



Negotiating watershed services

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International Institute for Environment and Development (IIED)

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Cover photo: Farmer interviews in Kolans watershed, Madhya Pradesh, India (Rob Hope)

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Abstract

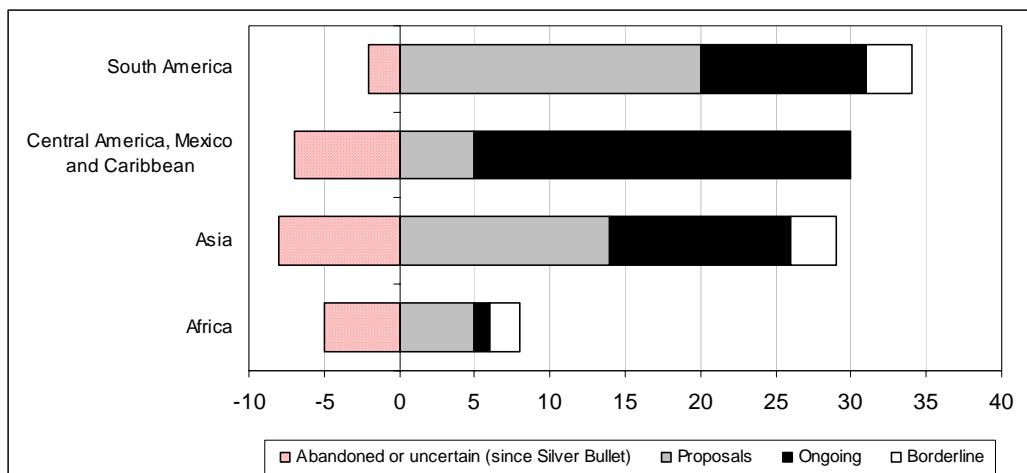
In response to the disappointing results of many regulatory or public investment approaches to watershed management, payments for environmental services has emerged as a new mechanism to maintain socially optimal environmental services by compensating people for the services they provide. However, without adequate understanding of stakeholders' willingness to modify or maintain land use or water resource decisions, market-based mechanisms may prove to be unsustainable, with uncertain social and environmental outcomes. Negotiating resource use patterns is a process that requires an understanding of the type, level and duration of incentives for stakeholders to co-operate meaningfully. In this paper, we describe a negotiation support framework that has been developed from the literature and field experiences in Costa Rica and India. The framework then serves to critically examine a case study from each country to draw empirical lessons from the inherently political and contested process of watershed management.

Key words: environmental services, Costa Rica, India, negotiation support framework, watershed management

1 Introduction

Attempts to reduce environmental degradation in the tropics are considered to have been largely ineffective (MA, 2005; Tomich et al, 2004). The poor performance of regulatory and public investment approaches to protect ecosystems is associated with increasing deforestation, deteriorating water quality, and reduced water flows around the world. Environmental degradation also has social costs, particularly for poor people, who are disproportionately dependent on natural resources for drinking water, food, fuel, and income. There is uncertainty about how interactions between environmental degradation will impact on development pathways. Although the benefits of improving environmental management are clear enduring solutions remain elusive. In this context, there has been global interest in the potential of market-based approaches to improve watershed management and foster rural development (van Noordwijk et al., 2004; Pagiola et al., 2004; Rojas and Aylward, 2003; Landell-Mills and Porras, 2002; Chomitz et al., 1999; see Figure 1).

- **Figure 1** Emergence and growth of market-based schemes for watershed management



Notes: In 2002 Landell-Mills and Porras reported 18 schemes (proposals and ongoing) in Latin America and the Caribbean, 17 in Asia and the Pacific, and 5 in Africa. A new review by Porras *et al* (forthcoming) shows that interest is growing in all these places. The review also shows that many of the schemes reported in 2002 did not emerge as fully matured schemes. “Borderline” schemes are those where a market component is not fully visible, but remain interesting examples of how interested parties across the watershed negotiate the supply of ecosystem services.

Market-based mechanisms attempt to reconcile resource disputes by compensating upstream environmental service providers for maintaining a socially optimal level of services, as demanded by downstream users.¹ In effect, it is a conflict resolution process through which upstream groups negotiate an opportunity cost for modifying their land-use behaviour (e.g. avoiding conversion of natural forests, overgrazing, or pesticide use) that may be paid for by downstream users’ associated cost-avoidance (e.g. they do not have to de-silt reservoirs or

¹ Environmental services may be classified as: (a) landscape beauty, (b) biodiversity, (c) carbon sequestration, and (d) watershed services (Landell-Mills and Porras, 2002). Alternatively, the Millennium Ecosystem Assessment describes ecosystem services as regulating, provisioning, supporting or cultural (MA, 2005).

treat polluted water²). Such agreements are negotiated on the perceived value of changing or maintaining upstream land practices that affect the production or consumption of downstream service users. Whether or not agreements are reached is influenced by the value of externalities³ compared with the transaction costs of implementation, including costs of organising, negotiating, monitoring, and enforcing agreements, and how the interests, power, and beliefs of different stakeholders affect the negotiation process.

The sustainability of emerging environmental service agreements is influenced by at least four factors:

- 1. Additionality.** This refers to the incremental difference or effect on the environmental service above a predetermined baseline condition that is directly linked to the provider's actions, and which can be measured and monitored. This currently constitutes a major challenge due to availability of reliable data and capacity to measure both the baseline and its marginal effects.
- 2. Contingency.** This relates to the requirement for service providers to maintain agreed land-use practices that are associated with the services that will be paid for by downstream users. Multiple claims on land and water resources may create a confusing and contested legal scenario, which can both obstruct (e.g. because no one agrees) or strengthen (e.g. because tenure claims are clarified) this process.
- 3. Interests.** An agreement will foster co-operative behaviour if it is in the interests of stakeholders across changing scenarios. Interests are dynamic and will vary according to changing climatic, economic, and political conditions. Failure to understand how people respond to change is likely to undermine agreements brokered on a static or linear basis.
- 4. Institutions.** These will influence levels of co-ordination and co-operation in the development and implementation of an agreement. Incentive mechanisms require an institutional framework that builds on or strengthens local capacity.

While all four factors are inter-related and important, the emerging literature tends to focus attention on the first two factors as particular constraints (Wunder, 2005; IIED, in press). It is also instructive to focus on how the growing numbers of incentive mechanisms are negotiated amongst stakeholders – often among stakeholders with competing interests – and how institutions that foster these agreements are forged and can be strengthened in the future. This report aims to contribute to further understanding these issues and to the wider debate on the role of market-based approaches by developing a negotiation support framework based on field experiences in Costa Rica and India.

