PRESIDENTIAL ADDRESS

Decentralisation of Natural Resource Management in India: An Institutional Perspective*

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INTRODUCTION

When I received the letter from the President of the Indian Society of Agricultural Economics, Prof. S.S. Johl, informing me of the decision of the Society to elect me to preside over the 69th Annual Conference of the Society, I was humbled. I am aware of my predecessors who have stood on this podium and presided over the previous conferences, Professors Manilal B. Nanavati, M.L. Dantawala, V.M. Dandekar, A. Vaidyanathan, and such others, whose ideas, thoughts and hard work have nurtured this great Society. Not only did they contribute towards the development of the field of agricultural economics but also devised ways and means through which our Society addresses socially and contextually relevant agrarian issues at different levels – policy making, programme and project development, and implementation. I have grown in this profession watching these great scholars and their ideas and thinking contribute to my own thought process in many ways. Therefore, I consider it a great honour and privilege to address distinguished members of the Society and am thankful to them for electing me the President for the 69th Annual Conference. Today, I will deal with the issues in decentralisation of natural resource management from an institutional perspective.

I stand here at this great institute of learning- named after Shri Guru Nanak Devji-one of the greatest saints and social reformers who raised the nursery of social capital for creating a democratic society. To speak on any aspect of decentralised governance fits well within the historical, socio-economic and cultural framework of Amritsar, the holy city. I have chosen this topic, not because Professor Elinor Ostrom who has worked in this area and was recently awarded Nobel Prize in Economics, but because I sincerely believe that decentralised management of natural
resources has the potential to solve the twin problems of our society - poverty and poor governance.

For nearly three decades now, I have been concerned with the role of institutions in sustainable development of renewable natural resources. For this address, I put together thoughts and writings that have evolved over 30 years of research and learning. Basically, there have been three approaches, which have been adopted in India towards decentralised governance and management of natural resources, namely, state initiated partnership programmes, state initiated devolution and community and civil society driven governance (Baumann and Farrington, 2003; Lele, 2004). Learning from research to understand the process of decentralisation and institutional arrangements has potential to improve the effectiveness of sustainable natural resource management. It can also fill the gap in policy making which is often based on poor understanding of the decentralisation process.

II

NATURAL RESOURCES AND DECENTRALISED GOVERNANCE: MEANING AND CONCEPTS

Natural resources (NRs) constitute an important component of community assets in India. They underpin the livelihoods of millions of poor people particularly those living in the under privileged areas, with few alternative economic opportunities. NRs in and renewable natural resources, in particular, are essentially flow resources. A decline in the flow below a critical minima may have irreversible consequences (Marothia, 2002 b). Various factors conspire to make NRs difficult to govern and manage sustainably. For example, many large scale NRs can be Common Property Resources (CPRs)¹ and may pose diverse and difficult challenges than those posed by either private or public goods. Use of NRs can produce significant externalities. The complex spatial and temporal boundaries of NRs along with their potential externalities rarely conform to the existing political institutions (Anderson and Ostrom, 2006). Rapid depletion and continuous decline in the physical productivity of CPRs and unequal access and control of the poor on CPRs have been the major factors in displacing a large number of people from their surroundings and reducing their status to environmental refugees.² In the era of globalisation, where market solutions receive primacy and are becoming a panacea for all economic and other challenges confronted by our society, the restoration of CPR productivity poses major policy challenges.

It has been observed that global attempts at democratisation and decentralisation have resulted in creation of wider opportunities for people’s participation in governance and, also in exercising control over NRs.³ Many developing countries, including India, have made efforts to devolve natural resources management (NRM) functions as a part of the process of institutional reforms. The objective of these reforms is to remedy some of the negative fallouts of the top-down and centralised governance by promoting local governance structures which can help tap the
understanding, and the ability of the local people and at the same time, providing them incentives (Ribot, 2004).

Diverse terms like devolution and de-concentration are used to refer to the varying forms in which decentralisation occurs. Part of the reason for this is that decentralisation takes place in many dimensions, at multiple levels, and for varied types of tasks. Decentralisation typically refers to a transfer of power from central authorities to lower levels in a political-administrative and territorial hierarchy. In other words, it refers to a shift in the locus of power from the centre towards the periphery (Manor, 1999; Agrawal and Ostrom, 2001). Beyond this, there is little consensus on the meaning of the term (Ribot, 2004; Larson and Soto, 2008).

Generally speaking, democratic decentralisation refers to transfer of powers and functions to local level governments such as panchayats or municipal governments, state governments in federal systems. The difference between administrative decentralisation or deconcentration and democratic decentralisation is that in the former case, the authority is transferred from central ministries to branch offices located outside the capital. Devolution usually refers to a broader set of transfer measures including transfer of authority to local community organisations. This may also involve creation or revitalisation of elected bodies at a lower level. It is often difficult to discuss decentralisation without addressing devolution since they are complementary with each other. Also, since legislative agencies depend upon executive agencies to put their decisions into action, devolution is unlikely to be effective without some accompanying decentralisation or deconcentration (Carney, 1995; Ribot, 2002; 2004; Larson and Soto, 2008).

It is assumed that the process of decentralisation would lead to improvements in resource allocation, efficiency, accountability and equity, besides promoting democracy by bringing the state closer to people, enhance local participation, and build social capital (Agrawal and Ostrom, 2001; Agrawal and Ribot, 1999). This would improve the sustainability of the resource. In order to be effective, decentralisation should transfer meaningful powers and sufficient resources to autonomous local authorities that are representative and downwardly accountable (Ribot, 2002; 2004). Success of decentralisation depends, to a great extent, on the degree of articulation among local political participants, political parties, and electoral system (Chhatre, 2007). If local institutions fail, decentralisation may also fail. It is a challenging task for the authorities to create new institutions and make them work efficiently for decentralisation (Hobley, 1996).

There is a growing concern about the central governments' strong resistance to transfer access and control over NRs and provide adequate administrative support to local institutions and authorities for effective decentralised decision making. Also, earlier optimism regarding collective action has been distorted by poor outcomes of participatory resource management projects and complex local social structures. The major issue in both theory and practice is, therefore, to develop in-depth
understanding about institutional linkages which may capture the potential benefits of decentralisation management of NRs (Baumann and Farrington, 2003).

Further, there is also a tendency in the literature to advocate that natural resource decentralisation and devolution to local or community governance is necessarily a better option. It is not surprising that a primary interest in the inclusion of marginalised groups and the promotion of democracy would privilege local actors, but it is also important to recognise its limitations. It has to be noted that only in a few cases, decentralisation has achieved both greater participation of and social justice for groups that have been traditionally marginalised (Hickey and Mohan, 2005). The concept of community in NRM is often assumed to be a small and stable spatial unit, a homogenous social structure having shared norms. However, persons or groups within a community may be highly mobile, economically and socially differentiated, and have different interests and values; they are likely to be affected by numerous outside social, economic, and political forces and may be highly conflictive (Agrawal and Gibson, 1999). Even though a community may be well organised and have effective institutions for making decisions and resolving conflict, substantial institution building could be required in many cases. Often, we see local elites hijacking initiatives such as community forestry or participatory water resource management because attention has not been given to social equity and inclusion (Agrawal and Ostrom, 2001).

Often scholars and policy makers do not have adequate answers to some of the basic questions (Andersson 2004, 2006) such as: What determines successful decentralisation policy? Why would some local governance institutions exploit the opportunities and succeed while others fail? What are the different patterns of incentives created by decentralised polices for local institutions, resource users and other stakeholders? To what extent, do such patterns help in determining the efforts of local institutions, resource users and other stakeholders and their degree of success in managing the NRs? An appropriate institutional framework can advance our understanding while studying the process of decentralisation in different settings.

