

Forest use and management in the wider Himalayan context

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***Forest Use and Management in the
Wider Himalayan Context
Selected Papers***

Klaus Seeland and Franz Schmithüsen

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TABLE OF CONTENTS

THE MEANING OF INDIGENOUS KNOWLEDGE IN THE USE AND MANAGEMENT OF RENEWABLE NATURAL RESOURCES	1
Klaus Seeland and Franz Schmithüsen	
THE SOCIO-CULTURAL AND POLITICAL CONTEXT OF SUSTAINABLE FORESTRY PRACTICES	10
Franz Schmithüsen	
WHAT IS INDIGENOUS KNOWLEDGE AND WHY DOES IT MATTER TODAY ?	27
Klaus Seeland	

THE MEANING OF INDIGENOUS KNOWLEDGE IN THE USE AND MANAGEMENT OF RENEWABLE NATURAL RESOURCES

EXAMPLES FROM APPLIED RESEARCH IN INDIA

Klaus Seeland and Franz Schmithüsen

FOREST, CULTURE AND DEVELOPMENT

Whenever man, in the wake of developing civilisation, was concerned with the management of renewable natural resources, forests definitely played a vital role in this process (Harrison 1992). Nowadays, the economically developed world as well as some of the underdeveloped economies still depend on their own and the world's forests for their survival, yet in different ways and meanings (Seeland 1997). Conservation and sustainable management have become central issues for almost all societies in order to meet either shortages in timber or non-timber-forest-produce supply or to face the challenges of environmental pollution. Economic development in times of increasing environmental hazards tends to create a dilemma in many societies which are bound to grow despite the often narrow limitations of a declining resource base.

Both economic growth, scarcity of resources and reckless pollution demand a well balanced socio-cultural concept to overcome the inherent dilemma in these three dimensions of development. Where economic and political measures fail or partly withdraw in a process of deregulation, socio-cultural traditions such as indigenous knowledge of resource use and management have inevitably to fill the gap (Warren/Slikkerveer/Brokensha 1995). Political self-reliance has, first of all, to be based on a responsible and sustainable management of renewable natural resources. Only then, a solid social development based on equity and a rationale of co-operation, as far as the use and management of renewable natural resources are concerned, will be possible (Woodley 1991).

Indigenous knowledge of forests and natural resources has been the subject of research for more than two decades now. The obtained results are encouraging, yet not always satisfactory regarding the problems of their implementation into practical development work. One possible reason for this is the fact that indigenous

knowledge is more a life-style than merely a set of traditional skills and know-how which may easily be transferred to other socio-cultural settings. However, the appeal of local and indigenous knowledge is not its transfer or operationalisation, but its local value as a means of cultural persistence and continuity (Wiersum 1997). Self-esteem and the empowerment of local socio-economic and political structures will ultimately decide upon the civilisational value indigenous or local knowledge has in a phase of rapid globalisation. It is particularly valuable wherever social development on the basis of cultural identity is desirable or favoured. Political structures and hierarchies of power, connected with social imbalances and privileges of the knowledgeable and traditional elites may also coincide with local and indigenous knowledge and traditional technologies. This political ambiguity of traditional knowledge structures, however, and their manifestation in material culture and social stratification is part and parcel of their socio-political impact and its inherent dynamics.

As with any other society which has been carried away by the development process of modernisation and the social changes resulting from it, the tribal population of India had to look for options and possibilities to survive in an emerging nation state with all its problems of demands for resource use equity, a balanced growth and resource supply for all sections of the society. The tribal-non-tribal-interface characterises rural life in so many remote areas of India today. Paternalism from the side of the Hindu mainstream society, conflict and a rapid change in authentic tribal lifestyle dominate the Hindu-tribal relationship, yet there are many social activists who selflessly achieve a lot of improvements for these marginalised forest dwellers, where governmental aid-programmes such as, among many others, the so-called micro plans, failed (Fernandes/Menon/Viegas 1988).

CROSS-CULTURAL RESEARCH COOPERATION

In 1991, a research co-operation was established between the Chair of Forest Policy and Forest Economics at the Swiss Federal Institute of Technology and Indian NGOs. In a joint research project called "Indigenous Knowledge, Environmental Perception and Traditional Management Systems of Forest Dwelling Tribes and Non-Tribal Village Communities in Selected Regions of Orissa / India" that was conducted from 1992-1995 cross-cultural and interdisciplinary investigations tried to get access to the tribal forest world of Orissa. This project produced a vast amount of data covering a broad scope of the use and management of trees and forests which were

presented at an international seminar held in New Delhi at Max Mueller Bhavan in March 1995. One of its significant positive results was the decision to embark on a follow-up and establish a research network in which trees, forests and forest management in the wider Himalayan context are investigated and research partners from India, Nepal and Bhutan are included.

One of our partners, with whom we co-operated from the very beginning was the Council of Cultural Growth and Cultural Relations in Cuttack, Orissa and in particular its general Secretary, Mr. G. Bh. Patnaik was the initiator and facilitator of so many valuable contacts at every level. Research, we dare say, would not have been possible without his enthusiastic engagement he showed particularly in the take-off phase of the project (1991-1993). His wife, Prof. Dr. (Mrs.) K. K. Patnaik, Dr. H.C. Das and later on Dr. J. Dash were advisors and guides to the research scholars Dr. M. K. Jena, Ms. P. Pathi, S. Behera, Dr. Savyasachi and Ms. A. Mishra, who worked for the project from a period of some months up to seven years. Other partners were A. S. Mehta, Secretary of Seva Mandir, a NGO located in Udaipur and L.P. Bharara, principal scientist (now retd.), from the Central Arid Zone Research Institute, Jodhpur, Rajasthan, who either conducted research on their own or integrated indigenous knowledge into their practical development work. In the second phase Dr. N. Patnaik, Director of the Social Science and Development Institute in Bhubaneswar, Orissa, joined the project. For the international seminar he was already invited as an expert on tribal affairs. All of them inspired the discussions in the research network and thus contributed to the success of the project despite so many difficulties and obstacles that made fieldwork sometimes tiresome.