² It can be argued that this suggests a ‘victims pay’ principle. However, typical regulations that restrict land-use changes mean that it is upstream landholders who have to ‘pay’ – by sacrificing their activities. From an economic point of view this can be resolved by allocating environmental rights.

³ Externalities can be positive (e.g. reduced siltation) or negative (e.g. reduced water flow).

2 Developing a negotiation support framework

The process of negotiating water environmental services is inherently political. No blueprint exists, and environmental and social conditions tend to vary so widely that creating one is not a viable option. Yet cumulative lessons provide a contextual basis on which to develop a negotiation support framework in association with wider experiences from the literature. Lessons and insights from water allocation, particularly related to irrigation allocation approaches, provide relevant and useful approaches for negotiating environmental services (Mosse, 2003; Swanson, 2001; Bruns and Meinzen-Dick, 2000; Brewer, 2000; Leeuwis, 2000; Wolf, 2000; Ostrom, 1990; Wade, 1988). The characteristics of water negotiation processes suggest that there are some generic stages that, if not applicable in all contexts, can still provide a conceptual framework for practitioners and decision-makers. These stages address stakeholder priorities and trade-offs and contribute to sustained resource and social improvements. The purpose of developing a negotiation support framework is to illustrate these stages and apply the framework to two socially and agro-ecologically distinct study sites. The framework represents a work in progress that attempts to capture complex and dynamic social and political interactions and feedback in a simplified form. This reductionism will hopefully be tolerated on the grounds that there appear to be discernible negotiation stages involved in moving from a problem state to an improved condition. The framework is not offered as a panacea for solving all water conflicts, but as a complementary approach to observed science methods and as an alternative to imposed solutions.

2.1 Begin by defining the problem

The entry point for the framework is a water ‘problem’. This acknowledges that ‘negotiations are likely to bear more fruit where they respond to urgent threats already recognized by farmers, and offer, not [the] imposition of one-sided sacrifices or mitigation of losses, but the prospect of genuine gains for farmers’ (Bruns and Meinzen-Dick, 2000, p.356).

Understanding the nature and the magnitude of the problem will also help to identify the potential ways to deal with it (Porras, 2005). It might be that the actual benefits in terms of watershed service are lower (or of a different type) than expected, and the transaction costs from an ill-conceived intervention result in a net loss. Failure to understand the nature of the problem may result in a situation of moral hazard with the danger that the ‘victim’, rather than the polluter, pays, potentially crowding-out existing and non-compensated good resource management practices, and may increase conflict between inter-connected water-user groups. Further, it may be difficult to identify pollution sources or to effectively measure the incremental effect from land-use mosaics on flow regimes between and within years in tropical countries with variable and changing climatic conditions. While establishing evidence of watershed services is difficult and often controversial (McCauley, 2006; DFID, 2005), it is a necessary step in ‘creating transparency and trust in the effectiveness of a payment scheme’ (IUCN, 2006, p.28). However, deciding when, where and for whom a problem exists will vary by ecological context, the institutional environment and the interplay of local and external political actors. Outcomes from such interactions will influence if appropriate steps to mitigate a problem will catalyse into sufficient support for policy action.

2.2 Negotiation constraints

Given the above concerns, stakeholders may remain in conflict, and this will have uncertain social, economic, and political implications. Negotiating environmental arrangements is no

simple task because of both the nature of the problem (the regulation of an open-access resource) and the nature of the process of resolving the problem (multi-party contracting) (Swanson, 2001). This may lead to high transaction costs, which will prevent gains from joint management being made. There are at least three obstacles to stakeholders choosing to negotiate. First, a critical mass of resource users will be required to co-operate for effective gains. Second, the contractual nature of an agreement may require that stakeholders find the proposed agreement in their own interest before they accept. Third, there is the possibility of sequential acceptance rather than simultaneous commitment, which may generate (perverse) incentives contrary to the negotiated agreement (Leeuwis, 2000). Watershed actors may overcome such obstacles if: (a) there is increasing pressure/conflict over water resources leading to worsening environmental and social conditions; (b) there are easily recognisable benefits from co-operation in the interests of all groups; (c) long-established and respected water management rules exist among relatively homogenous user groups; and (d) pooling resources from different users results in higher investment capacity. It is predicted that type (a) situations will increase in the future (UN, 2005).

2.3 Pre-negotiation

Pre-negotiation is a scoping phase that is central to determining external agents' understanding of key issues. These issues may include: who are the stakeholders?; what forums may be appropriate?; how might the dispute be framed to promote a negotiated outcome?; and, how might a provisional agenda be set to ensure the interaction of stakeholders? (Bruns and Meinzen-Dick, 2000). A preliminary investigation of existing non-co-operative behaviour is important in order to determine if a negotiation process is feasible, and what factors may currently be impeding stakeholder co-operation. This may be a better alternative to either a conflict or a negotiated agreement such as a judicial process (Fisher and Ury, 1981). A lack of co-operation may be due to diverse reasons such as hidden information, adverse selection (asymmetrical incentives), or a holdout strategy (Swanson, 2001). It is unrealistic to expect stakeholders to choose to co-operate with an arrangement that will make them worse off.

2.4 Institutional framework

In the pre-negotiation phase it is important to gain an in-depth understanding of the institutional context that frames the problem situation. The negotiation process can be conceptualised as an exercise of collective action for institutional change towards greater levels of co-ordination and co-operation (Bravo, 2002). There is a wealth of literature on institutional analysis for natural resources management that can provide guidance on how to identify the key questions to take into account in order to support a negotiation process. Figure 2 shows one possible analytical framework specifically adapted to implement incentive mechanisms for watershed management. It draws on the Institutional Analysis and Development Framework (Ostrom, 1990; Ostrom, Gardner and Walker, 1994) modified by other authors (Thomson, 1992; Fischer and Petersen, 2004). The adapted framework tries to encompass both the analysis of incentives that guide natural resource use and the different roles of the multiple actors involved in a particular situation.

