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# Management of Knowledge System in Natural Resources- Exploring Policy and Institutional Framework in Nepal

Ram Bahadur Chhetri, Netra Prasad Timsina, Hemanta Raj Ojha and Krishna Prasad Paudel

## Final Scientific Report

Forest Resources Studies and Action Team (ForestAction), Nepal,
Phone: 9771 5550631, Fax: 9771 5552974
P. O.Box 12207, Kathmandu, Nepal
Email: forestaction.wlink.com.np
Website: www.forestaction.org

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## Acronyms

| | |
|---|---|
| AAC | Annual Allowable Cut |
| APP | Agricultural Perspective Plan |
| APP | Agricultural Perspective Plan |
| CAI | Current Annual Increment |
| CBO | Community Based Organization |
| CFUG | Community Forest User Group |
| DFO | District Forest Office |
| DoF | Department of Forest |
| FAO | Food and Agriculture Organization |
| FECOFUN | Federation of Community Forest Users-Nepal |
| FMIS | Farmers Managed Irrigation System |
| HMG/N | His Majesty's Government, Nepal |
| ICIMOD | International Centre for Integrated Mountain Development |
| LFP | Livelihoods and Forestry Project |
| MoFSC | Ministry of Forest and Soil Conservation |
| NACRMLP | Nepal Australia Community Resource Management and Livelihood Project |
| NACRMLP | Nepal-Australia Community Resource Management and Livelihoods Project |
| NARC | Nepal Agricultural Research Council |
| NGO | Non Governmental Organization |
| NSCFP | Nepal Swiss Community Forestry Project |
| OP | Operational Plan |
| ORD | Outreach Research Division |
| RoKS | Research on Knowledge System |
| TCN | Timber Corporation Nepal |
| VDC | Village Development Committee |
| WATCH | Women Acting Together for Change |
| WUG | Water User Group |

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## Executive Summary

This research on knowledge systems aims to contribute to improving policy and institutional frameworks for managing knowledge systems in Nepal in the field of natural resources. In order to achieve this, the study has attempted to understand, explicate and analyse selected natural resource institutions at local, sub-national and national levels. One specific objective of this study was to explore ways in which knowledge is perceived, approached, communicated and applied in natural resource management sector (mainly forestry, irrigation and agriculture). Besides, we aim to investigate policy and institutional frameworks for effective management of natural resource knowledge systems at strategic and operational levels in Nepal.

Based on the analysis of seven case studies, we have come to a few insightful conclusions. First, in every human institution knowledge and power are inextricably linked factors[1], and treatment of knowledge in isolation gives an incomplete view of learning and innovation system. Power is grounded in diverse dimensions of social class – such as caste, economic assets, symbolic capitals (such as social status), gender and ethnicity, to varying degrees. Knowledge-power nexus is enacted, contested and resisted in day to day practice. Several of the reported tensions in knowledge domain – such as scientific versus indigenous, theoretical versus practical – are actually created by inherent power relations among the social agents and institutions. The case of community forestry inventory indicates how two broadly defined groups – state forest officials and local communities – are in tension over claiming legitimacy of two contrasting systems of knowledge – local/indigenous and scientific – in the management of community forests as part of the continuing struggle for controlling resources. The alliance between local elites and state officials around the same domain of knowledge – scientific forestry in determining the nature and quantity of forest harvest – leads us to conclude that the divide between "indigenous" and "scientific" knowledge may not exist as sharply distinct as is usually believed, but is very much mediated by local power relations. The implication is that policy framework should provide adequate space for unconstrained deliberation among diverse actors with different knowledge system for social learning and innovations.

Second, the inherent diversity and differentiation among social agents means that dominant groups are often structurally in better position[2] to create more holistic and legitimate claims of knowledge through more effective allocation of efforts for action and reflection[3]. This is one of the reasons why within forest user group local elites have been able to justify and argue collective decisions in their favour even when the policies and institutions mandate participatory decision-making processes. This raises challenges on, given the complex nature of social hierarchy, how democratic deliberation is possible within civil society, and between civil society and the state, without which it is difficult to achieve equitable governance of natural resources.

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1 This is the reciprocal nature of these two words that Foucault titled "power/knowledge Allen, B. (1999). "Power/Knowledge." Critical Essays on Michel Foucault. E. K. Racevskis. New York:, G.K. Hall & CO.

2 French sociologist Pierre Bourdieu argues that social agents have inherently unequal distribution of opportunities for creating knowledge in any differentiated society, and the ideologies of dominant groups are tacitly accepted by other groups who lack adequate reseources to create knowledge. (Bourdieu, P. (1998). Practical reason: on the theory of action. Cambridge, Polity Press).

3 American pragmatist John Dewey considers knowledge is created when a reflection over an action establishes connection between an action and its consequences (Elkjaer, B. (2003). Social learning theory: learning as participation in social processes. The Blackwell handbook for organizational learning and knowledge management. M. Eastery-Smith and M. Lyles, Blackwell Publishing Ltd.

Third, we analyzed a recent action and learning initiative at local level and found out that critical and self-reflexive engagements of the marginalized groups, with active facilitation from civil society activists[4], can allow them to challenge their own doxa (un-reflected and tacitly held beliefs and assumptions), and dominant discourses and narratives, and thus marshal power-knowledge nexus to influence institutional decisions. This finding has challenged our own initial assumption that institutional frameworks and policies are pre-conditions for development of effective and transformative knowledge systems; we now see tremendous scope of manoeuvre within the existing institutions if social agents start to engage in critical self reflection[5]. This is, however, again related to how the macro policy and institutional environment encourages the development of civil society activism at the grassroots level have a potential for such change.

Fourth, technocratic model of modern development has constrained the citizen to bring their knowledge and practice into discourse. The role of civil society to challenge over scientization[6] of the political and social issues is also demonstrated by the case of federation of forest users. Though the internal learning system is not free from hierarchical influences, the federation as a civil society has been able to challenge the expansion of overly instrumental posture of forest officials in the governance of forest resources. The federation has pooled and organised the knowledge system of ordinary citizens to enhance claims for legitimacy of decentralised and participatory forest management.

Fifth, a common observation through almost all the cases is that learning is more incremental and less transformative[7]. This means that both individuals and institutions hardly explore and question their basic assumptions, "mental models" or "doxa" – that guide perceptions and methods of knowing. Discursive knowledge is thus inscribed within a more encompassing cognitive structure, which is hardly challenged, unless there is a serious crisis or break. This is supported by our observation at micro level groups (water users changing norms due to demographic compositions). This observation also resonates in the lack of any significant shift in strategy of developmental actions on the part of a development agency – in this case, the Australia government funded bilateral forestry project, which was renewed for several times over a period of 30 years, which adopted similar approach to implementing community forestry, without any visible "double loop" or "transformative" shifts in learning. However, this has contributed to

4 The role of external agents is a bit contested but we found empirical relevance of Bourdieu's view that human agents on the ground tacitly reproduce the existing social order, and there is a need to provide an epistemological critique, which will bring tacitly held beliefs to discussion and reflection. This resonates with Giddens's view on moving from "practical consciousness" to "discursive consciousness", and Dewey's view on the need to bring issues of "primary experience" into "secondary "experience" of reflection. All these theoretical insights indicate a need for social critique for change, for which critically oriented civil activist and practical researchers have an undeniable role.