The main objective of the second phase of this project network (1996-1999) is to investigate indigenous knowledge of trees and forests among various forest dwelling tribes as a mode of appropriation of nature in a wider Himalayan perspective. In this phase SAGUN, a Nepalese NGO that has been working on indigenous knowledge and forest related matters already with other partners, and government officials from Bhutan who do research on forest and development policy have joined the research network. In all empirical studies which have been conducted within the network, an emphasis is laid on local, regional and national natural resource policies. As a cross-cultural cooperation, scientific knowledge and development practice at the local level were to be seen as interlinked and theoretical and methodological support for the local researchers were provided by the Chair of Forest Policy and Forest Economics at the Swiss Federal Institute of Technology in Zurich, Switzerland. The German Ministry for Economic Cooperation has been financing the major part of the project through the German Technical Cooperation (GTZ) within the scope of promoting its programme of tropical forest research, now merged with the Ecological Flanking

Programme for the Tropics (Toeb). In this interface the research project is to promote local, regional and international cooperation and exchange among researchers, an extended web of partner-NGOs and university institutions with environmental and socio-cultural concern in the wider Himalayan region.

OVERVIEW OF RESEARCH FINDINGS

The contributions to the reader are a collection of research findings, accounts of experience and empirical evidence in the fields of forest management, social anthropology, ethno-botany, economy, forest policy and cultural history. Except four contributions, all of them were read and discussed at the international seminar "Indigenous Knowledge On Forests" in New Delhi in 1995. The original contributions to the seminar have already been published in 1997 in the series "Forstwissenschaftliche Beiträge, No. 19 of the Chair of Forest Policy and Forest Economics, Eidgenössische Technische Hochschule Zürich" in Switzerland. The supplementary papers add more and valuable findings, insights and information to the existing corpus of papers from the seminar. Other contributions, mostly shorter ones, partly being policy statements or specialised accounts which transcended the scope of the general topics raised, have been omitted. Together, all contributions reflect the state of the art within a range of selected scientific disciplines which inspire the policy dialogue taking into account the ascribed benefits, as well as the limitations, of indigenous knowledge in general, and with regard to forest management by local tribal people in particular.

It is the objective of this selection of papers to show the potentials as well as the socio-cultural and political obstacles to protect and manage the forests of the Indian subcontinent in a sustainable way. Traditional modes of production and conservation are considered as relevant for future cultural and economic development, and this point of view is reflected in most of the papers. The general aim of indigenous knowledge as a scientific topic is the search for appropriate means to meet the challenges and deficiencies of modernity, i.e. the rising number of poor people living in precarious environments with very limited prospects for self sufficiency in food production or the sustainable management of their local resources.

F. Schmithüsen highlights the socio-cultural legacy and the political development, importance and meaning of indigenous knowledge research for sustainable forestry

practices. Thus he gives the framework in which the regional examples covering North (Himachal Pradesh, Arunachal Pradesh, Uttar Pradesh), West (Rajasthan), East (Orissa), South (Karnataka) and Central India (Madhya Pradesh), emphasising the social meaning of forests as a cultural legacy. K. Seeland's contribution gives a theoretical introduction into various aspects of indigenous knowledge, hints to the historical development of its background and draws a sketch of its practical relevance for development co-operation. S. Brodt's is the first contribution of a regional case study. In her example located near the city of Bhopal in Madhya Pradesh she describes the nexus between modern, i.e. global and scientific knowledge and local techniques in agriculture and tree cultivation. She shows that social status, caste, prestige, economic wealth, education, structures of communication and age matter most in the application of knowledge and innovation of new cultivation practices. The complexity of local knowledge and differences of access to global technical know-how has, until now, led to a preservation, or at least to forms of coexistence between indigenous and other systems of knowledge. Nityananda Patnaik gives an account of the broad eco-diversity of the forest world of Orissa and its reflections in the tribal people's lifestyle. He stresses the view that there is a symbiosis of forest dwelling tribes and their surroundings and every fabric of their social and cultural life seems to be interwoven with so many aspects of the forest environment. Indigenous knowledge of land resource conservation in Rajasthan and its relation to the local people's perception is the focus of L. P. Bharara's contribution. Soil conservation, traditional methods of water harvesting and other ways and means to adjust to the hazards of drought and a poor and fragile environment characterise the livelihood pattern of the desert dwellers in the semi-arid and arid zones of Rajasthan. In his view, the scarce resource base for survival in desert areas has ever since been endangered and has recently come even more under pressure due to the rising number of livestock and human population. It seems that neither the state nor co-operation from outside can help to solve the problem; the most appropriate and sustainable way is to enhance self-reliance by using indigenous knowledge to strengthen the local adjustment capacities to scarcity and environmental hazards. R. Pant shows in her paper on forest resources management in the two traditional mountain communities of the Apatani and Nishi tribe in the North-Eastern Himalayas of Arunachal Pradesh that conflicts over resource use and their resolution was and still is to a large extent most efficiently tackled by local institutions. The functioning of

some institutions relevant for resource management is described and several case studies show how successful they are as compared to the respective administrative services of the state. The contribution raises the question of how appropriate formal legislation in general and forest legislation in particular is to solve conflicts in a tribal-non-tribal social and administrative interface. The Central Himalaya with examples of traditional modes of forest and tree management on the basis of indigenous knowledge is the topic treated by N. P. Melkania. They have been developed by the farmers over time and are adjusted to specific ecological and ethno-economic conditions. In the author's view, development of forest management strategies and plantation projects in the region must proceed from local strategies and reinforce indigenous knowledge rather than trying to impose new and often alien ideas on the farmers. Suggestions for sustainable management of tree-based natural resource management are outlined for the Central Himalayan region of Uttar Pradesh and the Himalayan ecosystem as a whole. The local meaning of traditional herbal medicine as an example of indigenous knowledge in the Sainj valley of the Western Himalayas is investigated by S. Vasan. In several spheres of occupation such as transhumance, the management of a sacred grove, or collecting herbs and medicinal plants, she shows adaptations to the conditions and requirements of emerging modern demands and markets in this remote part of Himachal Pradesh. These changes have mostly resulted in a revitalisation, re-valuation of indigenous knowledge and an increasing involvement and participation of local communities. The contribution of H. C. Das is an inquiry into the religious history and art with particular reference to some selected plant and tree species. It provides an introspection into the relationship of man and forest in ethno-historical perspective. From prehistoric times certain plants and trees have been deified and they still continue to play a vital role in Hindu religion and Indian civilisation in general. The salient features of tribal economy in five selected villages of Raisen District of Madhya Pradesh are analysed by S. Kant. It can be learned from this interesting analysis that the contribution of certain forest products to the household income, the seasonal importance of forest produce and the rates of return on labour enhance the capacity of tribal forest dwellers to survive in a marginal forest environment. By making use of forest produce they are in a position to compensate income inequalities due to seasonal imbalances of agricultural yields and social inequalities. In this way, forest products contribute to improved food security in years of calamities and mitigate uncertainties in the income structure. A