One key aspect of this framework is the parallel analysis of the actual resource user's behaviour (local factors) and the role played by external actors trying to influence the situation (external factors). Three tasks should be considered in the analysis of local factors:

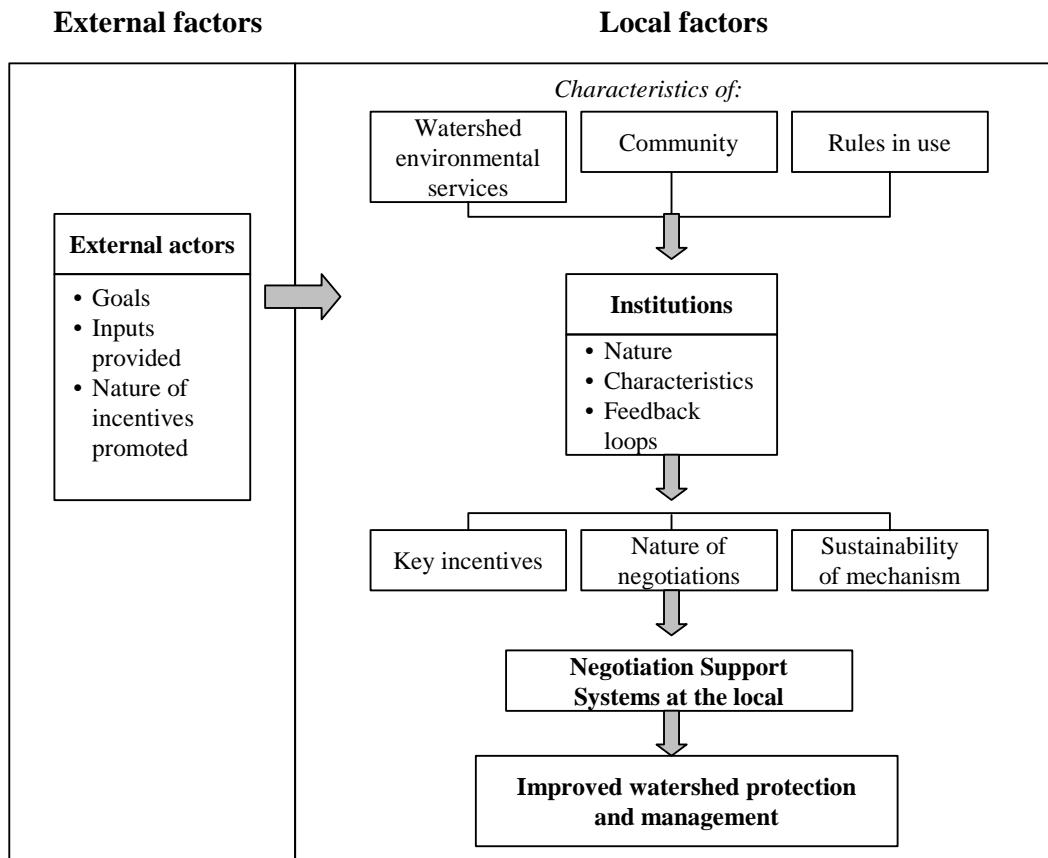
- identification of the potential service and its characteristics;
- identification of the characteristics of the communities; and
- identification of the rules-in-use (formal, informal, enforced) governing the use of resources.

These factors help to determine the nature and characteristics of the relevant institutional arrangements and, importantly, the types of feedback loops that could link service providers with the new incentive institutions. The analysis should cover the providers and receivers of the service and existing or potential negotiation support.

The second part of the framework helps to analyse the impacts (intended or actual) of the interventions of external actors within the watershed system. The key actors are the external agents promoting the negotiation process. This analysis consists of:

- identification of major external actors and their goals;
- identification of the nature of the inputs provided; and
- identification of the nature of the possible incentive measures promoted by external actors.

Figure 2 Analytical framework for incentive mechanisms for watershed management



The application of this conceptual framework could take the form of an extensive scoping study or it could simply be used as guiding tool for a project workshop. What is important is to focus on three pivotal tasks:

1. Identifying the key incentives that would work in a particular situation;
2. Engaging stakeholders in a negotiation forum;
3. Guiding the negotiation process to a sustainable agreement.

These three key tasks are illustrated in the examples from Costa Rica and India presented (see below).

2.5 Negotiation forums

Negotiation forums are social spaces for discussion and debate. Evidence indicates that local water-conflict agreements negotiated amongst the disputants themselves are more successful than decisions imposed by a court, agency, or other external authority (Bruns and Meizen-Dick, 2000). In Central America, for example, payment negotiations have provided a platform for stakeholders to engage actively in solving their water management problems

(Pérez, 2004). A negotiation forum is likely to bring together stakeholders with varying levels of power, differing beliefs and knowledge, and conflicting interests. Even if all relevant stakeholders are identified and agree to attend a common forum (no small task in itself), it may be unrealistic to expect everyone to set aside their conflicting personal and/or institutional interests in a social-learning or scenario-building process. Assuming that stakeholders could abstract themselves temporarily from their relative strategic or power positions, they are likely to have different levels of access to knowledge, assets or financial capital, all of which can be used to determine claims on truth, validity, and legitimacy. Thus, even if the opportunity to ‘speak out’ is equal, the opportunity to make claims, criticise, and influence are not (Leeuwis, 2000). It is within this context that expectations for pro-poor and equitable outcomes have to be set.

2.6 Beliefs, knowledge, power, and interests

A negotiation forum will be influenced by the beliefs, knowledge, power, and interests of its constituency. Water rights and claims from different stakeholders will overlap and be shaped by historical experiences, local belief systems, and considerations of what individuals’ legitimate claims are and whether these claims should be honoured. As such, negotiating will be a political and multi-stakeholder process. Stakeholder beliefs based on experiences and practice may dominate negotiations if they are associated with power. Beliefs associated with power may prevail over knowledge based on observed science in decision-making regarding water (Allan, 2003). Technical knowledge should be sought as a complementary component of any negotiation processes, as evidenced by water allocation studies (Brewer, 2000) and wider misunderstandings of land-use and water-resource impacts (DFID, 2005).

Interest-based negotiation can shift the focus away from fixed bargaining positions to identify broader constraints. This moves beyond distributive negotiations, where the resource pie is simply cut up differently, leaving conflicts largely intact, to consider integrative negotiations to remove non-water constraints and/or strengthen stakeholder capabilities (Leeuwis, 2000; Ostrom, 1990). One of the principal aims of drawing stakeholders together in a forum is to determine a desirable and feasible future vision negotiated from the priorities and trade-offs of the different stakeholders.