5 This is consistent with Long's emphasis on practice and interaction rather than central policy and planning alone as a source of change. Long, N. (2001). Development sociology; actor persepctives. London and New York, Routledge.

6 The issue of scientization of political discourses and communicative reason has been a crucial issue in political philosophy following the writings of Jurgen Habermas (Roderick, R. 1986). A particular concern in this regard is that modernist emphasis on technocratic approaches to policy abd social change has undermined spaces for political deliberation among ordinary citizens. Habermas and the foundations of critical theory. Hampshire and London, Macmillan; Turner, J. H. (1987). The structure of sociological theory. Jaipur, Rawat Ppublications).

7 This relates to "Single Loop Learning" of Chris Argyris (Argyris, C. (1993). On Organizational Learning. Cambridge, MA, Blackwell; Argyris, C. and D. Schön (1996). Organizational learning II: Theory, method and practice, Reading, Mass, Addison Wesley). Mezirow's theory of transformative learning is even morte relevant from our perspective. Taylor, E. W. (1998). The Theory and Practice of Transformative Learning - A Critical Review. Columbus, Ohio, The Ohio State University.

facilitate an interface between local communities and national forest bureaucracy to better link policy and practices.

Our analysis concludes that knowledge systems are inextricably linked to the processes of democratization of political institutions. Because of inherent social inequality, actors have differential capability to claim, promote and influence their respective knowledge systems which is largely responsible for the domination of technocratic knowledge and marginalization of indigenous and traditional knowledge. Current practices of learning are tied to instrumental purposes, with limited recognition of critical self-reflexivity and appreciation of dialogical interactions. Uncritical adoption of external knowledge has actually undermined and dismantled existing knowledge systems which have sustained social life for generation. Our conclusion, however, is not entirely against any intervention for change as we have found out that unconstrained negotiation and empowered deliberation can contribute to social learning and democratization of political institutions. An environment needs to be created for genuine participation of the people in learning process that facilitates open deliberation among social agents with diverse perspectives and knowledge system in equal footing. Bringing issue of policy process into public domain beyond the bureaucrats and political representative will allow ample spaces to widen and deepen the civil actions in democratising knowledge and power relationships. The role of policy makers should be toward enhancing spaces for dialogue and deliberation among concerned social actors while the role of scientist should be to assist informed negotiation of policies.

# Chapter -One

## 1.1 Introduction, conceptual framework and methodology

This report is an outcome of the research on knowledge system (RoKS) carried out by ForestAction and supported by International Research and Development Centre (IDRC). It contains seven case studies and their analysis in details in relation to knowledge system management. This report has also made recommendations to the policy and institutional framework for an effective management of knowledge systems. This report begins with the rationale of the research, conceptual framework to analyze the information and methodology to collect information.

## 1.2. Rationale of the research

As knowledge is expanding exponentially in the global arena, many states with poorly developed knowledge capacity are lagging behind the others in their ability to devise effective policy solutions to a wide range of development problems. The expanding policy and knowledge gaps between these two groups of states have been a concern worldwide, since these gaps are increasingly recognized as the root causes of deteriorating global peace, inequity, environmental degradation, and poverty.

Nepal - like many other small states - has not been able to explore, manage and utilize local, regional and global knowledge resources due to limited policy and institutional capacities. Various factors account for poor knowledge management. First, academic/research institutions are poorly governed creating limited incentives and motivation for creative works. Second, the role of producing knowledge is confined within public sector institutions that have inherent bottlenecks in fostering innovations. Third, confusion and conflicts prevail in regard to the role of civil society and private sector, as well as their partnership with government institutions, in creating and sharing knowledge. Finally, there is a weak linkage between policies and practices, limiting knowledge production and communication.

That an understanding and appreciation of various systems of knowledge (indigenous, scientific, etc.) and their corresponding technologies and practices to make development efforts more effective is becoming a common ideology among all including academics, development professionals, and policy-makers (see Warren, Slikkerveer and Brokensha, 1995; Chambers, 1997; Kalland, 2000). We argue that development of science (knowledge and the knowledge systems) is characterized by a constant informing of each other by various systems of knowledge glossed as western, scientific, local, indigenous and traditional. Moore (1996) has spelled out similar concerns while reminding us that western social science tends to consistently reposition itself as the originary point of generalizing theory.

Within anthropology and other social sciences, the turbulence created by the postmodernist discourse has provoked new sets of questions, issues and challenges about learning and interpreting social realities. These include: "Who are the producers of knowledge?" (Moore, 1996:2). Or, Where do knowledge and science originate? Who owns the knowledge? Who has access? How is knowledge distributed? How the knowledge and power are linked each other? These questions have guided the research process.

We believe that it is more crucial "knowing where to hit it" (see Thompson and Warburtun, 1985) in order to effectively allocate the ever shrinking resources for development interventions anywhere in the world. Thus, we argue that a better understanding of knowledge systems - how they are built/structured, used, disseminated; how such systems could be complementing and supplementing each other; and how to bring them together for the benefit of humanity in general - by means of research at micro to macro levels (along the continuum) could be the way towards cost-effective and time effective approaches and strategies.

It has been widely acknowledged today that local communities too have their own effective science in relation to resource use and management among other things. Given this, it becomes imperative that such knowledge and management systems be understood in their own right as well as in relation to the wider context (see Sillitoe, 1998). The importance of scientific research and technology will not diminish. The issue, however would be to accommodate indigenous with the western scientific knowledge on equal terms. Management of knowledge is even more critical in the context of devolution and decentralization of natural resource management. The policy question then would be: How to effectively manage such knowledge systems so that they meet the needs of all kinds of stakeholders? Engagement in advancing such understanding is therefore urgent in order to ensure a genuinely locally informed perspective into development works.

## 1.3 Conceptual framework of the research

### *1.3.1 Knowledge and Social Change –Theoretical Foundations*

How human agents learn and change themselves and their social structures has remained a key theoretical and practical question in sociological inquiry. Following Giddens and Bourdieu, the focus of sociological inquiry has transcended the dualism of micro and macro sociologies which existed for long, and has turned into a duality of structure and agency (Ritzer 2004). One implication of this powerful synthesis of sociological thought is that we need to look at how human agents in the micro settings are simultaneously related with the macro structures (of power, culture and economy) – not only in terms of how macro structures constrain or enable practices but also in terms of the potential of practice to recursively reconstitute, reproduce or transform the larger social structures (Bourdieu 1977; Giddens 1984).