III

DECENTRALISED NATURAL RESOURCES MANAGEMENT: AN INSTITUTIONAL FRAMEWORK

To analyse the process of decentralised governance and management of NRs, researchers have developed an institutional framework that identifies the key attributes of typical situations facing resource users, local communities and decision makers at different administrative hierarchies (Kiser and Ostrom, 1982; Oakerson, 1986; 1992; Ostrom, 1986; 1988; 1990; 1992a, b; 1995; 1999a, b; Schlager and Ostrom, 1992; Ostrom and Gardner, 1993; Ostrom et. al., 1994; Tang, 1992; Townsend and Polly, 1995). The principal attributes of institutional analysis and development framework include various physical and technical attributes of a resource, characteristics of resource users and community, social and ecological
context, and internal and external institutional arrangements that may affect the outcome directly or through collective action and patterns of interactions. The interrelationships among these variables can ensure efficient, equitable and sustainable outcomes in managing a large group of renewable resources including CPRs.\(^4\)

The study has used institutional analysis framework developed by Ostrom and her co-authors, and Townsend and Polley in my studies during the last 15–20 years to assess the performance of various CPRs based development programmes following decentralised management approach.

Amongst all the attributes of the institutional framework or derivatives of the framework for analysing the institutional design of NRM, property rights structures are the most important. Property rights regimes are part of the institutional arrangements through which resource users convert natural resources and environmental services into human made capital or inputs of production (Folke and Berkes 1995). The nature of institutional arrangements defines the extent of property regime over land, water and related resources. A property regime is a system or a set of institutional arrangements or working rules of rights and duties characterising the relationship of co-users to one another with respect to a specific natural resource.\(^5\)

Property rights regimes or resource management regimes can be classified under four categories: state property, private property, common property, and open access (Bromley, 1989; Ostrom, 1990; Gibbs and Bromley, 1989). These four categories of resource governance or property rights regimes have been extended by Townsend and Polley (1995) to recognise that the governance can be shared among states, communities and private interest groups in various ways at different decision making levels. Distributed governance involves the external institutional arrangements among government and local communities or resource users as well as internal institutional arrangements within local community institutions or resource users. Government, local communities and private parties utilising CPRs bring different interests, capabilities and understanding to the resource management process.

The degree of authority that government could transfer to local organisations varies with the internal governance structures. If management of NRs is to be effective and efficient, two features that characterise distributed management are needed. First, clearly defined institutional arrangements for local communities and local governments that minimise the potential for prolonged and costly disagreements between the resource user groups and the government administration. Second, decision making structure should be shared at different levels of administration so that costs and benefits of any decision are internalised within some cohesive decision making unit (Townsend and Polley, 1995). These alternative institutional perspectives shape the decision making process among government and local resource users' communities and within members of local community for managing a resource by converting unorganised structures into organised ones (Marothia and Phillips, 1985).
The basic requirement for any property rights regime (or a combination of property rights regimes) is an authority system that can guarantee the security of expectations for the rights holders. When the authority system breaks down, a particular resource regime degenerates. Under such a situation, new institutional arrangements are used to define the NR resource regimes and the authority systems to protect the interests of those holding the rights under a particular regime (Gibbs and Bromley, 1989; Marothia, 1989b; 1993; 1997b,c).

If a government is willing to devolve property rights over NRs that comply at the operational, choice, and constitutional levels, then, meaningful decentralisation takes place. At the operational level, users interact with each other to use or withdraw resource units from a CPR. At the collective choice level, rules are established to structure the operational terms, decisions are taken by existing and potential resource users to define the operational, institutional, and technical arrangements. In constitutional situations the decision is taken to determine who has the authority to structure rules for collective choice situations. The outcomes of decentralisation at different levels are largely affected by the types of property rights structures assigned to the resource users in implementing decentralised management of NRs (Agrawal and Ostrom, 2001). It is not necessary that the three levels correspond to the three actual levels of authority or institutional arrangements in political or legislative system. It is entirely possible that the same political or administrative body designs and implements rules-in-use for decentralisation management of NRs at all three levels (Ostrom, 1999b; Andersson and Ostrom, 2006). For example, in many Indian States, the State Department of Forests assigns usufruct rights for collecting non-timber forest products (NTFPs) and at the same time also designs institutional arrangements and implements them for managing NTFPs at operational, collective and constitutional levels even under the cooperative management system (Saxena, 2003; Marothia, 1996b; 2009c).

It is recognised that, at times, decentralisation may involve significant shifts in property rights to the local governments, but not to the local resource users. If local governments and communities compete for the same resource base, such rights may strengthen property rights of local governments but can weaken the property rights of local communities. In fact, the implications of changes in property rights depend on the property rights arrangements, including customary or traditional rights, that would have existed previously (Pierce, Colfer and Capistrano, 2005; Larson and Soto, 2008).

However, there is still a substantial lack of clarity with regard to the role of property rights granted to a single individual, user groups, or communities for managing single use or multi-use resources under decentralised governance. Research on property rights and NRs in general in India and elsewhere has adequately demonstrated that tenure security can effectively influence incentive structures for sustainability (Marothia, 1993, 1997c, 2002a; Singh, 1997; Agrawal and Ostrom, 2001). Research findings pertaining to role of property rights and institutional
arrangements in managing NRs can provide sufficient input to design relevant plan and to implement decentralisation (Anderson and Ostrom, 2006). Now we turn to discuss the outcome of NR programmes implemented under alternative institutional arrangements for decentralisation management.

IV

DECENTRALISATION IN NATURAL RESOURCE MANAGEMENT:
LEARNING FROM INDIAN EXPERIENCES

During the last three decades of decentralisation, programmes for water, forestry, fisheries and rehabilitation of waste and wetlands resources have been managed under alternative property rights regimes. As mentioned in the previous section, it occurs under three broad categories namely, state initiated partnerships, state initiated devolution through panchayat raj institutions (PRIs), and community and NGO initiated efforts with or without state or donor support.

In this section we discuss the outcomes of the case studies, which were conducted over the years to understand the process by which institutional arrangements affect decentralised natural resource governance. Some of the sites of the case studies were visited at the initial stage of the implementation of the programmes and later after a considerable time, revisited the same sites to assess the efficacy of evolving alternative governance structures in managing CPRs.

4.1 Common Pool Land Resources

Several schemes were initiated to improve the management of wastelands and degraded forest resources, beginning with establishment of village woodlots in the early 1970s under the social forestry programme and culminating into joint forest management programme initiated in the early 1990s. The salient features of this programme are presented here only to highlight the experiences in the evolution of institutional arrangement and its impact.

Village Woodlots (VWLs) Plantation Scheme: Many State Departments of Forest (SDF) undertook village woodlots (VWLs) plantation as part of their social forestry programme on village common grazing lands. The programme utterly failed as it was implemented without having a clear understanding of the sociological context, institutional arrangements (including property rights), complicated by insufficient consultation and involvement of the local people who depended upon the grazing land. For the entire project period, the village community was alienated and did not have access to resources created, and the conflict between SDF and village communities became a common phenomenon. Village woodlots are now managed by panchayats with enforceable implementation of institutional arrangements to promote need based biomass and to regularise harvest of fuel, fodder, and small timber. This was possible after the 73rd Constitutional Amendment of 1993 which
provides (PRIs) the necessary power and authority for the village development programmes (Marothia, 1988; 1989a; 1993; 2002b; 2004b; 2006a). Weak institutional design, external and internal institutional arrangements between village panchayats and forest department, were the main reasons for the failure of village woodlot schemes.

**Tree Patta Scheme:** This scheme was implemented mainly in three states-Uttar Pradesh (including Uttarakhand), Karnataka and West Bengal. In Uttar Pradesh and Karnataka respectively, degraded common wasteland and degraded forest land were leased to poor households for raising trees. The experiment largely failed in Uttar Pradesh as adequate technical and financial support from the forest department had not been extended (Vijaylaxmi and Parikh, 1997). Due to poor incentive structure and sharing arrangement over forest produce between forest department and beneficiaries the programme failed in Karnataka too (Iyengar and Shukla, 2002). West Bengal’s patta scheme was targeted to bring more area under agriculture and make redistribution in favour of the landless. In the second stage, the Government of West Bengal also launched social forestry scheme for patta lands. Both the schemes had limited success and all sorts of problems ranging from technical, financial and court injunctions were encountered (Singh, 1994). This suggested that State-backed privatisation is likely to have serious problems due to bureaucratic stifling (Iyengar and Shukla, 2002).