comparison of three tribal communities of Orissa, the Hill Kharia, Kuttia Kondh and Saora, investigating their indigenous ideas of protection of plant species on religious grounds is presented by M. K. Jena. This paper shows how the sacred world view of these tribal groups plays a role in the preservation and conservation of forests. Sacred complexes in forests matter for all of these communities as far as mythical, economic and ecological aspects and their role for the preservation of biodiversity are concerned. S. Behera provides the reader with a very complex and enlightening account of how the Saora tribal community of Orissa perceives resources in the material, social and spiritual dimension of their life-world. The most intriguing aspect of this contribution is that there are social resources being part of the natural resources. Social resources are meant to enhance the social cohesion, the equity among fellow villagers and the co-operation and solidarity among the members of the tribal community. It can be characterised as the process of societal appropriation of natural resources. They are classified according to their logic of being linked to each other, to the extent they matter in the institutional set-up of the community and their contribution to the livelihood system. An account of the holistic view of the Saora cosmology and its symbolic representation in art is given in P. Pathi's contribution. The Saora world is run by spiritual powers which act at several levels and their environmental perception can only be understood with regard to the interaction of these different layers of spiritual and material reality. Their iconography is a key to decipher their complex and manifold cosmology and can be taken as a prerequisite to obtain access to their indigenous environmental knowledge. The role of plants in the folk medicines of the Kuttia Kondh and Saora of Orissa is investigated in the paper of K.K. Patnaik. This very instructive article shows a lot of interesting applications of plants as remedies for various purposes. It is the result of intensive field research aiming to preserve indigenous medicinal knowledge which is endangered due to the spreading of modern medical services. This contribution is a pragmatic approach to reflect local indigenous knowledge in a more practical than a science-oriented way. The last paper by J. Brouwer examines South Indian artisans' views on their principal raw materials from the vantage point of the craftsman's perception. Indigenous knowledge is investigated in the context of society and culture of the Visvakarma caste of Karnataka. Although South Indian artisans consider their fauna and flora as separate from the self and society, their perceptions of their

working materials wood and stone show a close interrelationship between social, religious, ecological and technological domains (Brouwer 1995).

Indigenous knowledge in a modern world under conditions of economic underdevelopment and precarious environments has to face criticism from inside and outside developing societies. The political implications of favouring local, decentralised socio-political structures raise suspicion at the central government level. Local empowerment and decentralisation is often claimed to strengthen the establishment of democratic decision making processes and indigenous knowledge could help local structures to attain self-reliance in economic and thus to a certain extent in political matters as well. Encouraging to revitalise indigenous knowledge in the context of development is ambivalent as it is always an intervention into a living social organism. International development or conservation agencies tend to apply their theoretical concepts and political programmes at the national, regional or local project level and in this process often transgress their cultural and political limitations, even if they are claimed to be on the global agenda. Whenever sections of rural societies choose to revalidate their indigenous knowledge it is a local political decision, but in its implications it is a global approach, initiated from outside and to be seen in a larger context of international and cross-cultural environmental policy. Indigenous knowledge as a social development concept is an option which can make sense and can be appropriate under certain conditions at a particular stage of crisis within the larger framework of the development of civilisation based on equity, sustainability and self-determination.

Some of the contributions to this book may reflect these aspects more or less explicitly, others may be more detail-oriented and convinced that indigenous knowledge is beyond any doubt the solution to many social and environmental problems. Being the editors of this volume, we are tempted to say that the overall value of these contributions first of all is that they provide the reader with empirical research findings from a regional entity, the Indian subcontinent and thus inspire the general discussion on indigenous knowledge at a culturally distinct and very practical level.

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THE SOCIO-CULTURAL AND POLITICAL CONTEXT OF SUSTAINABLE FORESTRY PRACTICES¹

Franz Schmithüsen

SUSTAINABLE FORESTRY PRACTICES AS SOCIO-CULTURAL PHENOMENA

Forests show great variety, represent an abundance of life, contain many possibilities for living beings and provide habitat for many forms of plants and animals. Abundance, growth and continuity are prominent features in man's perception of a forest. There are several definitions of forests and forest lands due to different assessment and inventory techniques. The most consistent data, especially for time comparisons, are those of the Food and Agriculture Organisation, FAO. According to this source forests and woodlands cover slightly more than 30 per cent of the world land area. About half of the world's forest and woodlands is situated in the boreal and temperate zones, whereas the other half is in the tropics and subtropics.

Human activities influence forests although their impact is difficult to assess. Some of the changes are immediate and occur in the short term. Others, and often the more important ones, are indirect and are to be understood in historical dimensions. The spatial distribution of forests, and the degree of their transformation by man are the result of physical conditions and of varying cultural patterns. This applies to forests that have been intensively used over centuries, but also to forests which still appear to be in a natural state. They may have been spared from human intervention due to physical inaccessibility and economic considerations, or because they represent particular spiritual values of a society. The differences between intensively used forests and those showing little or no trace of human interference reflects social rules, economic options and political decisions. In this respect all forests, including those which we still consider as natural, are cultural phenomena.

Forests and woodlands are environments which societies interpret as local surroundings, develop as resources for commercial and industrial purposes and consider as a representation of nature. In such a perspective it is questionable whether one should continue to perceive forests as rural or urban in societies in which spaces form an entity and represent distinct but complementary potentialities.

¹ Based on a contribution published in "L'uomo e la Foresta"; Le Monnier, Firenze, 1996.

