, etc;
- Women are likely to require considerable capacity building (following a needs assessment) and better access to information in order to participate more strongly in governance and decision-making, as well as broader educational initiatives that can influence the cultural constraints to participation. Men also need capacity building and educating, since for gender initiatives to work men need to be supportive of them;
- Facilitation of women's participation in governance and decision-making following an analysis of constraints to their participation;
- Regular consultation with staff and stakeholders, including women-only focus groups, on gender issues;

- Gender sensitive monitoring including monitoring of the quality of women's participation. This needs to go beyond "descriptive representation" (e.g., the number of women on a committee) to "substantive representation" (e.g., adoption of rules and regulations that take account of women's concerns) (Mwangi & Mai 2011). Annex 2 presents a useful checklist of monitoring questions from which gender sensitive indicators can be derived;
- Most of the above can be summed up by the term 'gender mainstreaming' (Box 5) which is usually the main aim of a gender-based approach. While this requires a concerted focus on gender, as a starting point it is advisable to have a gender officer, or at least for all staff to have gender training – the idea is that all staff, and especially senior managers or directors, should be gender sensitive.

Table 2. Rapid Social Assessment of Gender Issues

Gender issue	Questions
Social diversity and gender	Are there differences in gender relations between subgroups of the community (indigenous groups, religious or ethnic affiliation, socioeconomic strata)? What is the proportion of households headed by women? Are these households significantly poorer than male-headed households? Will the proposed project benefit both women and men differently? What contributions do men's and women's activities make to development goals?
Institutions, rules and behavior	What formal and informal institutions that promote/perpetuate current gender relations are in the project area? Do women participate equitably in formal and informal institutions? Are there any opportunities to promote gender equality through these institutions?
Stakeholders	Who are the male and female stakeholders in the project? Do they support or oppose the project? Does the project threaten the interests (actual or perceived) of either men or women? What are the potential male-female conflicts that the project might induce?
Participation	Will both women and men participate in the project? Is there a likelihood of elite capture (e.g., due to all-male community councils, or the influence of better-off women whose priorities differ from those of poorer women)?
Social risk	Are there any significant local, regional or national risks that are different for men and women? What measures can be taken to minimize or avoid these risks?

Source: World Bank 2005.

Box 4. Six Key Questions for Gender Analysis of Water Resource Management

The following questions allow a quick assessment of gender in a water resource management context:

1. How are men and women using water resources and for what purpose(s)?

2. How are contributions (labor, time, payments, and contributions in kind) to the development and management of water resources divided between men and women?

3. Who makes the decisions and controls their implementation at the various levels?

4. Who gets the project or program resources, such as jobs and training?

5. Who benefits and who has control over benefits such as the status, water, products and income produced from the water, including use of the income?

6. How are the benefits and control over the benefits divided up among women and among men of different wealth, age, and religious and ethnic divisions? Do some women and men benefit more than others?

Source: van Wijk 1998, adapted by author.

Box 5. Gender Mainstreaming

Gender mainstreaming is the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels (global, national, institutional, community, household). It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres so that women and men benefit equally, and inequality is not perpetuated. At the project level it can be said that gender issues have been mainstreamed when everyone on the project is continuously alert to opportunities for getting women's inputs, participation and feedback in ways that are culturally appropriate.

Source: GWA 2006.

Conclusions and Recommendations

This review of the social effects of IWS finds that, although there is a lack of reliable data, the indirect benefits of IWS appear to have been more important than the direct income or employment effects which tend to be marginal and/or short-term. IWS schemes seem to have been generally positive in terms of social capital, the capacity to attract other projects and services, and the potential to develop new business or livelihood opportunities. Some projects (Bolivia, Indonesia) appear to have contributed to community empowerment. The indirect benefits of IWS projects are more likely when local people have secure access to watershed resources, and when IWS initiatives support (e.g., through capacity building) rather than undermine existing institutions and management systems (Bond & Mayers 2010).