**Tree Growers’ Cooperatives:** The Anand Pattern Tree Growers’ Cooperative Societies (TGCS) was established in 1986 under the National Dairy Development Board (NDDB)’s pilot project to help in developing an institutional mechanism for regenerating degraded common land to meet fuel wood and fodder deficit in the villages. To provide technical guidance on a continuous basis, a National Tree Grower’s Cooperative Federation (NTGCF) was constituted in 1988. A series of case studies indicate that TGCSs may hold the key to improve the status of some parts of common property land resources (CPLRs) and provide support to the poor. However, its replication on a larger scale depends on formulation and effective implementation of a judicious land policy, periodic survey for land use capability classification, adoption of simple procedures for land lease for grassroots institutions and interdepartmental coordination (Misra, 2002).

**Joint Forest Management (JFM):** Shared forest management or JFM has been the prime driving force in achieving the objectives of forest policy since the early 1990s. JFM deals with the sharing of products, responsibilities, control and decision making authority over forest between forest department and local users groups based on formal agreements. The primary purpose of JFM was to create conditions at the local level, which enable improvement in forest condition and productivity and strengthen the livelihoods of the forest dwellers. This was to be achieved through development of institutions at the grassroots. Available evidences of JFM assessments indicate mixed results in terms of participatory aspects, product rights and autonomy of JFM Committees (JFMCs). It is overwhelmingly reported that the
accountability of SDF is rather poor. The current institutional design of JFM is inadequate to deal with high socio-economic differentiation, multiple stakeholders, and pre-existing rights of the people. However, it is found that JFM has performed better in the central Indian forest belt as these forests are rich in non timber forest products (NTFPs) and tribal communities are involved in protection and management of forest which is a largely homogenous community and highly dependent on the forest resources for their livelihoods (Lele, 2004).

Let me share with you the lessons from a JFM experiment in one of the central Indian State - Chhattisgarh (Marothia, 2009c). Though the JFM movement began in the early nineties, it acquired the desired momentum after the formation of the State in terms of formation of a large number of JFMCs, coverage of forest area and collection, processing and marketing of NTFP. The Government of Chhattisgarh passed a Resolution in October 2001 on JFM to assign usufruct rights to every member of the JFMCs to avail forest produce (Nistar) subject to their availability, developed a benefit sharing arrangement between Forest Protection Committees (FPCs)/Village Forest Committees (VFCs) and SDF, and made provision to appeal against Forest Officer’s order to the Union constituted or in the absence of the Union, to the Territorial within one month from the date of passing of such an order. Despite all these provisions and achievements, the performance of the State of Chhattisgarh in terms of clarity and purpose of roles, institutional mechanisms, capacity of JFMCs and resource management was not satisfactory and had negligible impact on forest profile and socio-economic aspects such as household income, village development, empowerment of women, and social unity.

Van Panchayats (VPs): VPs of Kumaon region of Uttarakhand were born out of the conflicts and the compromises that followed the settlements and the reservations of the forest in the Kumaon hills at the turn of the last century. Ballabh and Singh (1988) have critically examined the institutional design of VPs. They conclude that not only does the entitlement of property rights vary, but methods of utilisation also vary from one VP to another. The high stakes of local people in the forest resource, open and informal election of management committee members, equitable distribution of products, and homogenous nature of communities contributed to active people’s participation. In spite of successful protection and use of VP forest, recent rule revisions have eroded the capability of VPs to manage the forest. A major weakness of the present structure of the VPs is generally weak support to them in terms of providing technical, personal and financial assistance by the revenue and the forest departments (Kramer and Ballabh, 1991). Recent evidence however, is disturbing. It has been reported that both VPs and JFM are at crossroads due to bureaucratic stifling and collusion between forest officials and rural elites. The benefits to the poor will not accrue unless they are given the opportunity to control decision making process.
4.2 Watershed Development Programmes

Initially started as soil and water conservation programmes, watershed development programmes have undergone many paradigm shifts over the years. Earlier, generation of watershed programmes was mostly confined to biophysical aspects, viz., contour bunding, check dams, afforestation etc. but subsequently the social and institutional issues came into prominence. The objectives later became broad based to promote economic development of the village community through optimum and integrated use of resources. Of late, the focus has shifted towards livelihood security and income generation, equity including gender equity, and transparency and people’s participation has become the hallmark of the strategy in watershed development programmes.

Based on the recommendations of the Hanumantha Rao Committee (Government of India, 1994) and in recognition of the need for meaningful participation of user communities in watershed development (WSD), the Ministry of Rural Development (Government of India, 1995) formulated the Guidelines for Watershed Development to be followed in its flagship WSD programmes such as Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Integrated Water Lands Development Programme (IWDP) in 1995. But, the Ministries of Agriculture and Rural Development were following their own Guidelines, the Planning Commission succeeded in harmonising them and a Common Approach for Watershed Development was formulated in 2000. To bring uniformity in the programmes being implemented by various agencies in India, the WARASA – Jan Sahbhagita Guidelines have been brought out in conformity with the “Common Approach/Principles for Watershed Development” as agreed upon by the Ministries of Agriculture and Rural Development. The MoRD brought out their own Guidelines called Hariyali involving PRIs as implementing agencies (Government of India, 2003, see also Hanumantha Rao, 2000).

In coordination with the Planning Commission, National Rainfed Area Authority (NRAA) in consultation with the concerned ministries/departments has come up with the “Common Guidelines for Watershed Development Projects-2008” to provide a unified approach and perspective in planning and implementation of all the Government schemes with common approach w.e.f. 1st April, 2008. The new guidelines include innovativeness in approach, decentralisation, dedicated institutions at various levels, social, gender and economic equity, involvement of PRIs and competent NGOs, transparency and accountability (NRAA, 2008). However, even with new unified approach, the most important consideration over the next few years in the implementation of watershed programmes will be that of designing multilayered institutions to minimise conflicts at various levels of governance.

Overall, the state implemented watershed programmes have shown poor to moderate success in terms of set goals. Effectiveness of watershed programmes, both as a package of technologies and as a part of organised institutional intervention
depends on the institutions that facilitate participation (Joshi, 2002). A potential interesting issue in this context is whether scarcity contributes to the effectiveness of technology via farmer’s direct relationship with institutional thickening and its effectiveness (Saleth, 2003). However, community and NGO-based experience of Sukhomajri, Ralegaon Siddhi, Tarun Bharat Sangh, PRADHAN, Sadguru Water and Development Foundation and other organisations have shown that the transformation process from a situation of ecological poverty to create conditions for sustainable economic growth demands community participation with multi-faceted dimensions and strategies. In all the three most cited cases of Sukhomajri, Ralegaon Siddhi and Tarun Bharat Sangh, village level institutions played a crucial role in sustainable management of the water resource and in ensuring equitable access to the resource generated from the watershed development programmes. A multi-layered institutional development structure was created in the villages for decision-making and implementing the programme with participatory democracy rather than representative democracy (Agarwal and Narain, 2002). A few ICAR-SAUs-State Department jointly-implemented model watershed programmes have also indicated that shared resource management or distributed governance is the most appropriate institutional design (see Marothia, 2005a; for multilayered institutional mechanism implemented in Nartora watershed in Chhattisgarh).