The varying importance of trees and forests in different cultures is the result of physical and material, socio-cultural and spiritual configurations. Physical and material conditions are the existence and potentiality of forests as a critical component of man's environment, the variety of plant and animal communities and the capacity of regeneration and self regulation. Pertinent socio-cultural considerations are present and anticipate human needs and values, prevailing and potential uses as related to the development of technology and life styles, entitlements to the access of resources and public regulations on sustainable management. Spiritual considerations as apparent in myths, religion and personal notions show the place of trees and forests in man's vision of his world and of himself.

The meaning of a forest is reflected in its cultural perception and societies have developed their notions of what forests mean to them over the ages (Harrison 1992). Whatever the forest represents for the members of one society, they certainly have a different relevance to what others see and understand in the dimensions of their own culture. The forests of today show how people have been, and still are dependent on them, and how they make use of and interpret their environment in terms of survival and social advancement. The transformation of forest vegetation that we observe, indicates specific social needs, cultural values, and changing economic and technological processes. Forests represent a legacy and they are a testimony of the evolution of societies and their respective perceptions of nature.

Public institutions, land management practices and the performance of a society in developing sustainable use patterns are evolutionary processes (Firey 1960). The analyses of such processes reveal the reasons for protection and management, but also the causes and rationales for the disappearance of forest vegetation as well as for the creation of new forests. Historical developments show changes in the importance of forests in different societies, varying perceptions of forests as cultural phenomena and evolving social attitudes in dealing with perceived problems and opportunities. From a political perspective, fundamental issues which have been important during the course of time and which are relevant today are appropriation patterns, tenurial systems and changes in land use. Institutional solutions have been established in order to find a socially acceptable balance between conflicting private and collective demands, between local and national resource appropriation, and

between benefits accruing to different user groups and their responsibility in protecting forests (FAO 1994).

Forests mean different things to different people. If one would individually ask people what aspects of forests are important to them, which is rarely done, we would get answers reflecting contradictory interests and convictions. The inhabitants of large cities would perhaps stress the importance of forests for leisure and recreation, people in mountainous areas might value them for protection and as an attraction to tourists, and farmers might refer to the income generated from forestry activities. Some people would stress the uniqueness and beauty of forests and the need to preserve them, and others would insist on economic benefits and employment opportunities which result from their use. Evolving attitudes and perceptions, changing opportunities and specific user groups determine the political importance of forests. To local communities they represent opportunities of many uses and values. At the national level, commercial wood production and the development of a forest industry sector are important. In a wider perspective they are perceived as environment and wilderness.

FORESTS AS LOCAL SURROUNDINGS

The meaning of forests as local surroundings reflects many different situations (Gregersen et al. 1989). Communities may actually live in forest environments which provide a livelihood and represent an element of their cultural identity. In agrarian and pastoral societies, forests are part of a continuum of complementary and often interchangeable uses. The management of local resources is largely based on rotational systems with alternating phases of agriculture and forest re-growth on the same patch of land or on combined agroforestry and silvipastoral practices. Within the various production systems, trees and different stages of forests are dynamic elements of a common and continuously changing resource potential.

For people in societies with traditional land management systems, the answer to the question what forests are and where they begin and end may be difficult. They would wonder whether this is a meaningful distinction. Is the area covered with trees, in which their animals graze, a forest, a pasture, perhaps both or perhaps something quite different? Does it make sense to separate trees and fields if cultivation is done for a few years only, and forest vegetation will come back in order to be cleared again for subsequent cropping? Are forests and fields not part of the same local

space which is used at different times in different ways? After some reflection they may tell us it is more important to distinguish the space formed by the village and its adjacent permanently cultivated land from the surroundings that serve different needs and have a distinct spiritual significance. And they may point out that forests as local surroundings may only be used in accordance with certain customs and with respect and consideration.

Trees and forests supply a large range of products used for food, medicines and daily needs, for fodder and local handicrafts, and they contribute to maintain soil fertility for an increased agricultural output. Wood is an important, but by no means the only component providing energy and material for local construction. The variety and importance of uses for local communities and in particular for the poor and disfavoured groups have long been underestimated (FAO 1989 c). By referring to forest products other than wood as secondary forest produce, they have been systematically undervalued and neglected. Studies undertaken at the local or regional level show that the economic weight of the non-wood forest products is sizeable and in some cases may be more important than the harvest of wood. The collection and processing of non-wood products provide considerable employment opportunities.

A widespread form of using forests is collective tenure of common property resources (McCay and Acheson 1987). It occurs in agricultural and pastoral societies in which forest and trees are important for the community to subsist and survive. Collective forest tenure does not mean an indiscriminate access to resources. It is based on elaborated tenurial arrangements carefully regulated by customs and rules. It provides different benefits to different groups of people, but even if restrictions for some groups are severe, they do not exclude any one completely from forest use. This is important in times of scarcity and natural disasters when trees and forests are one of the last resorts for subsistence to peasants and herders.

Collective tenure systems of common property resources have found an increasing attention both from an economic and from an institutional and social point of view. Within the political and economic context which they have developed, they offer a reasonable arrangement for resource management. A combination of restrictions and obligations protects trees and forests to varying degrees and allows for some form of continuing use. However, collective tenure is slow in adapting to change, and may

lose its regulatory force and provoke exploitative uses, if confronted with new forms of resource appropriation (Bromley and Cernea 1989). The appropriation of land through a process of acquiring private ownership rights as part of agricultural expansion, and the claim of forests as a domain of the state are major reasons for the discrimination of local uses, for the disappearance of collective tenure and for the clearing of forests.

In contemporary societies of a Western culture, there may be different opinions about what forests represent, but most people can agree on the difference between forested lands and lands without forests. Forests are perceived as a distinct element of the landscape with clearly demarcated borders and a defined range of uses. Their protection and the regulation of access are largely determined by considerations of economic utility. Forests are means of production for goods and services satisfying individual and collective needs, and their management can be optimised in relation to prevailing opportunities and requirements. Forests and forest lands are a property which the owners may, within certain limits, use freely. They may be cleared due to collective and individual necessities, and land may be planted with trees if this promises to be a useful undertaking.