Since enlightenment, science has emerged as a dominant way of understanding social and physical world. The triumph of science which was triggered by experimental methods usually employed in physical world has lead to what Habermas says “overscientization” of social and political life. Habermas argues that colonization of cultural domains by capitalist and scientific rationality has reduced our worldviews within narrower purview of instrumental rationality – pursued within the larger framework of capitalist and scientific society. He has argued for differentiating two domains of learning – a) technical knowledge, and b) communicative knowledge (Habermas 1971; Habermas 1987). While the first is related to how we understand nature to augment human purpose, the second is related to understanding how as humans we better understand each other and each other’s perspectives to create and transform relationships for greater justice.

Modernization and development has tended to promote technical rationality (Scott 1998), at the cost of communicative rationality – which is the basis through which human can develop organizations for collective coexistence. As a result, socio-political issues are

handled by technical experts of government, minimizing the space for transformative dialogues and deliberation among groups of diverse cultural perspectives. Habermas's reconstruction of rationality has sought to relocate the domain of learning away from technical to communicative domain. This has indeed inspired alternative ways of organizing governance in society – through what is emerging as deliberative democracy (Bohman 1997; Dryzek 2000).

When it comes to communicative engagement, the role of human agency is crucial. Giddens has ascribed qualities such as knowledgeability, capabilities on human agency through which they can learn and reconstruct social systems (Giddens 1984). Bourdieu, however, cautions on the excessive optimism of agency as he considers that human agents are located in structured spaces with pre-reflective dispositions which he calls doxa, which inscribes conscious and discursive agency (Bourdieu 1984; Bourdieu 1990; Bourdieu 1998). His view is that discursive knowledge is just a thin tip of a thick doxa (Crossley 2003; Hayward 2004), implying a need for deepening discursive domain of human agents through increased self-reflexivity. He rather warns that many processes of social interaction – including those oriented to change such as school education –actually end up with reproducing the existing social inequality (Bourdieu 1977). This poses serious challenge to efforts of social change through the direct engagement of social agents, and the possibility of learning and change emerges when there is a dissonance between structured positions of social fields and the naturalized expectations of human agents (cognitive and motivating structures). Genuinely critical deliberations have the potential to dissolve doxa (Wacquant 2004). Also, Bourdieu holds that the inherent diversity and differentiation among social agents means that dominant groups are structurally in better positions to create more holistic and legitimate claims of knowledge through more effective allocation of efforts for action and reflection.

Viewing from post-structuralist perspective, Foucault (1972) views discourse as the breeding ground for the emergence of social agents, and thus widens the terrain of social learning in discursive domain, beyond individual agents who are themselves the products of one or the other discursive formation. Discourse creates political subjects along the three axes of human existence – knowledge, power and ethics. He treated knowledge as embedded in existing power structures. Lyotard, who is even more a radical postmodernist, has challenged science as an enterprise of experts rather than an objective procedure of representing truth (Lyotard 1993), invoking a relativist epistemology wherein no one can represent no one else. Here again, Habermas' reconstruction of reason and modernity seems more plausible avenue for human learning and change.

American pragmatist movement in 20$^{th}$ century challenged the intellectualist tradition of European knowledge enterprises, suggesting that every intellectual pursuit has to be linked with practical human purpose. John Dewey linked human thinking from practical problem to identifying and testing solutions. Dewey's idea that society exists through "transactional" process of communication and that democracy is itself a learning process (Dewey 1916/1966; Dewey 1933/1986; Dewey and Bentley 1949) very much resonates Habermas's conception of communicative democracy. Pragmatist emphasis on knowledge as practical enterprise parallels to Bourdieu's emphasis on practical rationality of human action.

Key insights from this review are as follows:

a. Learning is related to "agency" dimension of social system. Human agency has both discursive as well as doxic elements and learning should be a reflective process to dissolve and transform doxa
b. Human knowledge oriented to understanding nature should be differentiated from human knowledge oriented towards understanding relations between human agents
c. Learning involves both individual as well as collective processes, and collective processes of learning are more crucial to understanding social change
d. Social agents or "agencies" are not equipped with equal opportunities to engage in a learning process, and as such learning opportunity itself an important cause and effect of social differentiation
e. In the contemporary debate between modernity and post-modernity, a drive to explore the possibility of human knowledge in desirable social change lies not in either of the extremes but in a critical reconstruction of communicative reason as a basis of social learning

Different disciplinary foundations and theoretical connections have given rise to diverse ways of understanding and approaching learning, from instrumental to intrinsic or transformative view of learning.

*Organizational learning* represents organized view of learning in modern organizations. Cyert and March (1963) is considered the foundational work in organizational learning (Easterby-Smith and Lyles 2003; Easterby-Smith 2003). Cangelosi and Dill (1965) revealed the tensions between individuals and organization, critiquing the work of Cyert and March as being suggestive of models appropriate for established organizations in stable circumstances (Easterby-Smith and Lyles 2003:9). Argyris and Schon (1978) laid the field more clearly, making the critique of rationalist assumptions of Cyert and March, and introducing new concepts (defensive routines) (Easterby-Smith and Lyles 2003:10). Special edition of Organization Science in 1991 significantly popularized the field (ibid:10). Brown and Duguid (1991) laid the foundation for social processes of organizational learning, moving away from personal and psychological emphasis, followed by Lave (1988) and others[1]. *The learning organization* tradition was popularized by Senge (1990), as a practitioner-oriented field of knowledge, emphasizing instrumental view of learning, but playing down social-emotional aspects and political consequences of learning (Garrat 2000). We suspect that both organizational learning and learning organization have emphasized learning in formal, organizational domain, even the most social variants falling short of more intrinsic and transformative view of social learning and change. *Knowledge management* (Malhotra and Galletta 2003) seems to take even more instrumental view of learning, emphasizing managed learning using technical tools.

In natural resource management, a key debate in relation to learning is related to combining indigenous and scientific knowledge systems (Fisher 1989; Chhetri and Pandey 1992; Sillitoe 1998). While many recognize the value of both systems of knowledge in development, debates persist as regards and how they can be integrated, and how agents can engage in open deliberation in equal footing to choose and combine local and scientific knowledge systems (Chhetri 1999). Advocates of adaptive management (Lee 1993; Lee 1999) and social learning approaches (Maarleveld 1999; Röling 2002) tend to claim a possibility of combining diverse perspectives but they themselves have remained largely within the instrumental view of learning, with inadequate embeddedness in cultural systems.