4.3 Surface Water Resources

There is widespread agreement about the need to enhance the efficiency of water use and sustainability of irrigated agriculture. Research indicates that institutional deficiencies are at the root of the water resource management problems. Innovative institutions and management structures are preconditions for tackling the problems of water management (Ballabh and Singh, 1997; Vaidyanathan, 1999; Marothia, 2003; Crase and Gandhi, 2009). To this end, I discuss the decentralised interventions in case of canal, tank and groundwater irrigation management.

Participatory Canal Irrigation: The physical and technical attributes of canal irrigation put water resource under the category of CPRs which is used by numerous farmers under the private property regime. Efficient and equitable water distribution of canal water among different categories of farmers depends upon technical and institutional arrangements (Chambers, 1988; Vaidyanathan, 1994; Marothia, 2001b; 2005c; 2006a). Until recently, the decision-making environment and incentives facing farmers and irrigation officials were not dealt with sufficiently. The failure of many large, medium and small irrigation projects to deliver the projected benefits to farmers beyond pipe outlets clearly indicates the limitation of state control over canal irrigation water. It is, however, now recognised that these technical solutions are not sufficient, involvement of the farmers is key to improve management effectiveness. Further, it is widely claimed that involvement of farmers in managing irrigation systems either through Participatory Irrigation Management (PIM) or Irrigation
Management Transfer (IMT) can effectively arrest the erosion of huge irrigation capital built at a massive investment, increase water and land productivity and improve farmer wellbeing. However, PIM programmes have belied many of these expectations even in the States where they are widely considered successful (see Shah, 2009 on future of flow irrigation).

In India the impact of water users’ associations (WUAs) under PIM arrangements is mixed. They are functioning effectively in isolated cases and have failed largely in other areas. The key reason for the successful WUAs may be attributed to effective functioning of technical and institutional arrangements at the main canal system, below the outlet and at the community/farm levels and continuous efforts to invest in capacity building of WUAs (Marothia, 2001b; 2005c). The sustainability of PIM largely depends on the political and bureaucratic will to share power with farmers and create an apolitical environment for the smooth functioning of WUAs. Due to huge transaction costs associated with system control and poor absorption capacity of the WUAs for transaction costs, they occasionally form on their own and have to be constantly propped up (Shah, 2009). The new institutional arrangements have not succeeded to give appropriate incentives to farmers and their organisations to overcome these transaction costs on the one hand and irrigation bureaucracy is not interested in sharing resources and power with the local institutions on the other. As a result, transaction cost economising behaviour is not observed in these institutions.

Irrigation Institutions: A few successful cases of irrigation co-operative societies and water users organisations working in the command area of river basins have been documented in the past three decades. Successful stories of irrigation co-operatives functioning in the command area of the river Tapi in Maharashtra, Mohini Water Distribution Cooperative Society in the Ukai-Kakrapar project command area in Gujarat, Sri Datta Water Cooperative Water Management Society in the Mula irrigation project in Maharashtra, Lower Bhavani Project – Thindal distributary in Tamil Nadu, water users association in Kerala and Paliganj distributary in Bihar are also available to draw lessons for replication. In most of these cases the State Department of Irrigation facilitated the formation of co-operatives and still maintains the main water courses. However, the internal institutional arrangements related to equitable and efficient water distribution, recovery of the irrigation fees and maintenance and repairs of the canal system are designed and enforced by the members of the societies. In some cases, WUAs have also promoted group farming to enhance the productivity of tiny farm holdings, for example, in Kerala (Mahapatra and Rajput, 2002).

Participatory Tank Irrigation Management (PTIM): For several centuries, tanks have been central to socio-ecology and irrigated agriculture in States like Andhra Pradesh, Karnataka, Tamil Nadu, Chhattisgarh and some eastern states. Tanks are, however, disappearing fast, and those that remain have long since fallen into disrepair. Decades of siltation, poor organisation and management, decline of compulsory labour contribution in maintenance work, inadequate operation and
maintenance budget from the government, meagre revenue from tank based activities, growth of wells in tank command areas and well owners’ reduced interest in tank management, and encroachments have contributed to their decline and most of the tanks in Southern States and elsewhere have degraded into open access due to weak institutional arrangements, property rights structures and breakdown of local authority system (Vaidyanathan, 1997; Shah et al., 2002; Palanisami and Balasubramaniam, 2002; Marothia, 2003; Raju et al., 2003).

Irrigation tanks in India were managed and controlled under private property regimes before Independence. After Independence, ownership rights in private tanks have been abolished and reside with State Governments, but the tanks are used by village communities as CPRs for irrigation and, in some cases, for aquaculture and domestic activity. In several dry land areas of the country, this traditional technology has been promoted for water harvesting through rainwater management. In some cases, these tanks were hooked with the canal irrigation system for water refilling (Marothia, 1992a; 2007).

Since the 1990s, efforts began in some states to transfer the control and the management of tanks to the village communities. The primary objective of PTIM was to restore storage and irrigation potential of tanks with well designed institutions. State Department of Water Resources and Tank User Associations (TUAs) jointly participate in rehabilitation process. The TUAs control operation and maintenance under well designed rules at different levels. One of the reasons for such poor outcome is that the tank rehabilitation program is not clear in terms of efficient, equitable and sustainable use of these resources. Tank rehabilitation has largely been a donor driven programme with only a short time frame. Thus, even well intentioned NGOs, which would like community participation in donor programmes, end up doing nothing but physical rehabilitation (Shah et al., 2002).

Small Irrigation Tanks: In several States, small water storage structures have been created by Water Resources and Agriculture Departments to provide life saving irrigation to rainfed based cropping pattern. In Madhya Pradesh, the State Department of Agriculture (SDA) introduced micro-minor irrigation tanks (MMITs) programme through its soil conservation wing in 1977-78 to increase foodgrain production, employment generation and minimise migration. MMITs were constructed on government owned wastelands across the natural water courses to store rainfed run-off. The command area of MMITs is generally below 40 hectares. After construction, the panchayats were given ownership rights of MMITs and these were expected to be managed under common property resource regime by group(s) of the farmers within the command area of a particular tank. To assess the performance of MMITs programme, an institutional analysis was carried out (see for details Marothia, 1992a, b; 2004b).

The MMIT programme was introduced with the assumption that contributions of farmers in different types of resources-labour, materials and capital will be forthcoming, once it is determined that the MMITs are useful to farmers and
panchayats. This assumption has largely been false. Due to lack of legislative and administrative powers, panchayats could not manage the MMITs under common property regime. MMITs had extremely poor excludability, i.e., it was difficult to exclude non-contributors in labour or capital resources from taking advantage of the water use in absence of well defined structure of rights and duties for users. The panchayats could not evolve rules for the use of water, collection of fees and enforce its authority; as a result the common property MMITs ultimately degenerated into open access.

After the formation of Chhattisgarh state, with the initiative of state government, panchayat and local people, rehabilitation of MMITs was started with renewed interest. The panchayats are now managing MMITs under common property regime with well defined incentives and sanctions that may promote long term participation of the water users and panchayats. Inter-temporal observations of MMITs suggest that irrigation efficiency may be improved with effective institutional arrangements under community based resource management regime in several villages of Chhattisgarh, where the government (panchayats) and village communities (water users) share responsibilities for decision making over MMITs (Marothia, 1992a; 2004b).

4.4 Inland Fisheries in Multi-Use Common Water Bodies

Inland fisheries in fresh water (ponds and tanks) date back to time immemorial in India. In millions of villages of India, community ponds and irrigation tanks have traditionally been allotted by local panchayats for different uses like tending cattle, washing cloths and bathing, irrigation, fish culture, and social rituals. Common pool ponds/tanks are now being administered and controlled under different institutional hierarchies or property rights regimes. Fisheries in multiuse common water bodies are an important source of livelihood for a large number of people. Responding to the survival issue of millions of fishermen, the central and the state governments have designed pro-poor policy for freshwater aquaculture development under which, fisheries in common pool water bodies have been managed largely under cooperative governance structures - both formal and informal.