The contrast between forests as a means of production and as a particularly valued element of the environment has developed in societies in which culture and nature are often believed to be in opposition to each other. The specificity and the historic dimensions of this thinking become visible, if one compares it with the meaning of forests and nature in societies with different cultures and spirituality (Schefold 1990). In some of them, nature and forests are not considered primarily as resources that may be disposed of for social and economic purposes and can be used at the discretion of individual and collective decisions. They represent a reality with gods and spiritual powers, in which man has to find his place and which may be harmful and at the same time helpful to him. In the thinking of people in cultures with traditional land-use systems nature and man may form parts of distinct realities which leave space for the beings of the present generations and for the world of the ancestors. Forests may represent the space of wilderness which is the realm of the ancestors and which gives cultural orientation and identity to living beings.

Changes of the forest vegetation result from continuing practices of local uses. It requires detailed studies in order to assess their impact on the supposed natural

vegetation. More visible and sometimes profound changes are due to intensive silvicultural practices, change of tree species, tree breeding and to large scale afforestation. If such developments have in the past mainly occurred in Europe and North America they become increasingly important in the tropical and subtropical belt and in particular in Asia and Latin America. Changes in land use result from clearing forests for agriculture and settlements, grazing and pasture, and man-made forest fires. Large scale clearing for agriculture and pasture occurred during certain periods in Europe and North America and occur at present in tropical regions with deforestation rates of 1 to 3 per cent in some countries. Grazing and forest fires are usually slower and less spectacular processes with nevertheless important effects in the arid and semi-arid zones as well as in mountainous regions.

Local communities with an almost self-sustained agricultural structure and a by and large still sustainable management of the immediate surroundings have a great environmental and political value. This sustainability is not limited to a reflected economic calculation of resource use only, but a rather broad and highly flexible mode of subsistence and local self-determination. Joint land management systems and a sustainable use of common property resources require specific frame-conditions in order to be workable, socially acceptable and economically efficient (Ostrom 1995). The definition of the resource has to be unequivocal and the entitled users must be clearly defined; participation of the users in decision making on common management rules has to be institutionalised and accessible to all; the joint management rules are subject to an effective control and to sanctions if not respected; there are established conflict resolution processes that can be used in case of serious disagreements; and administrative action from outside does not obstruct the self-regulatory capacity of the local community managing the resource, or make it obsolete.

FORESTS AS RESOURCES FOR INDUSTRIAL WOOD PRODUCTION

During the last century a change in emphasis has taken place in the Western hemisphere from multiple forest uses in a local area to a single and economically important use, usually timber production. In a first stage forests were exploited with little regard for their long-term timber production potential and for soil conservation and water regimes. But soon it became evident that the prospects of an expanding

wood products industry required a lasting forest productivity, and this required investment in forestry and an adjustment of timber harvest scheduling.

In Europe this evolution was preceded by a long period in the 17th and 18th centuries when the sovereign and the nobility had claimed wood resources for operating local industries and long distance trade. They had established juridical control over certain forest lands, forest administrations controlling local uses, and supervision of management practices in communal and, to a lesser degree, private forests. The growing influence of the state on production objectives and management practices led to controversies and resistance in particular on the side of large forest owners. It also created continuous tensions between the forest administration and the peasants and villagers being more concerned with local uses than with commercial wood production.

The emphasis on the importance of forests for commercial production has had important consequences with regard to the role of communities in the management of resources. In several countries it has been a deliberate and forcefully implemented policy to restrict existing collective uses. Usufructuary rights were abolished in areas classified as state forest domain and collective tenurial arrangements were transformed into clearly defined categories of forest ownership. In some cases this has favoured the constitution of communal forest ownership, whereas in others it has increased the state forest domain. Part of the forests used in common has been distributed among the previous collective users and became private ownership. Very often a combination of tenures has developed. The present ownership pattern in European forests is to a large extent the result of this transformation process.

Market economies, the change from subsistence to commercial and highly productive agriculture and the introduction of industrial production, have changed the social relevance of forests. They were now considered as a "resource" with a specific meaning, a resource for the production of wood. Growing wood products markets, based on long distance exchanges, made wood a major national economic option. The concept of forestry as a sustainable timber production activity became the principal objective of forest conservation. Forest policies as a national issue developed in Europe in this context. They were induced by an experience of timber shortages or an anticipated scarcity of future supply in economies that were still depending in many ways on locally available raw material. At the same time the

improving economic prospects, demonstrated by new wood products demands and technologies, as well as by rising timber prices, made it attractive to governments and land owners to promote timber production in expanding market economies. Policy programs, determined by the legislatures and governments, set the framework for the development of forestry and the wood products industry. The principal actors in elaborating and implementing the programs were governmental forest services and major user groups such as forest owners and wood products industry associations.

Policy objectives focused on the protection of forest lands, the regulation of harvesting practices, the establishment of a viable sector economy organised by forest enterprises, and the promotion of large-scale afforestation programs. Yield regulation, silvicultural measures such as thinning and tree improvement, planting of high-yielding tree species and site melioration became a progressive and acknowledged means to increase wood production. To some extent policy targets also included protection, in particular in mountainous areas. National programs were on the whole fairly simple, but for that reason effective. They prohibited forest clearings, restricted clear cutting, provided technical advice and, to a lesser degree, financial support to forest owners.

A somewhat comparable evolution took place in North America, perhaps with a stronger emphasis on large-scale industrial development. Forest resources were to finance new infrastructures and settlements. Capital intensive, high-yield forestry regimes developed in some regions. Certain forest areas were excluded from commercial wood production mainly as parks. By 1900 the United States had adopted conservation programs for federal forest lands that combined sustainable timber production with the preservation of certain areas as parks and wilderness. The policy framework that had developed around the turn of the century and continued to evolve, emphasised protection of forests from wildfire and management based on scientific principles. Its implementation implied a strong public sector role in forestry research; the protection of forests from wildfire and epidemics regardless of ownership; the productive management of federal and state forests; the promotion of improved resource utilisation on private forest lands through technical and financial assistance and tax incentives; the adoption and enforcement of state and federal wildlife conservation laws; and the acquisition of public lands for stream-flow

protection (Schmithüsen and Siegel (eds.) 1997). Policy implementation was largely based on co-operative efforts among federal, state and private sector interests.

