Governance of natural resources: issues, challenges and complexities

Leena Srivastava & Vishal Narain
The Energy and Resources Institute
Darbari Seth Block, Habitat Place
Lodhi Road, New Delhi – 110 003

The concept of good governance has increasingly come to be seen as an essential ingredient of principles guiding natural resource management. Governance is a term that does not lend itself to an easy definition. Perspectives on debates in governance have varied; however, essentially questions of governance of natural resources revolve around such issues as improving the effectiveness of the bureaucracy, improving accountability and transparency, strengthening the legal framework, improving stakeholder participation and involvement, changing the state-user relationship, issues of disinvestment and privatisation, and the building of partnerships at various levels. This paper presents the many dimensions of studying governance of natural resources and the challenges and complexities that it entails.

Conceptualising governance

The concept of governance has interested scholars of many disciplines and varying interests; rational choice theory and the new institutional economics, political science, public administration, sociology, law and legal anthropology. Some scholarly writing focuses on inter-disciplinary perspectives in governance, such as socio-technical approaches that draw upon the natural and social sciences and approaches in ecological economics that seek to bridge a gap between the study of ecology and economics.

Governance deals largely with questions of control over natural resources. This needs to be distinguished from management, which deals with the more organisational issues. In functional parlance, however, the terms are used interchangeably and the two concepts are some times difficult to separate. Governance and management of natural resources are two intertwined processes. Control over one yields control over the other.

The governance question is closely related to that of livelihoods. Since governance deals with control over natural resources, governance issues are embedded in issues of access to and rights to natural resources. Laws and property rights issues become significant in the context of defining access to natural resources; to that effect, governance has a bearing on livelihood and equity concerns.

No matter what level of resource use we choose to focus on, from local to inter-state and global, we find that governance of natural resources is a socially embedded process. It involves power relationships and questions of ethics and equity. It involves questions of struggle and contestation. In a regime of growing resource scarcity, resource conflicts tend to increase and resource use becomes a politically contested process, with varying domains and power struggles. Similarly, regardless of what level
we choose to focus on, improving governance requires improving transparency and accountability, access to and sharing of information and strengthening of databases. This also necessitates an enabling legal environment.

There is also an important difference between governance and government. Government is but one of the means through which governance can take place. Increasingly, governance has moved out of the corridors of the government and actors outside the government have taken a more prominent role. As a matter of fact, scholars of governance are deeply interested in the changing role of the government vis a vis other actors in governance processes. Within the Government, it is customary to think of its three arms–the Executive, Legislature and Judiciary – as shaping governance processes. And we could conceptualise the role of the government in governance as being shaped by the interface of these three sets of actors. The Government governs through an interface among the Executive, Legislature and Judiciary. As we shall see in the discussions that follow, recent trends in governance exemplify a change not only in the relative roles of the Government, but also result from a change in the relative roles of the three arms of the Government. The recent CNG debate in Delhi gives a good example of this interface between the judiciary, executive and legislature. In fact, it provides an example of the process of going back and forth between the Executive and the Judiciary. There have now been several cases wherein the judiciary has stepped in to influence the direction and content of reforms and this stepping in has often been necessitated by weaknesses in the executive or the legislative framework. Increasingly, in the Indian context, the judiciary has come to play an important role in the nature and content of governance processes.

Governance could be conceptualised in three different social and geographical domains: that of private goods, national public goods and global public goods. The prominent challenge in studying governance of private goods is in internalising the externalities associated with the use of those goods. This happens, for instance, when we study soil degradation or governance issues in the mining sector. When studying governance of national public goods such as water, forests and biodiversity, we are concerned with issues of access; however, we are also concerned with issues of sustainability from an inter-generational as well as intra-generational perspective. The design of institutions for governance of national public goods needs to reflect these concerns. The governance of global public goods such as the oceans and the atmosphere is a much more complex phenomenon as the number of actors increases, as does the geographical scale of coordination. The design of institutions for global governance is fraught with high transaction costs and often hampered by the prevailing balance of power in the international arena.

**Forms of governance: state, market and community**

Historically, and academically, the question of governance came into prominence with Hardin’s classic paper “Tragedy of the commons” (Hardin 1968). Hardin argued that given a resource base, if every resource user were to use it to maximise his private gain, the resource base would soon be diminished. Thus, “The tragedy of the commons” gave rise to questions on the need for a governance structure. Proponents of what came to be called the property rights school advocated the establishment of private property rights to avert the tragedy by internalising the externalities associated with resource use. On the other end of the spectrum were advocates of nationalisation
who saw nationalisation as a superior alternative to establishing private property rights. More recently, rational choice theorists have advocated for the establishment and strengthening of community-based forms of self-governance, based on the premise that communities are capable of crafting rules for sustainability.