Taking a clue from the traditional property rights arrangements for managing multiuse water bodies, village panchayats in Chhattisgarh are making collective efforts for minimising conflicts among the varied stakeholders and water controlling authorities. In several villages of the State, a good number of community ponds still exist. There are invariably one or two temples or sacred ponds in most of the villages. In almost every village, ponds were separately allotted for women. A few ponds are exclusively used by Schedule Caste community under the social caste hierarchy. Close-in ponds can be reserved for common use and more distant ponds for fish culture. Similarly, irrigation ponds/tanks can be exclusively used for irrigation and fish culture. Further, a feasible solution can be worked out between fishers, irrigation
groups and State Department of Water Resource Development (SDWRD) for desilting the tanks, as one of the major concerns of the SDWRD is increasing silt load and reducing water intake capacity of a tank due to use of fish feed and manure. Such institutional arrangements can increase fish yield and the total productivity of common water bodies by many folds besides minimising social conflicts. Fishery Policy of the state needs to be changed in consultation with SDWRD, State of Department of Agriculture, State Department of Rural Development and Panchayat and Fisheries organisations to enhance the total welfare of the poor engaged in small scale fisheries sector (Marothia, 2007).

Lessons from studies of Chhattisgarh and other States indicate that property rights are fundamental to the use of multiple-use water bodies for culture fisheries. Property rights regimes are necessary, but not sufficient condition for sustainable use of multi-use water bodies for fish culture unless these (property rights regimes) are supported with functional authority system that can guarantee the stakeholders to enjoy the privileges of right holders. A multiple authority structure is also required to resolve conflicts among varied and socially differentiated multi stake holders – fishermen, irrigators and others.

4.5 *Groundwater Resources*

Ownership of groundwater, under the existing legislative framework, is tied with the ownership of land in India, and the landowners have the right to extract the groundwater beyond any time it is available (Singh, 1991). The landowner can use the ground water and sell it to other potential users and locations. Property rights to groundwater are complicated due to the fugitive nature of aquifers, size of aquifers, and seasonal and secular nature of aquifers. Groundwater is, thus, neither a true open access resource because the ability to extract groundwater is limited by well ownership, nor a common property resource as it lacks an identifiable group of users having co-equal use rights (Ciriacy-Wantrup and Bishop, 1975; Veeman, 1978; Marothia, 1997b; 2003). This puts pressure on the availability of water for competitive uses. Indiscriminate use of borewell technology for groundwater extraction at phenomenal rates, growing emphasis on cash cropping irrespective of water availability, very low or flat power tariff rates, and ineffective legislative structures are the major factors for mismanagement of groundwater.

Designing appropriate water-saving irrigation systems needs critical analysis of current financial incentives provided through power and electricity and diesel oil supplies; price support to the water incentive crops vis-a-vis water saving crops and disincentives to the diversification of cropping system, revising existing groundwater laws to control mismanagement of groundwater, strengthening the role of co-operatives or group-oriented systems, adoption of river basin approach are the some ways to control externalities connected with groundwater (Joshi, 2002; Rathore, 2002; Shah, 1993; Dhawan, 1995; Vaidyanathan, 1996; Saleth, 1994
However, since these measures have not found sufficient ground in current political economy, thus the groundwater resources continue to be degraded one or the other way almost in every part of India.

To use water efficiently, equitably and sustainably in water scarce areas, Pani Panchayats have designed intra-and inter-institutional linkages. The success of Pani Panchayats in Maharashtra can be attributed to robust institutional design based on locally understood design principles (see Deshpande and Mani, 2003 for dynamic process of institutional design). An unanswered question in this case is: whether resource scarcity always induces institutional change or at what level of scarcity, can institutional change or organisational innovations be reasonably expected? (Saleth 2003). Institutions like Pani Panchayats can be replicated on a large scale, particularly, in groundwater scarcity zones for an efficient and equitable distribution of water, promoting a less water intensive cropping pattern and effective enforcement of the rules and regulations by Panchayats (Deshpande and Jyotishi, 2002). However, the intra-and inter-institutional linkages of the Pani Panchayat model of Maharashtra has to be graduated into polycentric or distributed governance mechanism if it is to be replicated in different socio-ecological settings to manage multi-use water bodies or other CPRs. For example, the Government of Orissa has recently transferred all its minor irrigation systems to newly formed Pani Panchayats. Initial feedback of Pani Panchayats performance is not encouraging as most of the minor irrigation water bodies are multifunctional and a multi-use and institutional design of Pani Panchayat needs to be modified in view of agro-climatic situation of the State (Marothia, 2009d).

In a case study of the Kheda and the Mehsana districts of Gujarat, Shah and Bhattacharya (1996) concluded that the performance of tubewell companies has been better than tubewell co-operatives due to design concept based on parameters of self-governance. Informal user organisations to which public tubewells have been transferred also emerged with visible success. Such hybrid forms of user organizations which had combined features of water user association and irrigation service markets need to be revisited before they could be recommended for large scale replication. But, groundwater resources are under severe strain and no viable solution has emerged.

4.6 Forest and Biodiversity Resources

Forest and biodiversity resources have been the most important component of natural resource decentralisation policy debates and most studied in natural resource decentralisation literature (Larson and Soto, 2008). In this section, we discuss the different forms of decentralisation that have taken place in the recent past in this area.

*Non Timber Forest Products (NTFPs)*: NTFPs play a vital role in the socio-economic, ecological, cultural and political environments of the forest dwelling communities. Governance structure of NTFPs varies significantly from state to state,
and so does the number of nationalised items (Saxena, 2003). Of all the States, Chhattisgarh has been continuously refining institutional arrangements to manage NTFPs under the shared resource management regime. Recognising the problems associated with nationalisation or creation of private monopolies by assigning private traders exclusive rights of collection and marketing, and to eliminate the middlemen totally, co-operative management of NTFPs was initiated with the formation of Chhattisgarh Minor Forest Produce Trade and Development Co-operative Federation (CSMFPFED) at apex (State level), District Minor Forest Produce Unions (MFPDUs) at secondary (district) level and Primary Minor Forest Produce Co-operative Societies (PMFPCs) at the primary level respectively.

The CSMFPFED has traditionally been responsible for managing the nationalised NTFPs (tendu leaves, sal seeds, harra, and gums) under the cooperative structure. The PMFPC members get their wages and bonus from the PMFPCs (Marothia, 2009c). To provide market and price support for non-nationalised NTFP trade, CGSMFPCF has established NTFP Marts in Forest Divisions and District Unions. These Marts are required to purchase and sell raw herbs and herbal products brought by PMFPCs, FPCs, self help groups (SHGs) and their micro enterprises. These Marts ensure marketing of herbal produce/products of micro enterprises established by the Federation. These Marts are supported by Sanjeevini (a brand name of the shop being run by SHGs). Incentive and benefit sharing norms are well specified at all levels. To what extent, this institutional arrangement protects biodiversity and the interest of the underprivileged classes is unclear. Overlapping institutions and authority have potential to generate a long drawn out conflict over use and management of the value added products (Marothia, 2009c; 2009d).

Under the Chhattisgarh Forest Policy (CFP) the ownership rights of non-nationalised NTFPs have been assigned to the PRIs in consonance with the following (a) harvesting of minor forest produce will be on non-destructive basis (b) the members of the Gram Sabhas will be free to collect minor forest produce for their own consumption, and (c) the manner, frequency and intensity of minor forest produce collection for any use other than bona-fide domestic use by the members of the Gram Sabhas will be in accordance with the prescription of a management plan prepared by the Zilla Panchayat in conformity with the guidelines as may be notified from time to time (Government of Chhattisgarh, 2002).