In Canada forest policy development by the federal government and the provinces has followed, probably with some delay, a pattern similar to that of the USA. Due to the large proportion of public forest land owned by the provinces, policy and resource management are to a large extent concerned with joint land utilisation and management, involving the public sector as land owner and the private sector's timber production and wood processing (Haley and Luckert 1990). The provinces have developed a range of permits, licenses and forest leases and modified the applicable regulations and contractual arrangements in order to improve forestry practices and to enforce nature and environmental protection.

Under the conditions of tropical and subtropical forest zones, only a small proportion of the exploited natural forests are utilised in a sustainable manner so far (FAO 1989 a, 1989 b, 1992). Silvicultural efforts have largely concentrated on plantation forestry which is replacing the natural forest stands in some areas. The priority given to industrial forest development has in many cases detracted governmental action and policy options from local uses that are important to people. This widened the gap between the reality of rural populations strongly depending on trees and forests and national objectives, which too often have only induced an exploitative extraction process. Rotational and combined land uses which are still dominant in many regions of the world have been officially acknowledged only recently and "reinvented" under such terms as agroforestry, rural forestry or forestry for community development. But such concepts still determine only very few policies at national and regional levels. It will demand more consistent efforts of governments to design and implement forest and rural development programs which contribute to an improvement of the living conditions of local communities.

A process of state appropriation extending to ownership, usage rights and management control has taken place in many countries. Ownership of forest lands for which no land title could be produced, was claimed to belong formally to the state. The application of this principle, already introduced by the colonial powers and subsequently retained by many forest and land tenure legislation of the independent states, created a new situation (Chakravarty Kaul 1996, Pathak 1994). The governments saw an opportunity to obtain fiscal revenues from commercial logging

operations, to promote log and wood product exports in order to improve trade balances, and to develop a modern forestry and forest industry sector. Since forest administrations were usually not in a position to organise large-scale forest resource utilisation, governments relied on the private, and in many cases expatriate sector. They usually granted different types of permits and contracts for timber extraction and forest management.

In countries, in which the principle of collective local ownership on forest lands has been retained or in which the forest area has been recognised to be under communal tenure, state intervention and more subtle forms of appropriation operate. This refers, for instance, to regulations which invest the right to contract with industrial operators in the state acting in trust for local owners and to sharing of timber revenues between the communities and the government. It also refers to strict management rules which usually limit the decisional powers of the land owners.

The concentration of benefits from forestry at the national level and the centralisation of land-use decisions have important consequences. The groups using forest surroundings traditionally tend to feel deprived of what they consider as their own property. A process of the transfer of resources from the poor to the rich and from rural to urban areas is initiated. The breakdown of customary rules protecting forests as part of the local space and the failure of modern forest laws that were adopted to replace them, may be explained in this manner. The lack of local opportunities to use forests, combined with often short term industrial exploitation, contributed considerably to deforestation, since this appears to many people as the only possible alternative to draw some benefits from the available lands. If general developments have led from local to national use regulations, many considerations appear now in favour of reconsidering the need for local participation in political decisions and for joint management systems.

The almost exclusive focus on national policy development, regulating forest protection and utilisation does not correspond any more to the reality of today. Social and political processes at the level of local communities reflecting different interests in forests require more attention and research analysis. National programs can only be successfully implemented, if they are meaningful to and accepted by local groups and communities. At present, forests have become a world-wide public concern and subject to political efforts in order to develop consistent Cupertino for their protection.

THE PERCEPTION OF FORESTS AS ENVIRONMENT AND WILDERNESS

During the last three decennia, a wider perspective on the value of forests has emerged with important challenges to forestry and forest policy. The first momentum came from the rapidly increasing demands for recreational activities in open landscapes and forests (Schmithüsen et al. 1997). A second momentum, which now has a world-wide dimension, developed from the environmental and nature-protection movement. A third element of change superimposed on the other two, derived from the interest of people in forests as an element of personal identification with wilderness as imagination of a cultural value and a spirituality of freedom and contemplation.

In 1992 the United Nations Conference on Environment and Development has put forests and forestry on the international political agenda. The preparatory stages as well as the follow-up processes to this conference, represented by the work of the UN Commission on Sustainable Development, show that considerable disagreement on many issues continues to exist, and a reluctance in spite of a growing public awareness, to take forests as a common world-heritage. Large scale deforestation in the tropics and sub-tropics lead to social and economic problems for many people living in these regions. Protection of forests, sustainability of uses and preservation of biodiversity are challenges of equal importance in many industrialised countries in the boreal and temperate zones. The conflicts which arise are part of international controversies concerning social justice, self-determination and sovereignty, local political participation and democratic decision-making, as well as symptoms of the unbalanced economic development between different parts of the world.

New elements that appear are an evolving perception of citizens on the urgency of conservation needs and to maintain future options. There is an increasing involvement of interest groups articulating conservation demands more forcefully, and the insistence of the public to see more effective policy measures for the preservation of nature and landscapes. The environmental movement has also made it clear that espousing conservation as a principle does not necessarily prevent degradation and waste of resources. It targets for specific measures and regulations based on a more precise understanding of how resources can be used in a sustainable manner and which elements of our environment must be protected and preserved. Value changes from a largely resources utilisation oriented to an

environmental perspective influence future management options on forest lands increasingly. This process leads to policy changes and new legislation as well as to an increasing influence of local groups on forest management decisions.

In a global perspective forests and woodlands are perceived as an important element of the natural and social space in which societies develop. Their potentialities leave options to present and future generations, some of which we may already be aware of and some of which we cannot yet foresee. In such a perspective trees and forests are a representation of nature which is supposed to be largely free from apparent human disturbance, some free of it altogether. Forests mean unfettered natural processes and wilderness, something very different from surrounding intensive urban and rural land-use patterns. The efforts to limit forest uses, to set aside areas without apparent human disturbance, and to preserve biodiversity in managed forests are the result of a growing concern to maintain forests as a representation of nature and wilderness.

These developments, representing a fundamental current in many societies, have put forests in a much broader political context. The evolution of a network of policy programs addressing conservation and management corresponds to evolving perceptions and new political demands. In addition to sustainable wood production, forest policy considers the objectives of infrastructural protection, recreational use, nature and landscape protection and spiritual and aesthetic values more systematically. These objectives are increasingly superimposed by those of cross-sectoral policies, addressing nature and landscape protection, environmental protection and land-use planning. In the beginning, they concentrated on general principles of resources utilisation, but over time they also become concerned with the regulation of specific forest uses. As a result, forestry matters are now the subject of several programs which for historical reasons have developed in a different manner and which, to some extent, compete with each other. Sectoral forest policies tend to emphasise production and economic land use aspects, while cross-sectoral policy objectives provide benchmarks for forest protection and environmental conservation.