It is easy to trace the paradigmatic shifts in emphasis on alternative forms of governance. Till the 1970s, most developing countries observed a strong emphasis on the role of the state. In the 1980s, emphasis shifted to the market, based largely on the World Bank’s espousal of neo-liberal ideologies. The 1990s saw an emphasis on the development of local institutions for self-governance, based largely on the work of rational choice theorists. The new paradigm in governance seems to be the emphasis on partnerships, a factor that received thrust at the Johannesburg summit. Perhaps there is a realisation, that neither of the state, the market, or local organisations are capable of addressing development or natural resource management concerns on their own. There is a need to capitalise on synergies that exist in terms of the relative strength of different actors. Hence, there has been an emphasis on partnerships as a new trend in governance.

**Improving governance of natural resources: lessons from TERI’s experience**

*Strengthening the legal and institutional framework: lessons from the mining sector in Goa*

Improving governance throws up many questions with regard to the institutional and organisational environment for natural resource management. Often this entails filling up a vacuum created by a weak Executive and establishing new linkages outside the government. TERI has been working in a large number of areas directly interacting with diverse stakeholders both within and outside the government to strengthen the capacity of existing organisations as well as to create new ones.

TERI’s work on the mining sector in Goa, for instance, has shown that having regulations and laws for the mining sector by themselves has not worked. The institutional capacity has been weak in terms of ability and willingness to implement the regulations (TERI 1997). Mining activity has taken place in an institutional vacuum, since the organisations charged with implementation have not taken their roles seriously.

To overcome this situation, TERI recommended the establishment of a Mineral Area Development Authority (MADA). An essential aspect of the constitution of the MADA, TERI suggested, would be the representation from various actors and stakeholders in the mining belt, including NGOs and village heads (*Sarpanches*). TERI also developed a charter of activities for MADA, that would include remediation of past environmental neglect, the undertaking of community development programmes to improve the social and economic conditions of the mining villages, co-ordination amongst various stakeholders to ensure that mining practices used good environmental management practices, and the carrying out of training programmes for different stakeholders. TERI suggested that MADA should encourage the use of Integrated Environment Impact Assessment, Auditing and management systems and carry out regular monitoring of ambient air, water and soil at several stations.
When seen through the lens of governance, TERI’s work suggested that there were several lacunae from the perspective of the Executive arm of the government. While there was a set of legislative mechanisms, they remained virtually dormant in the absence of a strong Executive to enforce them. Not only was there a need to create a new body to fulfil that role, but also to liaise effectively with actors outside the government.

**Decentralisation, participation and community: lessons from forestry and water sector**

An important trend in governance in recent years in India, as elsewhere, has been decentralization in natural resource management, that has typically assumed the forms of varying degrees of state-user involvement, or the changing of the state-user relationship. The emphasis on decentralisation has emerged largely as a disenchantment with the predominant role of the state on the one hand and the glorification of community on the other. Essentially, decentralisation entails a new role for the Executive arm of the Government.

The emphasis on community, that has spurred current thinking on decentralised institutions, has come from several categories of actors - multilateral organizations and donors, academics, NGOs and policy makers. First, this emphasis stems from the disillusionment with two alternative approaches to resource allocation and management- the state and the market (Agrawal & Gibson 1999). With the spread of democratic political structures and the emphasis on participation, unrepresentative development and conservation projects have come to be seen as unattractive and impractical. The failure of bureaucratic, centralized approaches to natural resource management has compelled governments to experiment with decentralized, ‘participatory’ approaches.

The emphasis on community has been seen as a superior alternative to nationalization and privatization of natural resources (Bardhan 1993). It is seen as a way of reducing the role of the state, sharing management responsibilities and generating resources. It has been argued that the financial and managerial burdens of professional bureaucratised approaches to meeting basic human needs have been enormous; at the same time many such programmes are depersonalised, inefficient and ineffective (Korten 1984).

For instance, in the case of canal irrigation, it has been argued that when government agencies assume irrigation management functions that farmers could otherwise handle themselves, it results in higher financial and social costs (Groenfeldt 2000). Authors like Groenfeldt argue that irrigation users have stronger incentives to manage water productively than does a government bureaucracy. When management is decentralized to users, they can also respond more quickly to problems or changes in the system.