Transformative approaches to learning seek to reconstruct perspectives and conceptual frames (Taylor 1998) of human agents as well as develop better understanding of each other through open and deliberative interactions (Forester 1999). Fals-Borda and Rahman's (1991) conceptualization of *action and knowledge* also seeks to bring learning outside of instrumental domain and engage agencies critically and politically. Lee's (1993) idea of combining science and politics for social learning also allows learning beyond boxes.

### *1.3.2 Analytical narratives, concepts and issues*

The previous section has mapped a theoretical territory of how human knowledge is related to the processes of social change. In this section, we seek to build more empirically relevant concepts and narratives, which inform our construction and analysis of case studies. Our selection and categorization of such concepts will be informed and enriched by the five theoretical foundations, which we laid in the preceding section about the ways learning and knowledge are conceptualized and approached in diverse ways in social life. Key debates can be summarized as –

a. The role of human agency (including internalized structures of cognition and motivation)
b. Instrumental or transformative/intrinsic view of learning (technical and/or social view of learning, and formally organized and/or socio-culturally embedded learning)
c. Pragmatic versus intellectualist approaches to learning (learning from practice, experience and action, and from theory)
d. Role of structured spaces, rules and institutions in shaping access to learning and knowledge
e. Discourse, deliberations and political/public spheres

Some say learning is like a sex drive and is a lifelong process of human agency (Senge 1990). Agencies have internalized structures of cognition and motivation which guides learning. When learning starts challenging the fundamental structures, more transformative learning may take place, resulting in change of existing perspectives. Human agency is not fundamentally an individual domain – it learns through collective interactions, or intersubjective processes (Habermas 1987).

We have identified in somewhat idealized way various types of doxic dispositions (or orientations) of human agencies in natural resource management in Nepal –

- ***Fatalistic*** – rural poor and peasants who believe in their fate or *Karma* for their success, achievements and failures in life (Bista 1991). This gives limited motivation of active learning and change.
- ***Feudalistic*** – people who traditionally control, rule or manage communities, groups, organizations and institutions who use positional power in decisions and avoid engaging in public and collective processes of knowledge generation.
- ***Technocratic*** – people who work as technical experts, bureaucrats and professionals with a tendency to view complex social realities in their respective disciplinary frames (Fisher 1990). They tend to (especially those who are with government) blend positional power with disciplinary orientations to pursue their interests often in the name of discharging public functions and responsibilities. Their dispositions tend to limit learning and social change within technocratic domain, away from the public domain of all concerned.

- ***Developmentalist*** – Over the past 40 years of development history in Nepal, an entire category of people has emerged who commonly share that developmentalism is the only way to liberate Nepali society. They are at different social locations – from community to national agencies of development with a common frame of mind that development actions can liberate society from poverty, injustice and underdevelopment. A whole industry of development has evolved through which these agencies pursue their self-interests.
- ***Critical and political developmentalist*** – A group is emerging comprising of intellectuals, development activists, human rights workers, and civil society network activists who seek to challenge the mainstream discourses and practices of development and advocate for devolution, decentralization, participatory governance and protection of local people's rights over natural resources.

Learning and social change in natural resource management in Nepal is taking place within and between such diverse and naturalized dispositions of human agencies. The link and interpretation of theses concepts and theories are given in respective case studies and the discussion section of this report.

### *1.3.3 Pragmatist and intellectualist learning*

The debate between instrumental and transformative learning roughly corresponds with intellectualist and pragmatic view of learning. Academicians and researchers often emphasize theoretical dimensions of social reality, while practitioners emphasize learning to improve practical actions. In the field of natural resources policy and practice, the tension between these tendencies are often manifest in day-to-day practices.

Some theoretical perspectives that knowledge is actually enacted in practice persuade us to differentiate practical logic of action from theory. The way agency engages in social practice cannot be represented adequately by theoretical frames. In this line, there are convincing ideas on how experience, practice and action are crucial processes of social learning and change. Yet, the role of theory is important in fostering inter-context dialogues.

### *1.3.4 Structure of access to knowledge resources*

Knowledge as cultural capitals not equally accessible to all social agents, and quite often the cultural capital has been a key element of domination in social, political and economic arena. Since constructing knowledge requires engagement in action, reflection, networking and sharing, agencies that have access to time and resources to such processes are in better position to learn. This applies to the condition of social inequality from a small community to global system. The least developed country like Nepal can afford very little in research and knowledge development. Educated elites have better access to wide variety of knowledge resources. Some dimensions of inequality relevant in learning include – language access, economic capital, culture of learning and reflection, access to diverse forms and products of knowledge, institutions and prevailing rules providing differential opportunities to learning.

Institutional approaches tend to emphasize rules and stability. Learning in practice not fully connected to rules. Rules sometimes constrain generative practice of learning. Tensions always remain between rules and practices.

### *1.3.5 Discourse and Deliberation*

Every social practice is surrounded by a complex layer of discourse, which provides a mirror reflection of the practices. Discourses even create the agency of humans through the axis of knowledge. Such a communicative domain is also an opportunity to agencies to reconstruct discourses and practices through open and unconstrained deliberation. The idea of deliberation provides an insight on how tensions between diverse knowledge systems can be resolved by social agents through conscious and active participation in the discursive practices.

## 1.4 Methodology of the research

This research was concerned with studying subjective meanings and individual ascriptions of sense, the activities of every day life of people, and the cultural meaning of things both material and abstract (Babbie, 1979; Silverman, 1993; Hamel et al., 1993; Nachimas and Nachimas, 1996; Chambers, 1997; May, 1997; Taylor and Bogdan, 1998) in relation to knowledge production, communication and application.

We investigated the knowledge systems at different *levels* (local, sub-national, and national), different *sectors* (forest, agriculture, irrigation), and different *institutions* (government, donors, civil society and local communities).

At local level, emphasis was provided to understand how community groups, households, individuals, wealth categories including gender and ethnicity engage in, and benefit from, managing knowledge. In doing this, four Forest User Groups (FUGs) and two Water User Groups (WUGs) were purposively selected to represent three distinct ecological zones (Terai, Middle Hills and High Hillls) of Nepal.