*STRATEGIC VALUE OF SOCIO-CULTURAL RESEARCH ON LOCAL KNOWLEDGE
RELATED TO SUSTAINABLE FORESTRY PRACTICES*

A wealth of knowledge, transmitted from generation to generation, has been accumulated indicating the meaning of trees and forests and the uses of particular species and products as well as the technologies which enable such uses. Experience has taught users how trees and forests should be managed in the interest of the community and how to develop practices that ensure their protection. Research on local knowledge of conservation practices shows its ingenuity, cultural distinction and social usefulness. Local, or in a more specific sense, indigenous knowledge is of particular importance in traditional societies because the local context is an universal frame in which knowledge matters.

Research on indigenous knowledge and on the meaning of trees and forests in different cultures matters and is necessary in order to show the many needs and values associated with forests in a given locality, and the importance of forested areas for the survival of indigenous people and their cultures (Seeland (ed.) 1997). Research findings bring forward concrete facts to be considered, which result in political decisions being made on the utilisation of natural resources, and they are also a strong argument for increased efforts in protecting forested areas and considering local uses. These findings also demonstrate the confrontation between customary performances in sustainable resource management, developed from experiences and adjusted to difficult living conditions, and the development activities of modern states (Bharara 1999).

In the interface of tribal and non-tribal sections of the society it becomes more and more important to outline and stress the wealth of knowledge and the merits as well as the problems that have to be taken into consideration on behalf of local forest dwelling communities. Most important is a reassessment of the possibilities of integrating the forest related knowledge of the tribal population into land use and management programmes. Through research it gains a lot of prestige and political empowerment, and raises the self esteem of a notoriously underrated section of modern society. This is a major aspect of research on indigenous knowledge. Another aspect is the entitlement to participate in decision-making processes at various levels with the help and mediation of local and regional NGOs. This goal can only be achieved if the political bargaining power of tribal populations is upgraded

through research on the potential of their knowledge so that they may become a more acknowledged partner in environmental planning processes.

There exists an increasing awareness that research of local knowledge of forests is relevant in all countries. The advancement of knowledge, induced by changes in attitudes and perceptions, may help to adjust the prevailing use patterns in a social evolution of changing potentials of resources (Burch and De Luca 1984). In many cases local knowledge and experiences are not considered, but opposed to national resource concepts and to governmental management regulations. The results are obvious: local knowledge and social obligations are bypassed, and the management schemes introduced from outside remain inapplicable and of little significance in the local setting. Investigations into the perceptions and attitudes of people and local communities with regard to the conservation of trees and forests have therefore an increasing bearing on forestry development and policy. They provide the possibility for an improved understanding of existing management practices under their specific social and cultural conditions, as well as the potential for adaptation to a changing economic environment.

Research on the prevailing socio-cultural values and uses, as reflected by local knowledge, is important for the efficiency of participatory resource management policies (Poffenberger and McGean (eds.) 1996). In increasingly urban and peri-urban societies, knowledge and personal experiences of forests as influenced by evolving attitudes and perceptions are particularly in a state of change. Available research results indicate that knowledge on traditional uses is still present, but fading and with little relevance to the context in which actual problems of protection and management are seen and assessed. Educational activities in forests try to introduce people to the abundance of nature and to make their surroundings and history more meaningful to them. There is also a need to increase the understanding of forests as a source of raw material and of forestry as a productive land-use activity. This aspect cannot be dealt with only as expert issues left to the small group of specialists competent in forest management. The indications from current studies on public attitudes towards forestry confirm the need to place timber production more clearly into the context of global sustainability and to explain more precisely its social usefulness in utilising renewable resources.

The process of adapting forestry practices to a broader range of social demands and of developing management systems, adjusted to varying local conditions, does not take place without difficulties and results in divergent positions. Multidisciplinary research has to embrace the cultural and social factors that influence individual and collective forest uses, attitudes and perceptions of people on various options in forestry development and the political processes that occur at all levels of the community (CIFOR 1995). The meaning of forests in different societies and at different times and the performance of a society with regard to use and conservation patterns become central issues of an innovative socio-cultural research activity. This implies an extension of the research agenda in order to gain a more fundamental understanding of the political relevance of forests as related to specific socio-cultural values. A broader context is indispensable in order to compare different situations, to discuss measures for the conservation of forests, and to evaluate experiences in forest policy developments. This kind of research examines the changing role of forests for their respective societies, the variations of the political context and the common denominators which determine conditions for their conservation.

The intercultural dimensions, in which trees and forests are important, require that professional attitudes comprehend social and cultural information in order to become appropriate contributions to sustainable management of renewable natural resources. Research has to put more emphasis on the manifold ways man performs in his environment. This calls for new forms of collaboration between the social and cultural sciences and established networks in applied natural sciences and forestry research. It implies a more intensive exchange of ideas between researchers who emphasise the social dimensions of forestry, and those who are *ex officio* responsible for resource protection and development.

CONCLUSION

The importance of a forest is reflected in its cultural perception, and societies have developed their notions of what forests mean to them. In order to know something about them, the political context of these cultural perceptions has to be investigated, particularly in times of the rising importance of sustainable forest management at the international level. At local levels multidisciplinary and cross-cultural research is necessary to obtain detailed data on the local people's use and meaning of their forest environments.

Research programmes on forests and trees that make a useful contribution in a changing social reality have to embrace the full perspective of forests as an essential, many faceted component of man's environment, as well as of forestry as an economic and production-oriented mode of land use. It is this twofold relationship that research has to consider by analysing individual and collective forest uses, attitudes and perceptions with regard to various resource options and contractual forest management arrangements involving different sections of the community. Inquiries into the many forms of local knowledge in traditional and modern societies are an important subject in socio-cultural research on trees and forests. Its results are a strategic element in promoting sustainable forest development based on participatory utilisation practices and joint natural resources management systems.

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WHAT IS INDIGENOUS KNOWLEDGE AND WHY DOES IT MATTER TODAY?