Among academic circles, the emphasis on community-based management has come from rational choice theorists who emphasize the role of community in common property resource management (Ostrom 1990, 1992; Tang 1991, 1992; Ostrom & Gardner 1993). The fact that communities are capable of crafting their own rules for resource appropriation is used as evidence to demonstrate the potential of community-based natural resource management. Non government organizations at different levels have also helped to amplify the role and auspices of local, indigenous and community
groups (Shepherd 1998). For the same reasons, donors and multilateral agencies have diverted huge sums of money to support community-based conversion (Agrawal & Gibson 1999).

The above arguments have resulted in an emphasis, among policy circles, on a 'territorial perspective', emphasizing control over and management of natural resources by those whose lives depend on them and, who, by virtue of their proximity to them are considered to be in the best position to do so (Korten 1984). More recently, however, there has been a questioning of the glorification of community (Agrawal 1999; Kumar 2002; Narain 2003).

In India, we have seen examples of decentralisation and community participation in many sectors. The JFM (Joint Forest Management) programme in which TERI has been closely involved provides a good example and throws up several questions and issues. There have been several lessons from the JFM experience. An important lesson has been that political decentralisation in itself is not enough unless it is matched by financial devolution of powers. Units of governance created at the local level, to be self—governing, need to be financially autonomous. Another issue is that by seeking to ensure representation from the forest bureaucracy in the Forest Protection Committees, the Forest Department has shown its reluctance to let go of control over the user groups. This does not secure a changing of the state-user relationship in its totality.

An important challenge arises with regard to the co-existence of different units of governance at the local level. At present, many states in India are at varying levels of efforts at strengthening the Panchayati Raj Institutions by virtue of the 73rd Amendment to the Constitution of India. This gives rise to a new question about the interface of these organisations with the Forest Protection Committees that have been created at the local level. Many other issues are involved; an important question that scholars of governance in India have been debating is the level of decentralisation. For instance, the question is whether a village Panchayat, which is an administrative and political unit, is the appropriate unit to manage water resources, that can be done better at the level of a hydrologic unit such as a watershed (Narain, 1998).

Much more still needs to be done with regard to mainstreaming gender considerations in local governance. Some efforts have been made to improve the representation of women in the JFM societies by reserving seats for them. However, addressing the question of gender requires a multi-pronged approach that addresses basic questions of access or rights of women to water, land and credit. Reserving seats for women may not necessarily improve their representation, unless there are fundamental changes in social power structures and the access of women to credit, land and water resources.

More recently, there have been efforts at decentralisation also in the irrigation sector. At present, 13 states in India are at different levels of policy formulation and development for WUA establishment (Ballabh 2002). However, there are a few caveats. Firstly, the notion of irrigation reform has come to be linked exclusively to WUA establishment rather than addressing the broader questions of what reform should accomplish in terms of resource generation, financial viability, and improving the effectiveness of system operation. WUA formation has become a way of “passing the buck” for reform on to farmers. Secondly, even where WUA formation has been
carried out, its scale is still too limited to have a significant effect on resource generation or efficiency (Narain 2000). Thirdly, one question that has received very little attention in the irrigation reform processes is whether WUAs that are created remain arms of the bureaucracy or also lead to a reorientation of the Irrigation bureaucracy. Making the bureaucracy more accountable to user groups for water delivery and for irrigation management performance needs to be an essential ingredient of the reform process. Finally, while WUA creation throws up new challenges for local governance, very little is known still about the internal dynamics of water users groups, their effect on social and power relationships as well as on the participation of different groups and minorities in them.

TERI has been assisting the JBIC (Japanese Bank for International Cooperation) in evaluating some irrigation projects in Orissa.\footnote{This is part of a larger project in which TERI has extended support to the JBIC in assessing the effectiveness of JBIC supported projects in four areas-irrigation, watersheds, ports and power.} An essential issue that emerged was that even when there have been some efforts at forming water users associations to promote decentralization, these efforts have not been matched by measures at reorienting the bureaucracy. In that event, the decentralization process remains a lop-sided, half-baked process. There has been some pressure to downsize the irrigation bureaucracy; however, the retrenchment has been focused at the lower levels. Thus, many equity issues surface. The spirit of WUA formation has been very instrumental; that is, forming WUAs is seen only narrowly as a way of more effectively meeting the goals of the Irrigation Department. Very little effort and thought has yet gone into addressing the broader questions of the effects of WUA formation on social and power relationships, or of building accountability and transparency in WUA decision-making processes. The task of decentralization is not complete till efforts at building local level governance structures are accompanied by efforts at ensuring their accountability to WUA members.