2.7 Stakeholder priorities and trade-offs

Developing consensual narrative scenarios for a future vision requires stakeholders to identify priorities and consider trade-offs from different courses of action. In a group discussion, a mediator can help stakeholders to identify the most significant and uncertain attributes in future scenarios. In-depth interviews with key informants may provide additional insights, in combination with fieldwork visits that contextualise and investigate local practices. Priorities will vary as stakeholders will be most familiar with their own circumstances and will naturally wish to promote them. Investigating an inclusive group of stakeholder priorities is likely to lead to a range of scenarios that may require renegotiation to be crystallised in a more consensual vision. Exploratory qualitative studies within a negotiation forum will provide valid and detailed insights to inform scenario testing for strategy building.

2.8 Scenario testing for strategy building

Exploring scenarios in an experimental design promotes an understanding of adoption alternatives and the preferences of stakeholder groups. One methodology that has been

successfully applied to related challenges is Stated Choice Methods (Louviere et al., 2000). These methods provide an approach to estimate stakeholder preferences to a predicted or planned future state that cannot be objectively assessed with existing knowledge (e.g. climate change, price shifts, new technology). It allows decision-makers to explore behavioural responses and priorities through stakeholder responses to carefully designed formats that can be presented pictorially (Figure 3).

Figure 3 Example of a choice card from Bhoj wetland study

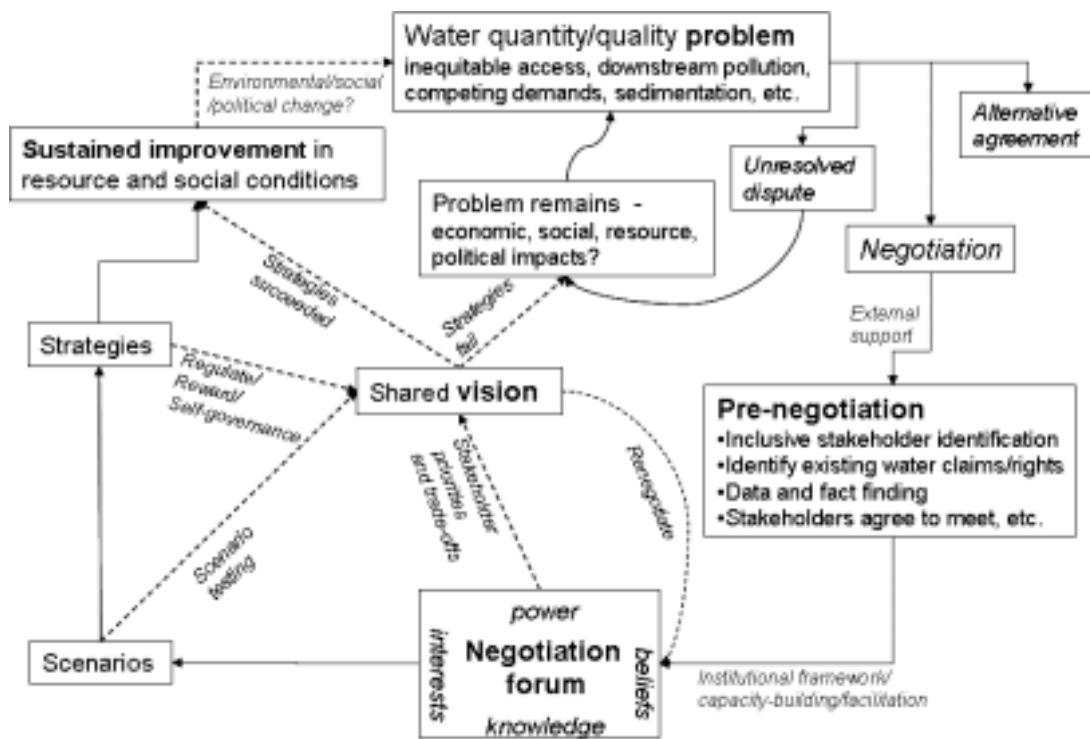
	# 1	# 2	# 3	# 4	# 5
LAND COMMITTED TO COAGRO FARMING	25% 	50% 	75% 	100% 	CURRENT SITUATION (Q45)
COAGRO CROP PLANT AND HARVEST FIELD 8 HECTARES	\$13	\$9	\$7	\$11	?
COST OF CHERRICO BON FERTILISER	\$3000	\$3000	\$3000	\$1000	?
PRICE COMPOST TROLLEY (\$/tonne)	\$1200	\$1200	\$1500	\$900	?
FARMER DATES TO COMPOST SITE TROLLEY	12	16	16	4	?
VOTE FOR ONE ONLY					

Results from stated choice methods provide statistical parameters that can be considered with qualitative understanding derived from informant interviews and focus group discussions. Based on this wider understanding, strategies that are considered feasible, affordable, and acceptable can be presented back to the stakeholders for discussion to derive strategies to achieve a more consensual vision. These strategies may include some combination of regulation, reward, or self-governance mechanisms, depending on the institutional environment and negotiation process. If strategies are successfully implemented this should promote sustained improvements in resource and social conditions; if strategies fail there may be an opportunity to renegotiate alternative approaches or the negotiation may stall and return to a modified version of the original problem situation.

2.9 A negotiation support framework

Figure illustrates the steps in the negotiation process described above. This framework will now be applied to the two case studies to test its applicability.

- **Figure 4** A Negotiation support framework



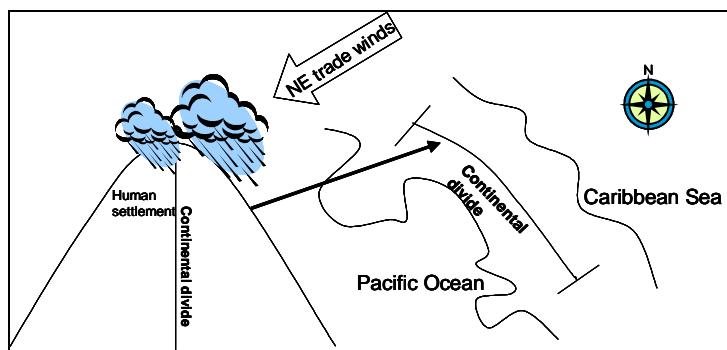
3 Insights from Costa Rica and India

3.1 Negotiations in Costa Rica

3.1.1 A strategy in the clouds

Because of its geographical location, Costa Rica has a rich biodiversity of endemic flora and fauna (Bruinjzeel and Hamilton, 2000). This richness in biodiversity is partly due to the high concentration of tropical montane cloud forest that covers 12 per cent of the land mass, compared to a global average of 0.2 per cent. Cloud forests located on the continental divide capture fog from passing clouds and this is widely believed to contribute to water environmental services for downstream users throughout the year (Figure 5).