*Medicinal and Aromatic Plant Resources:* In order to provide an enabling environment for the promotion of conservation of medicinal and herbal plant resources, Chhattisgarh State Medicinal Plant Board (CSMPB) was constituted recently. Chhattisgarh is the first state in the country to establish a well designed institutional mechanism to promote cultivation, processing and marketing of medicinal and aromatic plant resources to link up with drug and pharmaceutical companies. Looking at the rich medicinal and herbal plants in the State, the forests department has developed a mechanism for *in-situ* and *ex-situ* conservation, domestication and non-destructive harvesting practices with the active support from
the local people including traditional healers and vaidhyas. Support for quality collection, production, processing, marketing and remunerative prices for selected NTFPs has been provided through network of NTFP marts and chain of Sanjeevni shops.

Peoples’ Protected Areas (PPAs): A network of PPAs, as a pool of assets for sustainable livelihood security and bio-cultural diversity conservation, has been established in the State of Chhattisgarh with special emphasis on utilising traditional ecological knowledge of the people, capacity building of the stakeholders and upgradation of local technology with appropriate information technology. PPA has been established in all 32 forest divisions to work for protection of gene pool, regeneration, and non-destructive harvesting of forest produce including medicinal and herbal plants. Biodiversity rich forest areas have been identified for implementation of PPA. Annually 1000 hectares of forest is being taken up for intensive forest management with the following institutional mechanism: (i) community based participatory mapping and management plan, (ii) appropriate resource assessment methodologies, (iii) non-destructive harvesting plan and methods, (iv) in-situ/ex-situ conservation and propagation, (v) grading, processing, value addition and marketing, (vi) eco tourism, (vii) biodiversity prospecting and bio-partnership, (viii) entrepreneurship development, (ix) revolving fund facility, (x) gender sensitivity, (xi) equitable benefit sharing, (xii) improved food security and health cover, and (xiii) enhancement of social capital.

Eco-Development Projects (EDPs): The EDPs have been implemented across various parts of the world including India to enhance CPR based livelihood support and reduce people’s dependence on protected areas (PAs). However, available evidences are not encouraging as it has been found that the EDPs have alienated local communities from their resource base and caused severe hardships, and alienation resulted in breakdown of traditional practice, erosion of traditional knowledge, loss of desire to protect resource from degradation, and hostility towards official conservation efforts (Kothari, 2002). In a few PAs the resettlement process was so unfavourable that many communities, for example Maldharis of Gir-Protected Area, refused to move out, and some of those who did get resettled, eventually returned to their hamlets inside the PA (Choudhary, 2000; Shah 2007). Researchers have suggested that only a partnership between conservationists and communities, social activists, and empowerment of ecosystem-dependent communities can withstand destruction of wildlife and habitats. Changes are, therefore, needed in the conservation policy, laws and administration, to allow for a much more participatory system - one which is respectful to both the needs of wildlife and the rights of humans. Such changes will have to integrate the relevant community knowledge and practices, customary laws and local institutional structures, vertical and horizontal integration within government agencies, land and water use planning in a regional context within which special areas of wildlife protection are supplemented by incentives for conservation across the spectrum of human resources uses, mutual
learning sessions amongst various stakeholders, and open access to information have potential to promote peaceful co-existence of wildlife and human beings (Kothari, 2002).

**Biodiversity Conservation:** As a signatory to the Convention of Biodiversity (CBD), India is committed to take appropriate legal and administrative actions to follow its provisions. India ratified this Convention in 1994 and committed to move towards the sustainable use of biological resources and to ensure that benefits from such use are shared equitably across local, regional, national and global societies. India, therefore, introduced Biodiversity Act in 2002. National Biodiversity Strategy and Action Plan (NBSAP) supported by Global Environment Facility/United Nations Development Programme (GEF/UNDP) were prepared in 2004 at different levels: state plans, sub-state plans, inter-state biological regions plans and thematic plans to protect biodiversity (Kothari and Kohli, 2005). Implementation and monitoring mechanism is carried out by National Biodiversity Authority and State Biodiversity Boards. Institutional design includes creating or strengthening decentralised institutions of governance with the basic planning and decision making unit being at the level of village, and the other local, state, and national level structures emanating from the village unit. The States have formed State Bio-diversity Strategy and Action Plan. It is expected that States may implement at least some of its recommendations, particularly the legislative framework to manage rich bio-diversity resources. However, weak coordination between Ministry of Environment and Forest, State Department of Forest, National Biodiversity Authority and State Biodiversity Boards and inadequate involvement of local institutions, civil societies and NGOs are the serious constraints in implementing biodiversity plans at different levels. It is identified that preparation of documents such as People’s Biodiversity Registers can reconcile the system of vast pools of locality specific indigenous knowledge of complex natural systems with those generated through fast-tract science or modern knowledge. Full benefits of such integration would, of course, flow only when supported by systems of open, public participation in management of natural resources and a just sharing of benefits flowing from relevant commercial or value added application (Marothia, 1997a-d, Gupta, 1999; Gadgil, 2002,). India has introduced new Acts and amended several existing Acts for addressing the needs of traditional communities. These includes Geographical Indications of Goods (Registration and Protection) Act 1999, Protection of Plant Varieties and Farmers Rights Act 2001, Amendment of Patent Act,1970 (2002), and Biological Diversity Act 2002. Besides, it has initiated a massive work on Traditional Knowledge Digital Library (TKDL) for facilitating global patent examination (Sengupta, 2005). Thus, it is important to evolve a pluralistic Intellectual Property Regime (IPR) regime with a strong legal framework which makes it possible to recognise and respect indigenous knowledge, and protect the indigenous knowledge and practice and livelihoods based on it and to prevent bio piracy (Shiva, 2002).
To summarise the findings from the case studies listed above and the findings from the studies of other scholars, following lessons and issues can be drawn about the decentralised management of natural resources which needs urgent attention of the scholars and the policy makers:

First, transition of institutional arrangements may, in fact, sometimes become a major source of eco-system degradation. It improves eco-system only if transition is designed with understanding of local socio-political and ecological context.

Second, State induced privatisation of common property lands in case of village woodlots and tree patta schemes has redefined the property right regimes and, in turn, created social tensions as well as replaced the customary institutional arrangements to conserve the resource and eco-system leading to failure of woodlot programme and degradation of resources.

Third, minor irrigation tanks have been created on village wastelands but due to weak local governance and absence of well defined institutional arrangements for common property regimes, they have ended up in an open access resource regime leading to their degradation. Now, after empowering PRIs, minor irrigation tanks are managed by panchayats with administrative authority. Experiences from management of inland fisheries have shown that multiple uses of water bodies are capable of creating social tensions if institutional arrangements are not functional with a multilayered authority structures.

Fourth, the NTFP cooperative experiences clearly indicate that the cooperative management system still has uneven distributed governance and too much State control is visible even at primary co-operative society level. The members still remain mere wage earners and their participation in decision making process is almost negligible. The important clue is that the State may use the local institutional building capacity to support and gain strength for making primary cooperative societies self governing organizations at local levels. However, without devolving power and authority to make decisions, decentralisation does not serve purposes either of conservation of resources or of strengthening people’s livelihoods.

Fifth, analysis of participatory irrigation management programmes indicates that bureaucratic reluctance to share power with people’s institutions does not help decentralization process and distributed governance. If PIM has to succeed, people’s institutions need to be given autonomy in day to day affairs of management.

Sixth, the intra and the inter-institutional linkages of Pani Panchayat model of Maharashtra has to be graduated into polycentric or distributed governance mechanism if it is to be replicated in different socio-ecological settings to manage multi-use CPRs.

Thus, the analysis of case studies suggests that the policy designers of institutional arrangements for CPR development programmes have to develop an in-depth understanding of the strengths and the weaknesses of alternative property rights regimes to promote the process of decentralisation. Pure state, pure community based or pure privately owned structures have more negative outcomes on one or the
other counts. Distributed or polycentric governance seems to be appropriate for CPR management. Promoting exploration of distributed governance as an acceptable model for institutional innovation for local situation may be reflected in policy and administration. However, this involves a major shift in the role of policy makers and administrators and implies that the stakeholders should be involved in designing policies, programmes and implementation. Further, theoretical and empirical research efforts can shed more light on the process of distributed governance in managing CPRs. It is only the beginning and not the end of the processes of decentralised CPR management.