**Market creation: the need for an inter-disciplinary perspective**

Markets have been widely understood to be a powerful tool for influencing resource management and allocation. The creation of water markets through the institution of well-defined, tradable property rights is often advocated as a policy option in the water sector. While groundwater markets in India have thrived in different parts of the country, more recently proposals for market creation have also been made in the canal irrigation sector (that is, for surface water). The premise is inspired by fundamental neo-classical economics: well-defined, secure property rights in water, will, through an invisible hand, lead to a situation where water is allocated to the highest valued uses and a price will emerge that is a market clearing equilibrium price. Further, this price, when it is constituted through the interface of the forces of demand and supply, will convey the scarcity value of water (Rosegrant & Binswanger 1994; Meinzen-Dick & Mendoza 1996; Anderson & Snyder 1997).

The case for market creation through a regime of well-defined, tradable property rights is built on many grounds. Firstly, it is argued that excessive resource depletion and environmental degradation are the result of misleading price signals, which result from the absence of markets in resources and environmental assets. Establishment of secure property rights should lead to the emergence of markets and scarcity prices for the
resource in question. With exclusive and secure property rights, resource depletion is internalised (Panayotou 1994). Once the water rights systems are set up, it is argued, water markets in water scarce areas will establish the market value of water, which is also a reflection of the opportunity cost of water (Kemper & Olson 2000).

Secondly, secure property rights are advocated on grounds that they could empower users (Rosegrant & Binswanger 1994). Security of tenure could lead to long term investments in water saving, cause users to consider the opportunity costs of water and to use it efficiently, and gain additional income from the sale of water and internalise externalities. It would be more responsive to changes in water values as demand patterns and comparative advantage change. Thirdly, it is argued that when water can be made available to meet demand through water markets, it reduces the need for constructing costly supply oriented infrastructure and leads to a more rational and economically viable allocation of water resources (Kemper & Olson 2000).

These arguments are challenged by the skeptics of markets (Young 1986; Bolding, Mollinga & Straaten 1995; Moore 1989). It is argued that water markets of the kind envisioned by neo-liberal enthusiasts would not emerge in surface irrigation. Several factors restrict trade in water; the inhibiting supply characteristics include mobility, economies of large size, uncertainty and variations in supply and availability of alternative sources of supply. Other factors include high costs of storage and conveyance and high transaction costs relative to likely gains from potential exchange. Apart from economic values, communities associate a certain sense of security and control with water over and above its direct economic significance, which may cause the emergence of a market to be 'sluggish'.

More recent research suggests that proposals for market creation should take into account their fit with the design principles of canal irrigation as well as with existing notions of rights and entitlements (Narain 2003). Under conditions of protective irrigation, where water is 'scarce by design', as in the case of *warabandi* irrigation in North-West India, the possibilities of water markets emerging are very limited (ibid.). At the other end of the spectrum, recent research in India has questioned the efficacy of policy interventions to impact upon groundwater markets, given their embedded character (Dubash 2002). Thus, policy approaches to market creation would really call for a more inter-disciplinary approach to analysing situations of governance; this calls for natural resource economists to interact closely with engineers and anthropologists.

**Inter-sectoral coordination: lessons from TERI’s work in the water sector**

Another area of governance is improving coordination among the various ministries that deal with a resource. TERI has been engaged in a cross-sectoral dialogue on sustainable development, supported by the DFID, that seeks to bring representatives of different ministries that deal with the same set of issues and/or environmental

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2 See also the discussion on the impacts of market-oriented reform policies in Mexico (Kloezen 2002). Kloezen argues that cost-recovery, financial autonomy and water pricing and marketing need to be seen as socio-political constructs. The behaviour of actors in settings of market creation is not purely guided by conditions of economic rationality, but also shaped by social and political factors. For a similar analysis of the mixed effects of market creation in Chile, see Bauer (1997). Bauer shows how sales in canal water tend to be limited on account of several geographical, local and cultural factors.
The absence of a platform for inter-ministerial coordination on water management was highlighted as an important issue. Representatives of the various ministries that deal with water management recognised that the absence of a mechanism for cross-sectoral coordination was a serious lacuna, even as that need was seriously felt.