- **Figure 5** Influence of the continental divide on rainfall in Costa Rica



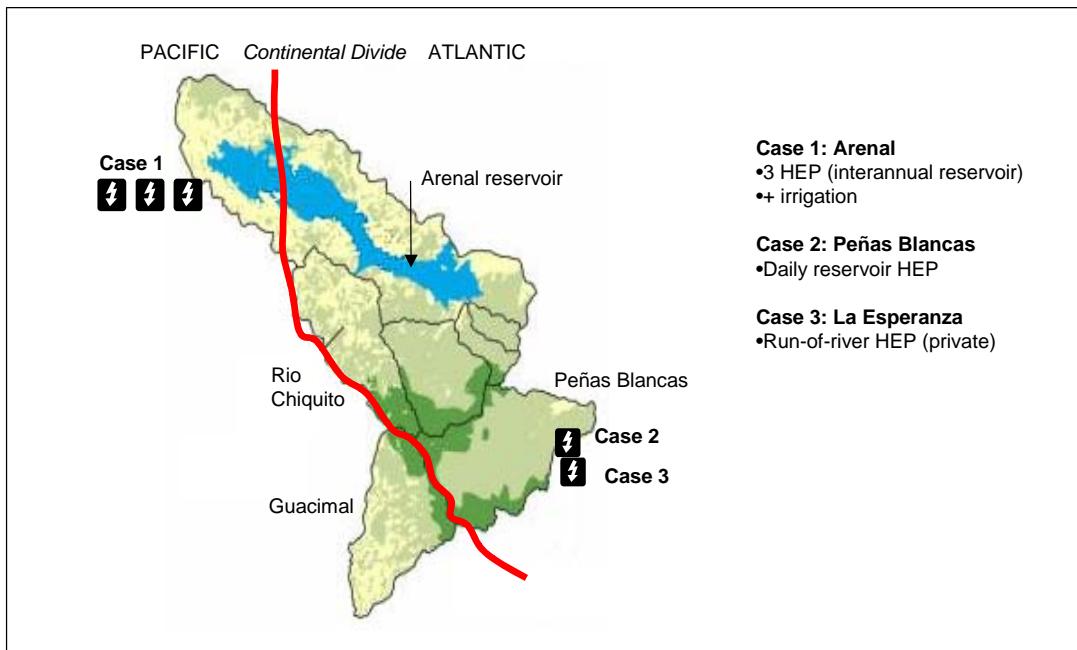
- Fog-water capture is particularly important during the dry season, when the value of water is higher because of its scarcity. In strategic watersheds like the Monteverde area in the northern Tilarán range, run-off from cloud forest zones drains into several hydroelectric plants (Figure 6), including the inter-annual Arenal reservoir, which serves a large irrigation scheme before reaching a RAMSAR wetland. The cloud forest also has important values associated with ecotourism, which has become Costa Rica's largest source of foreign exchange since 1993. These factors have led to significant efforts to prevent any further deforestation, mainly through the creation of private and public protected conservation areas, and the introduction of the Payments for Environmental Services programme in 1996. Despite these efforts, important patches of forest located on private land are considered to remain under threat, as many small and medium-sized farmers are unable or unwilling to participate in these arrangements.

3.1.2 A clouded vision

The Costa Rica Payment for Environmental Services Programme (hereafter referred to as the programme)⁴ is often presented as the ‘poster-child’ of such schemes (Pagiola, 2005). The programme partly evolved in response to the removal of forest production subsidies, which was a condition imposed by the IMF for the Structural Adjustment Plan loans on the

⁴ Payments are approximately US\$219/ha/5 years for conservation and US\$563/ha/5 years for forestry plantations and it rewards biodiversity protection, watershed services, carbon sequestration, and landscape beauty. The approximate rate is \$10/ha/yr for watershed services. A new scheme for agroforestry pays roughly one dollar per tree (Source: FONAFIFO website values for 2005.)

Government of Costa Rica (Rojas and Aylward, 2003). It also provided a platform for conservation groups to shape the new forest policy. A national-level strategy emerged, led by the National Forestry Fund (FONAFIFO), which served as an intermediary between environmental service users and providers through land-management contracts. Although national consultation forums were established, there was little involvement from small or medium-scale farmers in shaping the strategy, incentives, or institutional structure (Porras and Miranda, 2005).



- **Figure 6** Water–energy relationships in the Monteverde area

Note: Cloud forests (presented as dark shades in the figure) along the study area feed several hydroelectric projects. Water from the Rio Chiquito, Aguas Gatas and Caño Negro watersheds are diverted towards the Pacific through the Arenal Reservoir.

While most of the funding for the programme comes from a national fuel tax, there were initial expectations of revenue from international carbon markets⁵. When the international carbon market deflated, attention turned to domestic opportunities, particularly water services. FONAFIFO negotiated several water quantity and quality contracts with private hydroelectric companies and one brewery. The carbon credits experience fed directly into the creation of Certificates of Environmental Services, which seek to reduce transaction costs by selling ‘pre-packaged’ options, whereby for US\$60 a buyer is guaranteed the protection of one hectare of forest for one year. While this flat fee is institutionally efficient, it is likely to be environmentally and socially inefficient due to the significant diversity of ecological landscapes and varying opportunity costs of land across the country (Chomitz et al., 1999).

Although the programme has been widely praised it has also been criticised for a number of weaknesses. There has been a major emphasis on conservation of existing forests, which can

⁵ Costa Rica pioneered the development of carbon bonds, making the first international sale of carbon credits.

not only result in limited additionality but also tends to exclude vulnerable landholders who cannot set aside enough land to justify the transaction costs. Initial contracts for watershed services tacitly supported the popular belief that forests increase water, although this is changing and the emphasis now is on protection of water resources. The regulatory strategy has resulted in a programme that tends to overlook local circumstances and primary stakeholder needs. There are also significant question marks about whether the scientific knowledge that informs the strategy is robust, although the approach of ‘bundling’ services makes it virtually impossible, or extremely expensive, to accurately estimate in most cases (Rojas and Aylward, 2003).