Let me now dwell upon emerging convergence between natural resource decentralisation and national planning process.

V

MAINSTREAMING NATURAL RESOURCE DECENTRALISATION IN NATIONAL PLANNING PROCESS

Attempts for decentralised governance of natural resources were initiated during the setting up of India’s Constitution in 1950. However, during the first four decades after Independence, control and management over natural resource was largely with the various sub-units of union and state governments. The 1990s, however, witnessed a significant thrust being given to decentralised management of NRs under different institutional choices (Lele, 2004). The Eleventh Five Year Plan has accorded prominent place to decentralisation and strengthening of PRIs. It is envisaged that PRIs will play a pivotal role in preparing integrated planning at the grassroots level leading to the preparation of district plans to achieve the best outcomes in terms of balanced development with convergence of resources and enforcement of inter-sectoral priorities, coordinating with community based organizations in managing NRs.

The Eleventh Schedule of the Panchayati Raj Act specifies 29 areas over which the PRIs have jurisdiction. In the context of NRs, the relevant areas listed in the Eleventh Schedule are agriculture, land improvement (including reforms, consolidation, and soil conservation), minor irrigation, water management and watershed development, animal husbandry, fisheries, social forestry, minor forest produce, drinking water, fuel and fodder, non-conventional energy resources, health, and sanitation.

In the Eleventh Five Year Plan, a clear cut strategy is evolved to speed up devolution process. It is expected that State governments will respond favourably by amending various acts in their jurisdictions. This seems to be formidable task in view of the current status of PRIs in different States including the States which have higher devolution ranking. It is important to mention here that even some of the progressive States, based on devolution index, have not devolved control over NRs to PRIs (NCAER 2009). JFM and PIM continue to be taken up through user groups. Further,
in Panchayats Extension to Schedule Areas (PESA) all the provisions of PESA related to natural resource governance are rendered ineffective due to inaction on the part of the State governments (Lele, 2004). The Eleventh Plan document clarifies the roles of PRIs and user groups or community based organisations with respect to control of NRs. It is clarified that CBOs and SHGs should draw their powers and resources from PRIs in the spirit of a social contract both conceptually and structurally, and not in a relationship of subordination or agency functioning. However, it will require massive capacity building efforts both in PRIs and CBOs.15

PRIs are political bodies and may lack technical and professional skills required for implementing natural resource development programmes.16 It is likely that when civil society institutions mobilise the community under user groups for implementing programmes like watershed development or JFM, there could be potential for a conflict of interest. PRIs, especially when dominated by vested interests, may perceive user groups and civil society institutions as threats to their ability to exercise control over resources. Such conflict may come in the way of effective implementation of NR development programmes. The PRIs may mobilise political and bureaucratic support for their cause and may nullify the efforts of user groups and civil institutions. Given the fact that developmental interventions are also a means for exercising control over financial resources, the conflict could become a constant feature and a cause of failure of local governance (Shylendra, 2009). Decentralisation of local governance thus calls for coordinated efforts among various grassroots institutions involved (Ravi Shanker, 2009; Marothia 2009b).

The Eleventh Five Year Plan document has also rightly raised the issues of climate change and its serious consequences contributing to weakening the links between natural resources and livelihoods of rural communities. Climate change can adversely affect the under-privileged and vulnerable population living in the less favored areas (Marothia, 2009a). Climate change is being recognised as ‘global commons’ that should be explored from a common property resources management perspective (Marothia, 2009a) International community has tried to respond to climate change phenomenon through establishing high level Intergovernmental Panel on Climate Change (IPCC, 2001). Needless to say, international level interventions are essential for commitments and negotiations among the governments. However at the community level, there is an urgent need to send the messages about the impacts of climate change, and possible adaptation strategies (Shaw et al., 2005).

Since the poorest and most vulnerable communities, who largely depend on CPRs and agriculture for sustaining their livelihoods, will bear the brunt of climate change, it is important to focus on the impacts of climate change on livelihoods, and explore the links among poverty, livelihood and environment (See Johl, 2006 for implications of climate change and correctives in rural sector). For the poor and vulnerable, community-based adaptation (CBA) is emerging as a key response to climate change. CBA is participatory as it involves stakeholders, development practitioners and policy designers, and, it builds on existing institutional
arrangements while addressing local development issues that contribute to climate vulnerability. CBA is now gaining ground in many parts of the world (Ayers and Haq, 2009; Jones and Rehman, 2007; Leopold and Mead, 2009). However, focusing on the communities only is not enough, and so long as the community initiatives do not become part of the government policies, it is difficult to even sustain efforts. Also, recognising the limits to CBA should signal a need for even more strategic and wider ranging climate change policies and measures (Burton, 2008). In the run up to the Copenhagen climate talks being held for the last few days, incorporating lessons learned from CBA case studies have potential for better policy dialogues. Thus, the link between local, state, and national governments and the community is of utmost importance (Shaw et al., 2005). However, there are uncertainties about the institutional mechanisms to be used at multi-levels, particularly in the context of PRI governance paradigm.

Linking the lessons drawn from the cases and the priorities set up in the Eleventh Five Year Plan for decentralising natural resource development and management, I would like to conclude this address by raising certain theoretical and empirical challenges that agricultural economics profession is confronted with.

VI

WAY FORWARD: FUTURE POLICY AND RESEARCH ISSUES

The analysis of the effect of institutions on the economic performance lies at the heart of economics. The traditional three pillars- endowment, technology and preferences- on which our profession stands, are incomplete without the forth and implicit pillar- institutions. Institutional arrangements inform decision makers about their standing and the consequences of their behaviour. It is the institution that assigns authority in relation to the endowments of land, water and forest, and therefore, these institutions matter. The study has highlighted the evolution and emergence of decentralised natural resources management and its impact on efficiency, equity and sustainability of resources. Unfortunately, the political economic aspects of institutional change are generally ignored by agricultural economists. The institutional changes and design involve mobilisation of substantial political resources. To the extent that private returns differ from social returns and may not symmetrically affect all stakeholders; some institutional changes are resisted and others promoted depending on costs and benefits to individual stakeholders. Some of the empirical issues confronted in the arena of decentralised natural resource management and related to political economy of institutional changes are:

1. In India, a significant thrust has been given during the nineties to decentralised management of NRs. Decentralisation of the governance of NRs has been broadly implemented under three categories, viz., state initiated partnerships, state-initiated efforts at full devolution of governance, and the community and
NGO-initiated efforts, with or without state recognition. Several programmes have been supported and implemented by international donors under the above approaches. The objectives, design and implementation of these programmes vary significantly. The findings of the studies reported in Section IV of this address indicate only a limited level of success under different institutional types of decentralisation. State initiated programmes were largely centred on the CPRs and the goal of decentralisation often has been to increase participation. In contrast, community initiated decentralised programmes have shown better performance as the institutional mechanisms have dealt with equity issues successfully. Devolution and delegation efforts have also been successful to a great extent in a few cases due to well designed external and internal institutional arrangements within a framework of distributed or shared management. To form broad based conclusions on the effectiveness of different types of decentralisation, it is necessary to pursue more detailed comparative policy research on different models of decentralisation under different ecological and social settings. Such research efforts may provide us with well informed input about the institutional performance to distinguish among robust, fragile and failed institutional arrangements.

2. Detailed research attempts are required to understand as to what leads to greater participation and livelihood improvements for marginalised people living in tribal and disadvantageous areas. Here, in my personal view, agricultural economists need to collaborate with social anthropologists to understand the broader dimensions of their needs, capabilities, and ways of life.

3. There is a large variation in policy or programme outcomes across the States in India that have decentralised NRM under different institutional designs. Many studies are location-specific and very often, it is difficult to examine why some local organisations perform better than others under various decentralised structures. It is, therefore, important to examine the crucial factors which explain such variation. Such research attempts seem to be equally relevant for tribal and disadvantageous areas.