At sub-national level, contribution of Federation of Community Forestry Users, Nepal (FECOFUN) in relation to democratising power and knowledge dynamics has been documented. At national level, Nepal Agricultural Research Council, the case of community forestry inventory policy and a bilateral forestry project has been studied in details. A summary of the case study is given in table below:

Table: Types and nature of case studies

| SN | Title of the case studies | Name of institutions selected | Level | Specific characteristics |
|---|---|---|---|---|
| 1. | Democratizing knowledge and power: Action learning in Community forestry | Gagan Khola (Siraha) Sundari (Nawalparasi), Karmapunya (Kabre) and Baisakheswori (Dolakha) CFUGs | Local | Diversity in terms of geography, natural characteristic and social-political compositions |
| 2. | Agricultural knowledge systems in Nepal – Perception, production and practice | Nepal Agricultural Research Council (NARC) | National | Government institution for agricultural research, |
| 3. | Civil forum and deliberative governance: The case of FECOFUN | Federation of Community Forest Users Nepal (FECOFUN) | Sub-national | A network of more that 14000 CFUGs in Nepal-a strong civil actors in the field of natural resource management |
| 4. | Knowledge authenticity: The case of forest inventory in CF | CF inventory policy | National | Instrumental versus local knowledge |

| | | | | |
|---|---|---|---|---|
| 5. | Interface of Knowledge systems: Case of Chhatis Mauja Irrigation in Nepal | *Chhatismauja* irrigation system (Nawalparasi district) | Local | Farmers managed irrigation system |
| 6. | Culturally embedded knowledge in irrigation: People's ways of thriving in a Himalayan village | Lomanthang (Mustang district) | Local | Formal and informal leadership, resistant to external interventions |
| 7. | Knowledge creation and a learning process: The case of Australian Forestry Projects | Nepal-Australia Community Resource Management and Livelihoods Project (NACRMLP). | National | Bilateral forestry project working for more than 30 years in Nepal |

While the study seeks to make full use of available secondary data, it has generated a significant amount of primary data. Participatory techniques were used to collect primary information at all levels, and the information obtained was validated through triangulation. A considerable amount of time was spent living with the people, which helped to obtain reasonably reliable information.

The researcher's skill, sensitivity and integrity were important for the validity and reliability of the research, when the fieldwork was a major basis for this study (Patton, 1990; Hedrick et al., 1993; Yin, 1994).

## 1.5 Tools and techniques for information collection

Some specific tools and techniques were used to collect information that are briefly described below.

### *1.5.1 Ethnography*

Ethnographic research focuses on the culture of people (Patton, 1990; Hammersley and Atkinson, 1983; Gregory and Altman, 1989). In this research, ethnographic technique was used to understand the history and culture of the people of different groups and the ways they have managed the knowledge systems in their society. At local level, the researchers observed households and groups level activities, and interacted with different types of people in order to obtain contextual information and insights.

### *1.5.2 Interviews*

Interviews are often considered to be the powerful ways to understand social phenomena (Patton, 1990; Fontana and Frey, 1994; Flick, 1998). This study followed semi-structured and open-ended interview techniques. These interviews were conducted in different forms and situations and organised individually, as well as in small groups at different levels. Attentions were provided to generate data from key informants including opinion leaders. Different sets of information sheets, checklists and semi-structured questionnaires were used depending upon the nature and type of information to be collected.

### *1.5.3 Focus group discussions*

Taking knowledge as a key theme, focus group discussions were organized at different institutions to identify and understand the various facets of perceived systems and practices of knowledge management. An average of five participants (male and female) who had specific interests, expertise and affinity with knowledge related processes of the concerned institutions were selected for this purpose.

### *1.5.4 Secondary information analysis*

Key sources of secondary information for this research include: policy documents related to natural resource management, field reports of various projects, unpublished organizational records and minutes of relevant meetings and workshops.

### *1.5.5 Data processing and analysis*

A coherent framework was used for analysis to link *three functions of knowledge management* (production, communication and application) and their *underlying factors* (mainly related to policy and institutional contexts) as the dependent and independent variables respectively. This framework allowed us to distil policy and institutional factors affecting the promotion of various traditions of knowledge within and between institutions, and develop recommendations based on various cases from local, sub-national and national levels. Since one of the approaches to research is case study, both individual as well as cross-case analyses were made.

# Chapter 2

# Discussions, recommendations and conclusions

## 2.1 Discussions

In this section, we provide a comparative discussion of the seven case studies in relation to the five conceptual angles we identified in chapter one, section 1.2. These include the nature and role of human agency, instrumental and/or transformative view of learning, pragmatic and instrumentalist approaches, learning related inequalities and negotiation of knowledge system. We denote the seven cases in our discussion in the following ways: NARC (Nepal Agricultural Research Council), Inventory (community forestry inventory policy), NACRMLP (a bilateral forestry project), FECOFUN ( Federation of Community Forest Users-Nepal), Chhatis Mauja (Farmer Managed Irrigation System), Lo Manthang (Indigenous irrigation system in high mountain) and action learning process (Four Community Forest User Groups).

***Human agency:***

The seven case studies presented encompass a range of situations in which diverse typologies of agency emerge in relation to various types of learning systems. Agencies operating within ***technocratic*** dispositions include agricultural scientists (NARC), foresters (Inventory and NACRMLP), and Engineers (Lomanthang and Chhatis Mauja). In the context of participatory natural resource management, a sub-group of technocrats is evolving who seek to have varying levels of interface with local knowledge of people – such as community foresters, and outreach and socio-economic agricultural scientists. Second category of agencies operates within ***feudal*** dispositions who include – local level feudal lords (as in Lomanthang), high-class and high caste members of resource user groups (as in Chhatis Mauja and four Community Forest User Groups), and managers and leaders of organizations (as in the case of FECOFUN). Agents who operate within ***developmentalist*** dispositions include NGO professionals (leaders of FECOFUN), mainstream intellectuals (NACRMLP), and those technocrats who are increasingly recognizing the importance of public domain in resource governance (NACRMLP). ***Critical and political developmentalist*** includes those who stand in opposition or maintaining critical stance to mainstream and dominant modes of discourses and practices (Civil society activists as in the case of four CFUGs and some FECOFUN members). Interactions of agencies within and between these categories have given rise to diverse forms of knowledge systems and their interfaces. The seven cases indicate that large masses of socially marginalized groups (operating within ***fatalistic*** dispositions), who draw their livelihoods form forest, water and agricultural resources have actually fallen behind all other categories of agencies. This is one of the reasons why inequitable resource management practices loom large in the field of natural resources. Whilst there is some sort of indication suggesting possible positive links between technocratic and feudal legacies, there are instances of critical and political developmentalist allying with the marginalized groups, and often forming a critical knowledge link between policy and practice of natural resource management. A direction of policy change coming from this analysis is to engage critical civil society activists to challenge fatalistic doxa of marginalised groups and thus empowered them to have active dialogue with developmentalist, technocratic and feudal disposition of human agencies.

***Instrumental or transformative view of learning:***

The case studies demonstrate diverse range of learning approaches from technical-instrumental to social-transformative. Even within a particular case, which we have documented, we have noted interface of diverse knowledge systems. In the case of NARC and community forestry inventory, agents with technocratic dispositions have significantly imposed technical-instrumental approaches to learning. NAARC's research on varietal improvement without concurrent research efforts to understand why poor farmers have limited access to land and agricultural inputs has had limited impact on enhancing the livelihood of the poorest (which is actually the priority of national development policy as stated in the tenth five year plan and poverty reduction strategy paper). The case of inventory also sought to impose the ideas of technical forestry as mandatory requirements for forest management within community forestry paradigm. When such knowledge approach was legitimized through a mandatory policy instrument, the technocratic foresters used both positional and technical expert power to disempowered local people, and technicalize social and institutional issues of forest management.