As for PES projects in general there is weak evidence that a IWS intervention *per se* is likely to have a strong positive or negative impacts on poverty, except insofar as the poorest, landless and land insecure are often ineligible for PWS projects, and the unique case of China's SLCP which may have exacerbated poverty in some areas (Bennett 2008). Where national IWS programs are impacting poverty it is where these programs have an explicit poverty reduction objective as in the case of South Africa's Working for Water Programme and Mexico's PSAH; these could be described as 'poverty alleviation and IWS programs' to distinguish them from programs in which water is the primary objective. Also the relative efficiency of the poverty gains of such programs compared to other poverty reduction policies is unclear. When poverty becomes a major objective, there is sure to be a trade-off in some locations, as well as some genuine win-win opportunities due to the convergence of poverty, watershed importance and degradation risks as evident in Mexico's PSAH.

The IWS literature hardly mentions gender except to say that it is important but women have low levels of participation. There has been no discernible attempt to track gender outcomes or impacts. This, in contrast with the extensive literature on the gender effects or outcomes of water resource management programs, leads one to suspect that IWS projects have significant gender effects but these are going unrecorded and so there is no learning process on how to improve them.

Some recommendations from this short review are:

- Instigate credible monitoring of gender and other social variables, so that it is possible to start a learning process about gender effects, and to feed the information back into the program design and adaptive management processes;
- The wider literature on gender and water management implies that a more gender-nuanced strategy would have a significant pay-off for both environmental and social outcomes. There is considerable guidance on how to conduct gender analysis;
- Programs should investigate promotion of local management arrangements that facilitate adaptation and innovation, for example, in enabling the participation of marginalized groups, or for dealing with local tenure problems;

- It is best not to have poverty reduction as a major direct goal of IWS programs since this is likely to result in trade-offs, but to aim to design payment mechanisms in such a way that the poor and women can participate, for example by supporting resource poor land users in the adoption of desired land use practices through technical assistance and access to credit (Pagiola et al. 2005);
- It is normally better to strengthen existing institutions rather than attempt to create new ones;
- Payments in kind rather than in cash or a combination of in kind and cash payments may be better for poverty reduction and gender benefits in view of the tendency for cash to go straight to men;
- Aggregation of service providers is an important strategy for minimizing transaction costs which are an important barrier to participation by the poor (Asquith & Wunder 2008).

A final reflection is that, as argued by Wunder et al. (2008) and others, it is inefficient to burden PES agendas with equity objectives since the potential trade-offs can weaken ecosystem service delivery, and that other interventions such as education, health, governance and social capital building are more effective at reducing poverty or empowering women. There is a stronger case for a "do no harm" approach. This does not imply a "do nothing" approach: *ex ante* social impact assessment (SIA) and monitoring is still essential in order to ensure a IWS intervention is designed and adaptively managed in order to avoid negative social impacts, and to know whether and how social negative impacts are caused (or not). Without credible monitoring there will not be a reliable learning process around how to at least avoid negative social or gender impacts. As pointed out by one guide on setting up IWS programs "a critical task in coordinating development of a payment scheme is to establish an effective, transparent social learning process" (Smith et al. 2006: 85).

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Annex 1. Detailed Social Assessment of Gender Issues

Gender issue	Guiding questions
Social diversity and gender	• Will the proposed project benefit both women and men? • What are the specific benefits both will receive? • Does the project seek to identify and respond to needs and priorities of the various subgroups of the project community (the poorer members of the community, ethnic and religious minorities etc.)? • Are there common community needs that can be used to reconcile differences of interest? • Will the project enhance the capacity of institutional and organizational structures to respond equitably to the needs of women and men? • How do local cultural traditions and social expectations define gender roles for women and men? In what ways do these roles differ? • What differences exist between the daily activities and responsibilities of men and women? Are women as well as men involved in the different sectors of production, and in the various aspects and stages of productive activities (such as crop raising, processing and marketing)? • Do gender-based disparities exist in areas such as power relations, decision-making and the ability to influence others? • What is the proportion of households headed by women? Are these households significantly poorer than male-headed households? • Are there differences in gender relations between subgroups of the community (indigenous groups, religious or ethnic affiliation, socioeconomic strata) that should influence project design? • What contributions do men's and women's activities make to development goals? • What are the implications of the identified gender differentials for project success, and for the contributions the project can be expected to make to social development goals such as social equity and cohesion?
Institutions, rules and behavior	• What institutional arrangements, organizational structures and social norms support or constrain the productive activities of men and women, particularly in sectors of production that will be involved in the project? • Do women participate equitably in leadership and decision-making processes in institutional and organizational social structures (such as legislative and governmental agencies at the national, regional and local levels)? • How can the project strengthen or modify existing social structures and processes, and utilize existing organizational resources (such as grass-roots women's community organizations) to increase gender equity and project sustainability? • Should the project create new organizations that promote gender equity?
Stakeholders	• Who are the male and female stakeholders in the project? • Do they support or oppose the project? • What degree of influence are they likely to have on the project? • Are there gender issues of specific relevance or importance to social subgroups (ethnic minorities, the extremely poor) that should be addressed? • Does the project threaten the interests (actual or perceived) of either men or women? • How can the project avoid or minimize potential male-female conflicts of interest, and promote social cohesion? • Are there stakeholders (NGOs that work with women, all-male work unions) that might be expected to actively further or hinder the gender-related goals of the project? • How can their contribution be secured?