3.1.3 Land, trust and money

Socio-economic studies in Monteverde highlight the above issues (Hope et al., 2004; Hope et al., 2005; Porras and Hope, 2005; Porras and Miranda, 2005). Historical isolation and physical remoteness have engendered a community identity and attitude free from almost any state influence (e.g. roads, health, municipality). This has contributed to small- and medium-scale farmers being unwilling to enter into contracts with the government. While cash payments are attractive to them, they consider that current levels do not reflect the opportunity costs of land and they would be more willing to enter into agreements within an integrated negotiation that included, for example, road improvements. Respondents’ unwillingness to enter the programme regardless of payment level (price inelasticity) was explained by ‘stand-point’ positions taken in the stated choice experiment. This was consolidated by the qualitative studies, which indicated a lack of trust as an important factor in the limited local enthusiasm for entering into a land-based contract with the government, given the historical nature of disputed land rights and ownership in the area.

No shared vision emerged in terms of limited local consensus on water-related problems. Focus group findings indicate that pollution of water resources through household and industrial waste (hotels and dairy farms) is considered to be the main problem. However, nobody is willing to negotiate an agreement locally and the problem has been left to be resolved by a recently-created municipality that has neither the funds nor the capacity to act. While water quantity is not really a problem, local people feel a strong sense of ownership of water, as evidenced in 2005 when local roads were blocked and water pipes destroyed in protest over a water abstraction licence granted to a private firm without prior consultation or agreement with the local community.

Despite local people’s beliefs that forests increase water, downstream opportunities for watershed services from cloud forests in the area appear limited. An externality valuation of hydroelectric water demand provides a guide to the maximum willingness to pay for local initiatives (Porras, 2005). Results vary from economically insignificant in the Rio Chiquito watershed (which feeds into a large inter-annual reservoir) to approximately US\$44/ha/year⁶ for water flowing into a daily reservoir. While this value is higher than the US\$10 paid under the national programme for water protection, it still falls short of expectations for compensation to landowners, let alone paying for the high transaction costs implied in these negotiations. This shows that water alone might not be able to ‘foot the full bill’ for improved upstream management, and local-level negotiations require careful pre-negotiation and data gathering to inform any proposed strategy.

⁶ The externality is valued in terms of forests as opposed to rough pastures. A study by Bruunzeel (2005) shows that the hydrological gains through fog capture are 25 per cent for cloud forests and 15 per cent for rough pastures.

3.1.4 Where is the problem?

The above discussion presents the effectiveness of the programme from the point of view of primary stakeholders. Although valid, this only presents part of the story. While the watershed is the obvious unit from which to analyse watershed services, there are several biophysical reasons why a national-level framework to address water quantity, such as the one that informs the programme, is scientifically sound and in the public interest. At least three factors may make a more targeted watershed approach more suitable in tropical countries with tectonically active zones, such as in Costa Rica⁷:

- Underground leakage may make it impossible to isolate water flows within watersheds, thus questioning the validity of payments between upstream providers and downstream users.
- Climate variability will alter flow regimes between and within years. Given the difficulty and expense of accurately establishing a ‘baseline’ condition, it is highly problematic to isolate and guarantee an upstream land-use change with additional water benefits in downstream areas to meet demand at a particular time, e.g. for dry-season irrigation or hydro-electric production.
- Strategic ‘water-producing’ areas, such as Arenal, are more easily identifiable at the national level. Prioritising the protection of resources flowing from these areas is likely to be more efficient and in the public interest than prioritising local initiatives that may not effectively respond to national water needs (Chomitz et al., 1999; Porras, 2005).

These arguments question whether a negotiation framework is an appropriate approach for local water quantity issues at Monteverde.⁸ The opportunity to effectively negotiate water quantity problems appears to be a ‘red herring’ disguised in a bundle of other environmental service reward payments that serves existing forestry interests and not local stakeholder problems (Hope et al., 2005). However, emerging legislation for implementing water extraction charges (e.g. *Canon de Agua*) may provide a firmer platform from which to apply the negotiation framework. Demand for improved regulation and revenue generation from the local use of groundwater and surface-water resource use requires FONAFIFO to develop tools and approaches to negotiate effective and sustainable water-use agreements at the local level.

3.2 Negotiations in India

3.2.1 Negotiating incentives that work for farmers and wetlands

The Bhoj wetland dates from the 11th century, when an earthen dam was constructed to block the Kolans River. The wetland is considered a unique man-made ecosystem as it has stabilized over the past 900 years, resulting in its designation as a RAMSAR site in 2002. The wetland consists of two lakes with the larger measuring 36 km², situated next to the city of

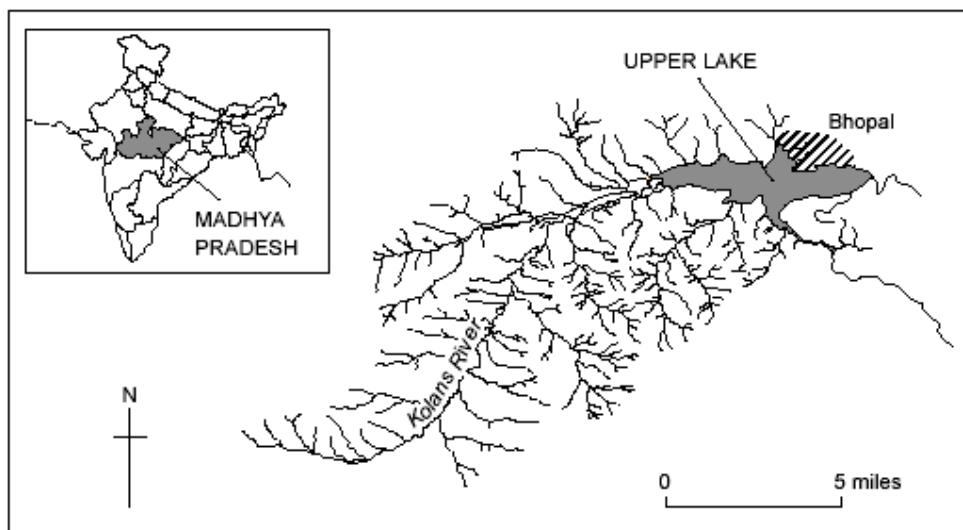
⁷ These arguments have been developed by Mark Mulligan (Kings College London) based on results from his national fog-delivery model in Costa Rica, as part of a sister hydrological project (FRP R7991) to the socio-economic project (R8174). They build on earlier World Bank analyses of PES in Costa Rica (Chomitz et al., 1999).

⁸ The rationale described is consistent with the PES programme design, although current implementation does not respond to the logic of targeting payments to strategic water-producing watersheds.