4. The Eleventh Five Year Plan has attached significant importance to decentralisation and strengthening of PRIs in implementation of decentralised management of development programmes including NRM. The Plan document has brought resources users committees, community institutions, informal or traditional institutions, community based organisations and NGOs initiatives under the overall umbrella of PRIs. There are a few serious issues here to be addressed by the researchers on decentralisation. PRIs have only a limited capability to understand and manage the complex dynamics of the decentralisation process linked to NRs. A valuable base of social capital to sustainably manage natural resources has been created over the years by traditional village level institutions, user committees actively engaged in State
initiated programmes, community based organisations, and civil societies. Integrating this social capital within the existing framework of PRIs is a big challenge. It is important to understand the dynamics of convergence of different local level organisations with PRIs and their consequences.

5. Decentralisation may significantly shift property rights to the local governments but not to the local users and holders of customary rights. PRIs may gain rights to most of the village NRs under current devolution process. The effects of changes in property rights need to be investigated keeping in view the configuration of previously existing rights over a resource.

6. NRs have political and economic dimensions which may have a strong bearing on the decentralisation policies. Further, decentralisation of NRs is intricate because it increases level of conflicts among a range of stakeholders and can create disproportionate spatial and temporal externalities. Issues regarding the role of traditional authorities, user groups, stakeholder committees, NGOs, state and national governments, private organisations and international donors, and the relationships among multiple authorities with overlapping working zones are highly complex. Given such a complexity, researchers and policy makers would require suitable analytical frameworks to evaluate the effectiveness of decentralisation of NRM. It is here that some of the emerging frameworks advocating pluralistic and polycentric or distributed approaches to management of natural resources have shown considerable potential from a policy angle. However, it is important to examine the layers or components of the institutional framework that is essential to put into operation the concept of distributed or polycentric governance particularly where many institutions are loosely linked and intensely compete for the same space (e.g., panchayats, WUAs, watershed committees, JFMCs and many more). Can the state initiated decentralised programmes graduate into polycentric governance? If so, what are the alterations needed and additional conditions to be ensured? More research is needed on these newer frameworks before they can be validated for policy applications.

I, therefore, plead this august body to take up these emerging challenges and incorporate political economic aspect of resource management and institutions in their research and analysis so that our contributions become more relevant.

NOTES

1. Common Pool Resources (CPRs) are those resources which are used by an identifiable group of people irrespective of whether the resources are owned or not owned by them.
3. Basic concepts, issues, and dimensions of decentralisation discussed in this Address are drawn largely from a review article by Larson and Soto (2008).


5. See also classic work of Commons (1934; 1968) on the role of institutions, property rights and collective action.

6. An external governance structures has essentially three alternatives of management systems (Townsend and Polley, 1995), namely, rights based management (the government grants usufruct rights to individual resource users under well specified constraint conditions and assumes the role of monopoly over the resource base and retains all responsibility/authority for conservation decision), co-management (the government and the local communities share ongoing responsibility for decision making over all or most of the resource management decisions) and contracted management (to transfer large part of the decision making process to local bodies).

7. The four alternative internal institutional arrangements that (Townsend and Polley, 1995) have been closely associated with the concept of distributed governance include: self organising institutions (institutional and organisational decisions remains with local communities and the government may use the institutional building capacity to support and gain strength from self organization), communal management (to reduce the existing authority of state and vest more localized interest), cooperative management (membership is limited with well defined working rules for collective governance) and corporate (under the corporate governance the owners and shareholders of the corporation would operate under governance rules typical of private corporations).

8. By the end of 2007-08 the State had covered about 56 per cent of total forest area under JFM with the partnership of 7887 Joint Forest Management Committees (JFMCs) having 27.63 lakh members. The JFMCs are engaged in various economic activities like collection, processing and marketing of a large number of NTFPs besides management of plantations. Nearly 1797 Self Help Groups (SHGs) assist the JFMCs in marketing of the raw or the processed NTFPs. During 2000-01 and 2007-08 the JFMCs received dividend to the tune of 15 to 30 per cent of income from the production of the allotted forest area to them. Rs. 58.40 cores of dividend was provided to JFMCs during the period under reference (Marothia, 2009c; Government of Chhattisgarh, 2002).

9. In a national level study conducted by the Indian Institute of Bio-Social Research and Development in 2004-05, JFM was evaluated in about 500 JFM Committee areas in 13 States across India. The criteria were clarity and purpose of roles, institutional mechanisms, capacity of JFM Committees and resource management. The impact on forest profile, socio-economic aspects such as household income, village development, women empowerment, and social unity were studied. The highest effectiveness was observed in Uttarakhand, West Bengal, Orissa, and the least in Karnataka, Andhra Pradesh, and Chhattisgarh (Chapter 3-Forest, Eleventh Five Year Plan, Planning Commission, Government of India).

10. The key features of this new unified approach are: (i) Delegating powers to states, (ii) Dedicated institutions for implementing the programme at various levels, (iii) Duration of the programme enhanced in the range of 4 to 7 years depending upon the nature of activities spread over 3 phases, viz., preparatory phase, works phase and consolidation phase, (iv) Productivity enhancement and livelihood given priority along with conservation measures, (v) Envisages geo-hydrological unity normally of average size of 1000 to 5000 ha comprising of clusters of micro-watersheds, (vi) Special efforts to be made to utilise the information technology and remote sensing inputs for planning, monitoring and evolution of the programme, (vii) Capacity building and training of all functionaries and stakeholders with definite action plan and requisite professionalism and competence, (viii) A multi-tier ridge-to-valley sequenced approach covering the higher reaches predominated by forests and where the water sources originate, the intermediate slopes to be treated by best possible options including horticulture and agro-forestry, and the plains and flat areas mostly under agricultural crops, (ix) The watershed development process would be synergised with employment generating programmes such as
the National Rural Employment Guarantee Scheme (NREGS), Backward Regions Grant Fund (BRGF) etc.

11. Even after unified guidelines, conflicts are still persisting over fund flow mechanism under IWMP between State Level Nodal Agency, DRDAs, and ZPs.

12. In recent years a large number of farmers’ associations in these States, even in Kerala, a State with strong traditions of local governance, disappeared (Joseph, 2001; Shah, 2009).


15. Vyasa (1992) observed in the early nineties that with the spread of democratic institutions the issues of environmental degradation, livelihoods and poverty received considerable attention by large number of researchers, policy makers and social activists.

16. A village or a panchayat area as constituted in some States, with thin population, may not be financially viable and also may not have requisite competence and capability for discharge of entrusted functional responsibilities to even deal effectively with the subjects, for example regulatory and maintenance function, managing primary education and health, where first-hand ground level supervision and involvement of community is necessary. Once these bodies gain experience and confidence, responsibility on other matters like managing NRs development schemes, can be assigned (Srivastava, 2002). It is equally important to generate strong public opinion and mobilise elected representatives of panchayats all over the country to bring pressure on the central and state governments to strengthen democratic panchayats and empower them to plan and implement all local development programmes (Vaidyanathan, 2005).

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Natural resource management (NRM) is the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (stewardship). Natural resource management deals with managing the way in which people and natural landscapes interact. It brings together natural heritage management, land use planning, water management, bio-diversity conservation, and the future sustainability of industries... "A concerted effort to mainstream natural resource management into local governance is gaining momentum through State-led devolution of powers to the Panchayati Ra Institutions (PRIs) that represent the primary rungs of democratic governance in India. The strengthening of these institutions at the village level to enable them to function as local self-governing bodies has lent an impetus to participatory democracy in general and to decentralized governance of natural resources in particular. The chief external challenges to these institutions include reluctance to completely devolve powers to these institutions, callous bypassing of PRIs by project implementing agencies of government and civil society alike and inadequate capacity building support on good governance skills.