Perhaps in no sector in India is the challenge of integration as important as that in water which is dealt with by a number of ministries (World Bank 1998; Narain 2000). The Ministry of Water Resources deals with the development of surface and groundwater resources and inter-basin transfers of waters. The Ministry of Environment and Forests deals with water quality and environmental matters, largely through its pollution-monitoring network that operates through the Central Pollution Control Board. Water is also a subject of the Ministry of Power (for electricity generation). The Ministry of Rural Development implements rural drinking water schemes; in the 1980s, this was done under the Rajiv Gandhi National Drinking Water Mission and more recently, through the Swajaldhara scheme. The Ministry of Rural Development also deals with watershed management programmes, that have as one of their components measures for soil and water conservation. Urban drinking water and sanitation are the prerogative of the Ministry of Urban Development and Poverty Alleviation.

While the above ministries deal with water specifically, it is also the interest of other ministries, such as The Ministry of Agriculture (for irrigation), the Ministry of Health and Family Welfare (for health impacts associated with water) and the Inland Waterways Authority of India (for navigation). Overall planning of water is the concern of The Ministry of Finance and The Planning Commission.

The fact that there is, at present, no institutional mechanism for inter-ministerial coordination on water management was strongly emphasised at the cross-sectoral dialogue held at TERI on August 8, 2003. There is no mechanism at present institutionally at the command of the Ministry of Water Resources to secure coordination at the inter-ministerial level. The whole approach to inter-ministerial coordination was described as ad hoc and reactive, rather than proactive. It was described as “tenuous”, “reactive” “very project oriented” and “not substantive”. This, in turn, was described as a very unsatisfactory situation.

At the same time, however, it was felt that the issue can not be resolved by simply placing all matters pertaining to water planning under one ministry; instead the more pertinent issue is how to secure integration and coordination by tapping on core competencies. There is also a need to look at international experiences on efforts at securing coordination in other countries such as China, or the USA, that also has a federal structure, much like India.

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3 This exercise, supported by the DFID, was carried out at two levels. At the first level, TERI researchers met with representatives from the respective ministries to examine mechanisms for inter-sectoral coordination. This was followed by a high level cross-sectoral dialogue organized at TERI, New Delhi where ministerial representatives interacted face to face to examine possible institutional mechanisms for inter-sectoral coordination. Attention was focused on four thematic areas. These were (1) water management (2) environmental health (3) environmental vulnerability and (4) environmental fiscal reform.
It was also felt that the need for coordination does not stop at the Central level. In fact, there is a need for coordination at all levels, including vertical coordination, that is, at different levels of the Government, as well as horizontal coordination at the local level. One issue that needs to be addressed in this context is that of the support that the Central Government can extend to the state governments in building their capacity for resource monitoring and management. Similarly, there is a need for coordination at the district level, where much of the intervention takes place. Improving coordination at various levels is one way of strengthening the Executive arm of the Government.

**Governance issues at the Periphery: understanding the periurban interface**

There is also a need for addressing governance issues that arise at the periphery of different lines of jurisdiction. One such project in which TERI has been engaged deals with natural resource management in periurban areas. Periurban areas are located at the periphery of rural and urban areas. Essentially, these are rural areas on the fringe of urban centres and towns. The management of natural resources in these areas encompasses some times overlapping jurisdictions of both urban and rural governments. This amounts to a situation where some important management issues get overlooked. Problems of governance also arise from the specific nature of resource use patterns. For instance, peri urban farming often depends upon sewage wastewater from adjoining towns. Often property rights in land are not clearly defined; in many other resources, property rights are in a state of flux as ownership rights and privileges change hands and the locus of control moves from inside to outside the village boundaries.

Periurban is essentially a state of transition between rural and urban areas. The question is not about the goodness or badness of periurban; rather the question is of evolving and enforcing polices and laws that make this transition smoother and environmentally sustainable. Natural resource implications also arise from changes in land use patterns. For instance, land use changes from agriculture to brick kilns. Then, there are issues with regard to siting and location norms when industries are located some times as close to the village boundaries, and at times, even inside the village boundary. Thus, a whole range of issues emerges in the peri urban context, dealing with the unintended impacts of a legislative framework as well as conflicting domains of operation of different arms of the Executive.

**Rural governance: working with self-help groups**

TERI has been working in the realm of rural governance through a variety of local level institutions such as local self-help groups. The focus has been on a better integration of energy and water management practices through women’s self-help groups. TERI has been providing training on the use of improved cook-stoves, and solar cookers with water tanks in the state of Himachal Pradesh. These self-help

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4 The project on sustainable settlements in periurban areas with special reference to the impacts of energy and transport is an EU-funded project that is designed as a thematic network activity. It involves six institutes, namely the Stockholm Environment Institute, Sweden, the Institute of Transport Studies, Leeds, UK, Technical University, Vienna, Austria, Institute of Rural Management, IRMA, Anand, India, Anna University, Chennai, India and TERI, The Energy and Resources Institute, New Delhi, India.
groups are rather small, with a size of about 12 members. The basic learning is that there is a need to link these programmes with activities for income generation.