Bhopal, the state capital of Madhya Pradesh. In addition to providing important environmental and socio-cultural services, the wetland also provides 40 per cent of the domestic water needs for Bhopal's 1.8 million residents. With the rapid growth of Bhopal since the 1960s, the wetland has faced growing pollution threats from the city and the agricultural hinterland. A Japanese Bank of International Co-operation (JBIC) project from 1995–2004 mitigated the main sources of urban water pollution by engineering interventions that provided wetland buffer zones (a major road and tree plantations) and diverted urban sewage through a new system of 85km of pipelines.

However, rural sources of pollution still remain, including agro-chemical run-off and silt degrading the wetland from the Kolans watershed (Figure 7). Agriculture is the main livelihood activity across the 86 villages in the 361km² watershed, with over 70 per cent of land cultivated. In 2004, an organic farming initiative to promote land-use change in over 30 villages resulted in limited farmer uptake. A review of the organic farming intervention by the Lake Conservation Authority (LCA) identified two constraints: (a) a lack of farmer incentives to switch to organic land use, and (b) insufficient funding to take the initiative forward. The LCA was created as part of the JBIC project to strengthen wetland management and provide a state-wide government institution for scientific research and policy on wetland management. This permits the LCA to discuss water externality issues with existing government bodies charged with rural agricultural development, such as the Department of Agriculture, the Rajiv Gandhi Mission for Watershed Development, and the Department of Rural Development, whose objectives and interventions may result in unintended but negative downstream water-quality impacts. The LCA has contributed to mitigating urban wetland pollution problems through facilitating regulatory interventions by other municipal bodies, but the problem of rural pollution impacts remains. This is because the majority of farmers face barriers to adopting organic farming, given that the land certification process takes two to three years, during which farmers are left without their main income stream.

- **Figure 7** Kolans watershed, Madhya Pradesh



3.2.2 Constraints to change

Adopting organic farm management is complicated by negotiating land management change across the 14,000 households, who largely depend on farming for food and income. Until the

1970s the watershed was mainly farmed organically, but with growing food shortages the government actively promoted new seed varieties and agro-chemicals. Some farmers continue to allocate land for organic crops for their own consumption, while a number of smaller farmers with cattle have recently shifted to organic, subject to livestock to land ratio (Borgoyary, 2005). Small-scale farmers report that the decision to shift to organic requires a fine balance between cost, price, and labour factors. Non-local markets for certified organic produce do exist, with a price premium of 5 to 50 per cent higher than non-organic produce, but access to such markets is limited. A lack of organic farming skills, and lack of access to land certification schemes and organic markets represent major constraints to change. Large farmers are particularly unreceptive to adopting organic farm management, as they pursue a cash-crop strategy based on agro-chemical inputs.

Organic farm management techniques, such as vermi-composting, were co-ordinated by the LCA in 2004 as an experimental activity. The strategy attempted to increase farmer awareness of how to grow crops with organic compost. The intervention did not attempt to show how farmers could effectively organise themselves to reduce the transaction costs of land certification, how to access non-local organic markets, or how to ensure sufficient and reliable input supplies of manure. This experiment provided useful insights, but did not result in the widespread or sustained adoption of organic farming.

3.2.3 Scenarios to evaluate incentives

Exploratory analysis of farmers across the Kolans watershed indicates that incentives are key to the adoption of organic farm management, subject to farm location, farmer profile and current farming practices. Results indicate that more than a quarter of all farmers are not prepared to commit land to organic farming even after reviewing a range of scenarios, which is consistent with current behaviour. However, organic farming appears a feasible and desired land-use change, if the right incentives are chosen. Results indicate that illiterate and younger farmers in the lower watershed zone are more likely to adopt organic farm management on up to 50 per cent of their land with collective land certification, though they require a clear price incentive. Yet, even with a lower price incentive, there is interest in organic farming. But, here, it is literate and more affluent farmers who will commit more land though they prefer individual rather than collective certification. Such results provide useful guidance to determine who, where and how organic farming may be most effectively promoted (Hope et al., in press).

3.2.4 Institutional ‘glue’

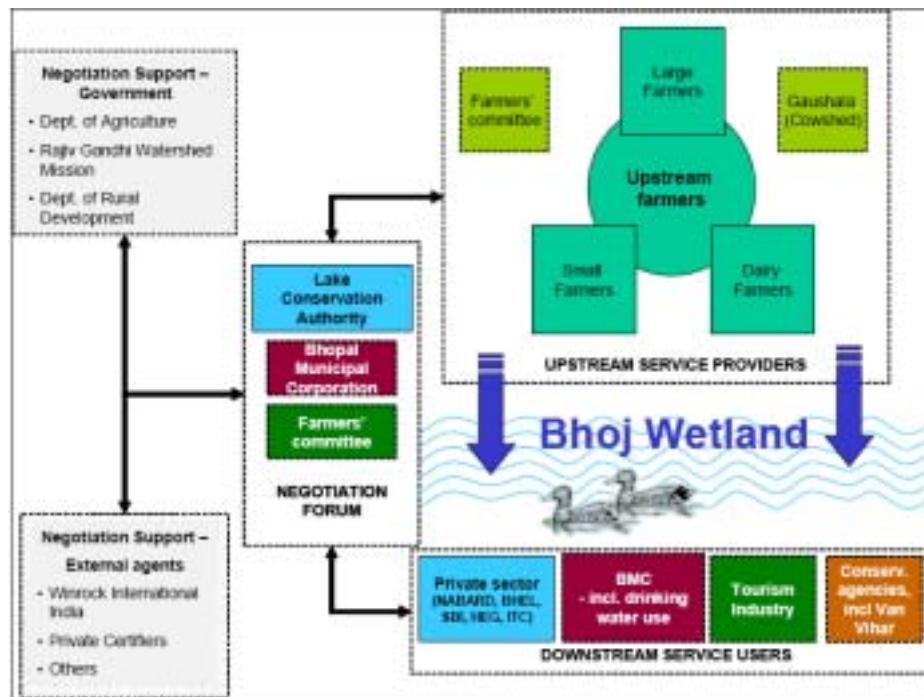
Incentives need to be negotiated in a legitimate and representative institutional forum. Currently, there are myriad institutions with varying levels of interest and influence over land-use practices in the watershed. The LCA, the Bhopal Municipal Corporation (BMC), and Farmers’ Committees are the key actors in a provisional negotiation forum (Figure 8). Creating a negotiation forum should be viewed as a key step in setting up an incentive mechanism with an independent external agent engaging the LCA (government) with farmers (primary stakeholders) in a negotiation process. A driver of change (internal or external agent/agency) is considered fundamental to engage stakeholders, identify incentives, establish a negotiation forum, and bring the process to a preliminary agreement.