Case of Lo Manthang and FECOFUN are perhaps at the other end of spectrum. Learning is not confined to formal domain of life. Social agents who live as a small community with rich traditions and cultural resources actually promote learning and innovation as part of their life. Likewise, the case of FECOFUN demonstrates how citizens can be organised to challenge and transform the technocratic learning approaches dominant in forestry sector. The case of *Chhatis Mauja* represent a situation in which both instrumental and intrinsic views of learning are in constant interface contributing to the stability and resilience of the entire social system. Action learning process in four CFUGs demonstrates a situation in which a group of intellectuals and activists with critical developmentalist outlook promoted transformative processes of learning – among themselves and the local villagers. NACRMLP appears to have provided an interface between local communities and national forest bureaucracy to better link policy and practices. While the project operates largely within the technical-instrumental domain, it has to a great extent contributed to transforming perceptions of forest bureaucrats (in social sense of learning). This analysis has suggested for the need of policy direction towards genuinely participatory and deliberative social change.

***Pragmatic and theoretical orientations:***

Social agents vary greatly in their understanding and appreciation of theory and practice as elements of learning. The perception of dualism of theory versus practice has undermined the potential of transformative learning. Technical experts have been found to have been guided more by theoretical frames, and they hardly appreciate the social dimensions of learning (as in the case of agricultural scientists and foresters in the cases of NARC and forest inventory and NACRMLP). On the contrary, local resource users are more guided by practical logics of actions (as in the case of CFUGs, Lomanthang, and *Chhatis Mauja).* Critical actors have emphasized generative dialogues between theory and practice for learning and change (as in the case of CFUGs with the support from civil society activists). While doing this research, we also experienced some degree of closure due to the boundaries of professions and conceptual frames. The case of FECOFUN demonstrates that local social practices need to be concurrently linked to global discourses (such as decentralisation and rights of local people in natural resources). This

analysis leads to a policy direction of enhancing generative dialogue between local social actions and outside knowledge.

***Learning related inequality:***

Our case studies demonstrate a complex dynamics of consequences of learning related inequalities. Foresters and forest users have to work in the same field, with different levels of opportunity to ideas, information and learning (the cases of inventory and CFUGs). Inequality in knowledge and more importantly the perception of hierarchy because of endowment of knowledge is a barrier to democratic learning processes. At the community level, high-class people have wide external networks, and more time to engage in discursive activities, whereas the poor and marginalized groups have to operate within limited opportunity for learning, reflection and access to outside information (as in the case of Lomanthang). Knowledge of agricultural scientists and local farmers are given differential weights. In Irrigation such as *Chhatis Mauja*, they way rich land owning farmers learn or seek to learn (such as construction of big canals, use of technical equipments) is different from small land holders, and those who are at the tail end of the canal system. The latter may as part of their strategy of resistance to the dominant practices explore and learn how they can violate rules of water use in the night or at times during which others find it difficult to watch. Even within the civil forum like FECOFUN, leaders at central level have substantially greater access to outside information and diverse learning networks which is likely to widen inequality between the central leaders and local user groups unless a full fledged internal democracy is ensured. This indicates a need for policy direction that allows spaces for civil society activists and marginalised groups to forge critical knowledge links.

***Discourse and deliberation:***

A range of interesting narratives and counter narratives are identifiable which nurture local level practices and learning systems. NARC and inventory cases demonstrate tensions between participatory and technical knowledge systems in the wider discourse of development. The case of FECOFUN demonstrates initiatives of civil groups to challenge technocratic approaches to natural resource management and promote deliberative policy-making and governance practices. FECOFUN has drawn from global discourses of democracy, participatory development and human rights. The discourse of Himalayan degradation prompted formulation of forest acts, which recognized local rights over forest resources, leading eventually to the formation of FECOFUN. This is how discourses and practices are related. But the views and opinions of local users and marginalized groups are in difficult position to project their views in wider discursive processes, which shape policies. Again the role of networks such as FECOFUN can bridge this gap. Such networking initiatives are also emerging in agricultural and irrigation sectors but not so effectively and widely as FECOFUN.

Social agents are differentiated into diverse domains of knowledge, and learning across such domains is limited. There are instances where technical experts (such as some foresters and agricultural scientists within ForestAction, NAARC and Department of Forests) have engaged in challenging the disciplinary presuppositions and are coming out to more deliberative processes and praxis. Such initiatives of agency are not necessarily determined by structural factors but in large part triggered by discursive coalitions across institutional boundaries. This analysis leads to the policy frameworks that provide spaces

for critical reflection of dominant paradigm and discourses and allow social agents in engaging political dialogues across institutions, groups and stakeholders.

## 2.2 Policy implications

Based on the findings and discussions, the following policy recommendations are made:

- *Recognise inclusive and deliberative processes of policy making and institutional change*
  Our case studies show that the policy and practices based on the framework of **liberal democracy** appeared to be insufficient to promote the diverse forms of knowledge. Knowledge and power of both the scientists (experts) and people's representatives did not seem to be appropriate mechanism for inclusion, deliberation and institutional change. The meaning, knowledge and perspectives of the people are often ignored. For example, the inventory policy process of 2000 was completely guided by the instrumental (expert) knowledge that ignored the people's perspectives. An environment needs to be created for genuine participation of the people in learning process that facilitates a process of deliberation among social agents with diverse perspectives and knowledge system on equal footing.
- *Bring policy processes into public domains*
  Bringing issue of policy process into public domain beyond the bureaucrats and political representatives will allow ample spaces to widen and deepen the civil actions in democratising knowledge and power relationships. Such type of horizontal dialogue of knowledge leads to appropriate policy. In the case of CFUGs studied, the policy dialogue in public spheres (small hamlet level to village level) changed the knowledge and power nexus by lowering down the rich and lifting up the poor and marginalized in the decision making process. Similarly, in the case of Bara forest privatisation (see the case of FECOFUN for detail), FECOFUN brought the issues into public sphere that led to the withdrawal of the multinational company from the timber business by way of generating public pressures.
- *Decentralize learning*
  Since current practices of learning are centralized and there is limited recognition of learning coming from grassroots, knowledge generating research practices should be decentralized and devolved to the local level in order to concede that authentic knowledge can also be generated from the grassroots. For example, NARC should not only learn (conduct research) itself, but should also facilitate learning system of others by creating a conducive multi-site learning environment. Facilitating the learning of local actors in a dynamic context could be an important role of national institutions. Recognition of public knowledge and mechanisms for consolidating local and national perspectives (channel for synthesizing diverse knowledge perspectives) would enhance deliberative governance.
- *Promote and recognize civil networks for learning*
  Organizing groups at grassroots level did not appear to be effective in changing the policy and institutional framework unless they were linked in discursive politics at different layers of institutions (local, sub national, national). Therefore, polices and practices should recognize civil networks and provide unconstrained environment for civil actions, as well as for strengthening and institutionalizing of civil forums and to promote inclusive governance. Since constructing knowledge requires engagement in action, reflection, networking and sharing, agencies that have access to time and resources to such process are in a better position to learn.