Participation	• Will both women and men participate fully in the project, not only as beneficiaries but also as leaders in project design, planning and implementation? • What specific project components will ensure this? • How can "project capture" by elite subgroups (all-male community councils, better-off women whose priorities differ from those of poorer women in the community) be avoided? • Are the costs of participation (forfeiting income-earning opportunities, increased workloads due to labor contributed to self-help projects) different for women than for men? • How can the project be designed to strengthen the individual capabilities of both men and women? (by providing experience in leadership roles, project management, opportunities to work with governmental and administrative bodies and community-based groups) • In what ways is the project likely to alter gender relations within the community? • Does it offer opportunities to create more equitable intra-household relationships?
Social risk	• Does the local, regional or national environment pose threats to project success in terms of addressing gender issues? (such threats may include socioeconomic crises, physical disasters, civil conflict or unrest) • If they exist, how can gender issues specific to the crisis situation be addressed? • Does the project pose potential threats to either women or men by altering gender relations (the balance of power or decision-making patterns within the family, access to resources, etc? Can these changes lead to an increase in gender-based violence? • What measures can be taken to minimize or avoid these risks?

Source: World Bank 2005, slightly adapted by the author.

Annex 2. Checklist of Questions for Generating Gender Sensitive Indicators

Monitoring themes	Guiding questions from which indicators can be derived
Monitoring implementation of gender-related project goals specified in project design	• Have resources (funds and personnel) been approved for gender training and capacity building, and for project components designed to accomplish gender-related objectives, actually assigned? • Have gender training programs for staff been implemented? • Do project component and activities correspond to gender-related goals included in project plans based on the expressed needs and priorities of men and women? • Have responsibilities involved in carrying out gender-responsive activities been assigned to specific members of project staff?
Monitoring gender-equitable participation	• What proportion of women are involved in project management, including in key decision-making roles? • What proportion of beneficiaries are women? • Do participants (as managers, implementers and beneficiaries) include women and men from ethnic and religious minorities, and from poorer sectors of the community? • What proportion of focus group participants have been women? • Have they actively participated in group discussions? • Have women's NGOs and women's community-based organizations participated in project activities and management?
Monitoring gender-responsive strategies	• Have arrangements been made to enable both women and men to attend project meetings and activities? (work schedules accommodated; transport, child care and food provided as necessary) • Have both male and female facilitators been used for focus groups and interviews? Have translators been provided for those from indigenous groups? • Have separate groups been conducted for women and men? • Have project components been made easily accessible and affordable to both women and men? (e.g., credit to enable participation in productive opportunities; compensation for lost earning opportunities) • Have project components included activities considered socially acceptable and permissible for women? • Have separate services been provided for women and men when joint services would be considered inappropriate?
Monitoring and addressing problems encountered during implementation	• What potential gender-specific social risks identified during project planning have actually been encountered during implementation? • What unforeseen situations involving risk have occurred? • What measures have been taken to mitigate these risks? • Have project activities negatively affected gender relations in unexpected ways? • What measures have been taken to adjust activities accordingly, or to resolve conflicts that have occurred? • Have necessary adjustments and changes been made to correct approaches and alter techniques, or to adapt project components, that were deemed unsuccessful or problematic by either women or men stakeholders?

Source: World Bank 2005, slightly adapted by the author.