The provision of finance has, for a long time, been acknowledged as one of the main bottlenecks in access to clean and appropriate energy sources. In Himachal Pradesh, SHG formation was taken up under which all the women members were asked to contribute and since the contribution was small, every one did so readily. After a certain sum was collected, it was decided that this sum would be deposited in the bank and the members could take a loan against this sum. With which these members could take up productive activities. With time and increase in income levels, these members would repay the loans so that other members of the group could also borrow. The problem arose when the women spent the loan money taken under the schemes and used it for non-productive uses and were subsequently unable to repay this loan which led to the insolvency of the SHG. Thus, the basic learning from TERI’s work on self-help groups is that there is a need to closely link programmes for self-help groups with productive and income generation activities.

Reforming urban infrastructure: creating a new set of state-user relationships

In the realm of urban infrastructure, TERI’s activities have been guided by the objective of ensuring universal access to municipal environmental services, namely water supply, sanitation, solid waste, and urban transportation, to facilitate an improvement in the overall quality of life. TERI has assisted in preparing reform strategies for urban infrastructure to improve sector coverage, facilitate improvements in the quality of service delivered, and ensure financial viability of the sector. The activities include designing appropriate public private partnerships, developing institutional restructuring strategies for effective regulation, suggesting frameworks for tariff reforms, and benchmarking quality of service delivered. The levels of intervention in most cases are the Urban Local Bodies and State Governments. At the Central Government level, the focus is on policy support to the Ministry of Urban Development, and the Planning Commission.

TERI has been actively involved in the urban reform process in India, particularly in the water sector in the state of Gujarat, and the public transport sector in Delhi and Maharashtra. After developing a detailed framework for private sector participation and independent regulation in the water and sanitation sector in Gujarat, TERI drafted a legislation for instituting an independent regulator in the sector in the state. TERI also developed a Model Water Sale Agreement for a bulk water transmission company in the state. Drawing on its previous initiatives in reforms in the sector, TERI has drawn a strategy for regulatory reforms in all the municipal environmental sectors.

In the transport sector, TERI drafted a restructuring strategy for public transport as part of the Sustainable Transport in Large Indian Cities. Based on this exercise, TERI has advised the Delhi Transport Corporation in implementing a strategy aimed at restructuring its operations to improve its financial viability and operational performance. TERI has also estimated the subsidies in public transport operations being borne by the Thane Municipal Corporation. Based on this analysis, TERI has developed strategies to reduce the subsidy burden and is currently handholding the local body in the implementation of these strategies.
A general learning from TERI’s work with regard to improving service delivery is that a dramatic transition is necessary from service standards being set by the central authority to a scenario where each community decides the service standards that should be realised based on an assessment of the costs involved and the benefits. Systems that permit consumers to design schemes based on their preferences and ability to pay for the same are needed. This would ensure that poor communities are not saddled with large expensive projects that they are unable to fund and maintain. In addition, it allows communities to trade off the improvements in service quality that would result from improvements in project design, with the incremental costs of such improvements, and thus make efficient investment decisions. Finally, this would also ensure that communities finally own the projects once these are executed as these would have been designed and funded by the communities themselves. Hence, a demand driven approach, that is empowering local communities to set service standards based on the costs of alternative levels of service, would result in a more efficient solution. In the state of Maharashtra in India, the savings estimated from efficiency improvements in investment decisions are quite substantial – about Rs 120 billion.

Conclusion

This paper has highlighted several issues that the term governance of natural resources encompasses. We also used some insights from the work done by TERI to throw up some issues for further research and discussion. As we stand at the cross-roads of this millennium, we need to define a research agenda for studies on governance of natural resources. Needless to say, the thrust of governance studies in this millennium has to be on inter-disciplinary analyses that bring together scholars of diverse disciplines, particularly across the natural and the social sciences. This is because governance is a multifaceted phenomenon that cannot be tackled within the boundaries of any one single discipline. Thus, economists, lawyers, ecologists, engineers and social anthropologists need to engage in a constant dialogue on governance issues. Perhaps the current meeting will provide one such forum.

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