- *Allow spaces for experimental innovations and promotions*
  The learning/knowledge component is related to how various groups, who use, depend, or otherwise have some interests towards some natural resources, make their way into an uncertain and complex environment, by engaging themselves through a process of learning. Space for practical innovations on approaches and methodologies should be provided as regards how diverse knowledge perspectives can be integrated for transformative social change. A greater recognition should be provided to the cases of failures in order to innovate new policies and institutions. The case of action learning in CFUGs in our study showed that the users have innovated the inclusive institutional processes after providing spaces to them. External agents should recognize and promote the innovations coming from the culturally devised strategies that are working in difficult environment with critical resources for livelihoods.
- *Create multi-stakeholder forums, cross institutional alliances and collaborative action to promote knowledge interface and transformative learning*
  The informal processes and dialogues outside of the formal institutional framework often contribute for policy change. Such policy influence can be made through multi stakeholder forums and cross-institutional alliances that provide spaces to engage stakeholders in a dialogue, planning and reforming social agendas. For example, the inventory policy process in 2004 appeared to be more participatory than in 2000. This shift was possible because of informal alliances and multi-stakeholders' forum that were organized several times between FECOFUN, NGOs and the individuals working in the Department of Forests.
- *Promote holistic reflection of practices* Often the technical rationality comes from fragmented views without analyzing and reflecting other related elements of policy. For example, the inventory policy was enacted without considering the capacity of the Department of Forests (human resources) to provide services, cost requirements and its implication to local knowledge. Therefore, holistic reflection of practices needs to be promoted to facilitate learning at various levels.

## 2.3 Conclusions

Based on the analysis of seven case studies, we have come to a few insightful conclusions. First, in every human institution knowledge and power are inextricably linked factors, and treatment of knowledge in isolation gives an incomplete view of learning and innovation system. Power is grounded in diverse dimensions of social class – such as caste, economic assets, symbolic capitals (such as social status), gender and ethnicity to varying degrees. Several of the reported tensions in knowledge domains – such as technical versus social, theoretical versus practical, formally organised versus socio-culturally embedded – are actually created by inherent power relations among the social agents and institutions with internalised structures of cognition and motivation. The case of community forestry inventory at national level indicates how two broadly defined groups – state forest officials and local communities – are in tension over claiming legitimacy of two contrasting systems of knowledge – local/indigenous and technical/instrumental – in the management of community forests. However, the alliance between local elites and state officials around the same domain of knowledge – scientific forestry in determining the nature and quantity of forest harvest – leads us to conclude that the divide between "indigenous" and "scientific" knowledge may not exist as sharply distinct as is usually believed, but is very much mediated by local power relations.

Second, relatedly, the inherent diversity and differentiation among social agents means that dominant groups are structurally in better position to create more holistic and legitimate claims of knowledge through more effective allocation of efforts for action and reflection. This is one of the reasons why within forest user groups, local elites have been able to justify and argue collective decisions in their favour even when the policies and institutions mandate participatory decision-making processes. This raises challenges on, given the complex nature of social hierarchy, how democratic deliberation is possible within civil society, and between civil society and the state, without which it is difficult to achieve equitable governance of natural resources.

Third, we analysed a recent action and learning initiative in four forest user groups and found out that critical and self-reflexive engagements of the marginalized groups, with some inputs from civil society activists, can allow them to challenge dominant discourses and narratives, and thus marshal power-knowledge nexus to influence institutional decisions. This finding has challenged our own initial assumption that institutional frameworks and policies are pre-conditions for development of effective and transformative knowledge systems; we now see tremendous scope of manoeuvre within the existing institutions if social agents start to engage in critical self reflection. This is, however, again related to how the macro policy and institutional environment encourages the development of civil society activism at the grassroots level have a potential for such change.

Fourth, the role of civil society to challenge over scientization of political and social issues is also demonstrated by the case of federation of forest users. Though internal learning system is not free from hierarchical influences, the federation as a civil society has been able to challenge expansion of overly instrumental posture of forest officials in resolving the issues of roles, rights and responsibilities over forests management. This indicates that how the deliberation and political/public spheres expand the spaces for creating knowledge and shifting power relationships.

Fifth, a common observation through almost all the cases is that learning is more incremental and less transformative. This means that both individuals and institutions hardly explore their basic assumptions, "mental models" or "doxa" that guide perceptions and methods of knowing. Discursive knowledge is thus inscribed within a more encompassing cognitive structure, which is hardly challenged, unless there is a serious crisis or break. This is supported by our observation at micro level groups (water users changing norms due to demographic compositions). This observation also resonates in the lack of any significant shift in strategy of developmental actions on the part of a development agency – in this case, the Australia government funded bilateral forestry project, which was renewed for several times over a period of 30 years, which adopted similar approach to implementing community forestry, without any visible transformative shifts in learning. However, this has contributed to facilitate an interface between local communities and national forest bureaucracy to better link policy and practices.

## References

**Bista D. B**. 1991. *Fatalism and Development: Nepal's Struggle for Modernization*. Calcutta, Orient Longman.

**Bohman, J. Ed.** 1997. *Deliberative Democracy: Essays on Reason and Politics*. Massachusetts and London, The MIT Press.

**Babbie, E. R.** 1979. *The Practice of Social Research, 2nd ed*. California: Wadsworth Publishing Company Inc.

**Chambers, R.** 1997. *Whose Reality Counts? Putting the First Last*. London: Intermediate Technology Publication.

**Bourdieu, P.** 1977. *Outline of a theory of practice*. Cambridge, Cambridge University Press.

**Bourdieu, P.** 1984. *Distinction: a social critique of the judgement of taste*. Cambridge, MA, Harvard University Press.

**Bourdieu, P.** 1990. *In other words: essays towards reflexive sociology*. Cambridge, Polity Press in association with Blackwell.

**Bourdieu, P.** 1998. *Practical reason: on the theory of action*. Cambridge, Polity.

**Brown, J. S. and Duguid, P.** 1991. Organizational learning and communities of practice: toward a unified view of working, learning and innovation. *Organization Science* 2(1): 40-57.

**Cangelosi, V. E. and Dill, W. R.** 1965. organizational learning: observations toward a theory. *Administrative science quarterly* 10(2): 175-203.

**Chhetri, R. B**. 1999. The Rhetoric and Realities of People's Participation in Conservation and Development in Nepal. Chhetri, R. B.and Gurrung, O. P. *Anthropology and Sociology of Nepal - Cultures, Scieties, Ecology and Development.*. Kathmandu, SASON**:** 192-211.