If an organic land-certification process is effectively implemented and enforced the existing but untapped organic-market incentives should contribute to ensuring land-use change that benefits both farmers and the wetland. This would be an elegant solution that would

overcome the significant difficulties of multi-party contracting that challenge many incentive mechanisms characterised by diffuse ‘service providers’ and few, uncertain, and generally under-resourced ‘service users’. This assumes that (a) economic returns per unit of organic land remain higher than non-organic returns, (b) additional labour inputs can be sourced locally, (c) pest and disease damage to organic crops can be minimised, (d) organic inputs of adequate quality and sufficient quantity can be reliably supplied to farmers, and (e) policy continues to support organic farming as a land use.

Progress to date is promising. A corporate awareness-building campaign by Winrock International India introduced the concept of incentive approaches to reduce wetland pollution, which generated interest and potential funding from local business organisations (Saigal, 2005). However, absence of institutional ‘glue’ that would link inter-related actors and their requirements in order to be able to implement wide-scale organic-farming uptake remains a significant constraint. It appears essential that one or more state governments or private institutions champion incentives for organic farming politically, financially, and administratively to build on the steps taken to date in negotiating sustained improvements in wetland management and farmer livelihoods. Without an external agent with adequate resources and motivation to actively engage with stakeholders, the tangible opportunity of a sustainable incentive mechanism at the Bhoj wetland appears uncertain.

- **Figure 8** How a negotiation forum may fit into the Bhoj institutional landscape



4 Lessons and implications

Applying the negotiation support framework in the two case study contexts is instructive in terms of both assessing the value of the framework as a generic tool and identifying lessons and developmental implications for the role of incentive mechanisms in a wider context. Key lessons that emerge from the research are discussed below.

Lesson 1. Shared interests are critical

Environmental conservation benefits resource-dependent rural people when there are shared interests. This requires pre-negotiation and an objective evaluation of stakeholder interests. This did not happen in the Costa Rican case and the programme does not address the priorities of rural people. Instead, it largely serves existing forestry and conservation interests. In India the situation is evolving, with firmer evidence that an incentive mechanism could respond to the interests of the majority of the stakeholders and wetland conservation, given the right incentives.

Lesson 2. Find incentives that work for people and the environment

Decision-makers need to evaluate carefully which incentives work for people and the environment. This is neither simple nor intuitive. Cash seems obvious but people wanted road improvements or more secure land tenure in Monteverde. Higher crop prices appear obvious incentives for farmers too, but unless their land is certified as organic wetland then benefits may be uncertain. Certification offers a self-enforcing institutional arrangement to reduce transaction costs and increase sustainability by linking an incentive to an existing market mechanism that allows external actors to withdraw after an initial start-up period.

Lesson 3. Institutions matter

Institution-building or institution-strengthening is fundamental to negotiating agreements that reflect the interests of all stakeholder groups. Institutions can reduce transaction costs, build local capacity, and empower vulnerable and excluded groups. This is a critical next step if the Bhoj case study is to graduate from a promising research project to a replicable intervention for wetland management. In Monteverde, the absence of effective and representative primary stakeholder groups shaping, influencing, and communicating with FONAFIFO highlights the limitations of the incentive mechanism in terms of rural development goals.

Lesson 4. Negotiation needs active engagement

Unless motivated actors undertake the task of overcoming transaction costs, a negotiated approach has a limited chance of success. This active engagement will usually come from external actors with the resources and motivation to identify adequate incentives, establish a negotiation forum, and bring the process to a sustainable agreement. Understanding the community characteristics of service providers and users and involving them from a pre-negotiation stage is critical.

Lesson 5. Start locally with a problem

Whether it is a watershed or a wetland, it is important to start at the local level with a generally perceived and recognisable problem. As evidence from Monteverde illustrates, tackling water flow problems with incentive mechanisms is problematic and political. Conditions of additionality and contingency are likely to be contested. Scale issues in tropical

contexts further complicate matters. Water quality or sedimentation problems may represent more appropriate applications for incentive mechanisms.

Lesson 6. Use multipronged approaches

Hybrid approaches that mix regulatory, reward, and self-governance mechanisms reflect the complexity of institutional arrangements and legal pluralities in the real world. Global surveys suggest that there are very few incentive mechanisms working on their own. In Bhopal, a public/donor investment programme worked well to address urban pollution sources; it is less clear that an incentive mechanism could work well outside the state in effectively achieving rural land-use change. Using a broad strategy may often be the most practical and effective approach.

Lesson 7. Have realistic and measurable goals

Cumulative research, including the Costa Rican study, is stressing the limitations of incentive mechanisms for reducing poverty. This is often because the very poor do not own land. Market-based mechanisms are frequently premised on land-use change, and although many poor people are effectively land managers, achieving contingency under disputed and/or multiple tenure rights suggests a further layer of transaction costs and complexity which is often beyond local capacity. In the Bhoj case, if a significant proportion of small and medium-scale farmers do adopt organic production with no welfare loss, it is likely to translate into gains in in-situ soil quality and wetland water quality benefits. This would be no small achievement, although it may not qualify as poverty reduction.

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Negotiating watershed services

In response to the disappointing results of many regulatory or public investment approaches to watershed management, payments for environmental services has emerged as a new mechanism to maintain socially optimal environmental services by compensating people for the services they provide. However, without adequate understanding of stakeholders' willingness to modify or maintain land use or water resource decisions, market-based mechanisms may prove to be unsustainable, with uncertain social and environmental outcomes. Negotiating resource use patterns requires an understanding of the type, level and duration of incentives for stakeholders to co-operate meaningfully. In this paper, we describe a negotiation support framework that has been developed from the literature and field experiences in Costa Rica and India. The framework then serves to critically examine a case study from both countries to draw empirical lessons from the inherently political and contested process of watershed management.

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Markets for Environmental Services (MES) is an initiative of IIED's Environmental Economics and Forestry and Land Use Programmes aimed at promoting the provision and maintenance of environmental services in ways that are equitable and beneficial for poor people. MES reports focus on the financial, environmental and poverty impacts of recent initiatives to develop markets, financial compensation mechanisms, fiscal incentives and other market-based instruments for environmental benefits (services) in rural areas of the developing world. They are targeted at developing country governments, private firms, donor agencies and other organisations working in the area.

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