**Chhetri, R. B. and Pandey, T. R.** 1992. User Group forestry in the Far-western Region of Nepal: Case studies form Baitadi and Accham districts. Kathmandu, ICIMOD.

**Crossley, N.** 2003. From Reproduction to Transformation: Social Movement Fields and the Radical Habitus. *Theory, Culture & Society* 20(6): 43-68(26).

**Cyert, R. M. and March, J. G.** 1963. *A behavioural theory of the firm.* Englewood Cliff, NJ, Prentice-Hall.

**Dewey, J.** (1916/1966). Democracy and education: an introduction to the philosophy of education. New York, The Free Press.

**Dewey, J.** 1933/1986. *How we think: a restatement of the relation of reflective thinking to the educative process*. Boston, D C Heath and Company.

**Dewey, J. and Bentley, A. F.** 1949. *Knowing and the Known*. Westport, Connecticut, Greenwood Press.

**Dryzek, J. S.** 2000. *Deliberative Democracy and Beyond: Liberals, Critics,* Contestations. Oxford, Oxford Unversity Press.

**Hamel, J., Dufour, S. and Fortin, D.** 1993. *Case Study Methods*. London: Sage Publications.

**Easterby-Smith, M. and Lyles, M.** 2003. Introduction: watersheds of organizational learning and knowledge management. *The Blackwell handbook of organizational learning and knowledge management*. M. a. L. Easterby-Smith, Marjorie. London, The Blackwell Publishing Ltd.

**Easterby-Smith and Marjorie, M. A. L.** 2003. Organizational learning and knowledge management: agendas for future research. Easterby-Smith and Marjorie, M. A. L. *The Blackwell handbook of organizational learning and knowledge management*.. London, The Blackwell Publishing Ltd**:** 639-652.

**Fals-Borda, O. and Rahman, M. A.** 1991. *Action and Knowledge: Breaking the Monopoly with Participatory Action-Research*. London, Intermediate Technology Publications, The Apex Press.

**Fisher, F.** 1990. *Technocrcacy and the Politics of Expertise.* Newbury Park, CA, Sage.

**Fisher, R. J.** 1989. Indegenous Systems of Common Property Forest Management in Nepal. Honolulu, Environment and Policy Institute.

**Forester, J.** 1999. *The Deliberative Pratitioner: Encouraging Participatory Planning Processes.* Cambridge, Massachusetts and London, The MIT Press.

**Foucault, M.** 1972. *The archaelogy of knowledge*.

**Fontana, A. and Frey, J. H.** 1994. Interviewing the Art of Science. In: K. D. Norman and S. L. Yvonna (eds) *Handbook of Qualitative Research***.** London: Sage Publications

**Flick, U.** 1998. *An Introduction to Qualitative Research***.** London: Sage Publications.

**Garrat, B.** 2000. *The learning organization: developing democracy at work*. London, Profile Books.

**Giddens, A.** 1984. *The Constitution of Society: Outline of the Theory of Structuration.* Cambridge and Oxford, Polity press.

**Habermas, J.** 1971. *Knowledge and Human Instersts*. Boston, Beacon Press.

**Habermas, J.** 1987. *The theory of communicative action: lifeworld and system - a critique of functionalist reason.* Polity Press.

**Hayward, C. R.** 2004. Doxa and deliberation. *Critical Review of International Social and Political Philosophy* **7**(1): 1-24.

**Hedrick, T. E., Bickman, L. and Rog, D. J.** 1993. *Applied Research Design: A Practical Guide*. London: Sage Publication.

**Kalland, A.** 2000. Indigenous Knowledge: Prospects and Limitations. In R. Ellen, P. Parkes and A. Bicker (eds) *Indigenous Environmental Knowledge and its Transformations: Critical Anthropological Perspectives*. Harwood Academic Publishers. 319-335.

**Lave, J.** 1988. *Cognition in practice: mind, mathematics and culture in everyday life.* Cambridge, Cambridge University Press.

**Lee, K. N.** 1993. *Compass and Gyroscope: Integrating Science and Politics for the Environment.* Washington DC., Island Press.

**Lee, K. N.** 1999. Appraising Adaptive Management.: 3 (2). *Conservation ecology* 3(3).

**Lyotard, J. F.** 1993. *Political writings*. London, University College London Press.

**Maarleveld** and Constant' **M. A. D.** 1999. Managing natural resources: A social learning perspective. *Agriculture and Human Values* 16: 267–280.

**Malhotra, Y. and. Galletta, D. F.** 2003. *Role of Committment and Motivation in Knowledge Management Systems Implementation: Theory, Concpetualization and Measurement of Antecedent Success.* Proceedings of the 36th Hawaii International Conference on Systems Sciences.

**May, T.** 1997. *Social Research: Issues, Methods and Process, 2nd ed*. Buckingham: Open University Press.

**Moore, H.L.** 1996. The Changing Nature of Anthropological Knowledge: An Introduction. In H. L. Moore (ed) *The Future of Anthropological Knowledge.* London and New York: Routledge. 1-15.

**Nachmias, C. F. and Nachmias, D.** 1996. *Research Methods in the Social Sciences, 5th ed*. London: Arnold.

**Ritzer, G.** 2004. *Sociological theory*. New York and London, McGraw Hill.

**Röling, N.** 2002. Beyond The Aggregation Of Individual Preferences: Moving From Multiple To Distributed Cognition In Resource Dilemmas. Leeuwis, C. and . Assen P. R *Wheelbarrows full of frogs. Social learning in rural resource management*., The Netherlands, Koninklijke Van Gorcum.

**Scott, J.** 1998. *Seeing Like a State: How Certain Schemes to Improve Human Condition Have Failed*. New Haven and London, Yale Univeristy Press.

**Senge, P. M.** 1990. *The fifth discipline: the art and practice of the learning organization*. London, Century Business.

**Sillitoe, P.** 1998. The Development of Indigenous Knoldge - A New Applied Anthropology. *Current Anthropology* 39(2): 223-252.

**Patton, M. Q.** 1990. *Qualitative Evaluation and Research Methods, 2nd ed.* London: Sage Publications.

**Taylor, E. W.** 1998. *The Theory and Practice of Transformative Learning - A Critical Review.* Columbus, Ohio, The Ohio State University.

**Wacquant, L**. 2004. Critical Thought as Solvent of Doxa. *Constelletions* 11(1): 97-101.

**Warren, D. M., Slikkerveer, L. and Brokensha, D. (eds)** 1995. *The Cultural Dimension of Development: Indigenous Knowledge Systems*. London: Intermediate Technology Publications.

**Yin, K. R.** 1994. *Case Study Research: Design and Methods, 2nd ed.* London: Sage Publications