Klaus Seeland

GENERAL CONSIDERATIONS

Two decades ago (Chambers 1979) indigenous technical knowledge became an important topic in the debate on an economic and culturally sound development of Third World countries. Ever since then it has been discussed predominantly with regard to develop appropriate technologies instead of transfer of modern and to be applied in the agrarian sector by reintegration or reinvention of what once has been part and parcel of a self-sustaining mode of production. The most prominent example that resulted from this discussion is agroforestry, where traditional agriculture, forestry and livestock-management make an integrate model of primary production under conditions of traditional societies. Agroforestry is an example of a new term for a more or less age-old practice to harmonise and maximise the degree in which different sectors of rural economies are integrated in terms of productivity and elasticity of peasant households. As agriculture was and still is considered to be the main source of subsistence in traditional and transitional societies with a large proportion of rural population, it was expected from this discussion that it would provide solutions for the deficiencies that arose with the introduction of the modern know-how of those favouring agro-business. The advantages of the Green Revolution, the mechanisation of agriculture and the rising importance of a market economy were to feed the ever rising number of the poor and low-productive rural population.

Indigenous technical knowledge in these discussions did not refer in the beginning, as far as I can see, to forests or forest management. Now that the need for a sustainable management and conservation of the worlds' forests has gained more and more attention, the interest to use local indigenous knowledge to achieve this goal has increased. The term "technical" has been skipped in this context. This was maybe due to the realisation of the fact that it is hard, if ever possible, to use indigenous knowledge in agriculture, as it was hoped, in the purely technical sense the term evokes in a westerner's mind.

WHAT IS INDIGENOUS KNOWLEDGE?

Indigenous means that something is originating locally and performed by a community or society in this specific place. It emerges as peoples' perceptions and experience in an environment at a given time in a continuous process of observation and interpretation in relation to the locally acknowledged everyday rationality and transcendental powers. The context of local social performance makes sense between people, who share a common rural habitat, language and knowledge, be it exoteric (open for all) or esoteric (secret knowledge). Indigenous knowledge is human life-experience in this distinct natural and social compound, within this unique local and contemporary setting. In a traditional society the local context is taken as the universal frame in which knowledge matters. This context is constituted out of physical facts, social interactions among people in their surroundings they perceive as their world and of spiritual beliefs. Indigenous knowledge is not formally taught, but perceived in a particular context at a certain stage of the perceiver's consciousness that grows in the world of local events.

Knowledge is to be called indigenous, if it is bound to local experiences and takes its local world perhaps not as the only one existing, but as the most relevant of all. It is an authentic appropriation of being. The environment is not an environment in a technical sense, but a world. The outlook that there is a locally meaningful world characterises an indigenous world-view. Local knowledge as we may also call it, is an encompassing whole of what has been revealed to human perception in a particular place or region. There will always be local knowledge even if modern scientific knowledge invades a socio-cultural setting and challenges its local knowledge more or less effectively. Global knowledge, once it has settled down in the locals' minds and is disconnected from the international setting it refers to, it becomes a local variety of what was once global knowledge. A local setting transforms outside knowledge in a continuous process of adaptation and appropriation.

THE APPEAL OF INDIGENOUS KNOWLEDGE

It is a matter of fact that indigenous knowledge is an amalgamation of what is perceived as "here-and-now" important by the local population. The term itself is an ascription from outside, coined out of a perspective that there is paramount and presumably supreme general, i.e. modern knowledge. This modern, or better to say,

non-traditional knowledge is distributed by formal standardised western patterns of education all over the world. However, indigenous knowledge is not an ubiquitous know-how everybody has and it is neither shared equally by all inhabitants of a locality nor is it a standardised and comprehensive account of "what is known" in a particular socio-cultural setting. Consequently, nobody knows what it exactly is, but a rising number of scientists and policy makers are convinced that it is an important component to safeguard the resources of a region by managing them adequately in the local manner it has always been done. Whatever it may be, important are the ideas leading to this apprehension.

Firstly there is the idea that an environment can only be properly managed by its inhabitants and not by ultimately absent experts from outside. The go-on-travelling-experts may know "solutions" to environmental or social problems because they are not part and parcel of the local setting. They do not live where they work for long or even for generations in a tight social cohesion or mutual dependence. The dynamics of social reciprocity in a poor and marginal community is almost beyond what an upper middle class expert from far away places can imagine. But these dynamics shape reality and not environmental rationalisations. Provided these inhabitants are in a position to exercise an active and almost independent political control and regulation over their territories and resources, their indigenous and sometimes age-old way of controlling the use and abuse of resources would be considered appropriate. They are also assumed to be sustainable, as long as an equilibrium between their constituting and stabilising factors prevails.

Secondly the technical experts and extension agents, who are trained in a western scientific rationality are more and more convinced that indigenous knowledge fits very well into a participating approach that involves people with their knowledge in the process of their economic development. Be it as it may, traditional knowledge is in the process of entering into modern development strategies through the back-door. In the light of interest that experts take in indigenous knowledge on a broad scale, it becomes paradigmatic for a new development idea. Why do internationally active elites invest intellectual energy and financial resources into this sphere of interest? Why do, for instance, agencies with a predominantly technical profile like GTZ become interested in indigenous knowledge? The answer may be that, after decades of extension activities, now there has evolved an awareness that modern global expertise has always to cope with autochthonous knowledge that is deeply woven

into the social fabric of a local and particularly rural community within a transitional developing society. There is always so to speak a basic layer of knowledge in every community from times immemorial that is a representation of a society in its typical natural surroundings. The wisdom and experience of generations reflect the way of life their ancestors performed before one's own generation and oneself took over. Indigenous knowledge is a matter of continuity, although one's surroundings may change at a slower or quicker pace. It is a matter of social and cultural evolution on the background of an ancestral tradition.

Sooner or later, tribal communities respond to outside or social mainstream developments in either a conservationist, adaptationist or fundamentalist way, that in many cases may lead to political antagonism with the dominant society. This response reflects the respective status and political power of a community or society and its inner strength, self-esteem and capacity to eke out a living even under circumstances of environmental stress and ethnic harassment. One question of strategic importance therefore is, whether or not the propagation of indigenous knowledge might be an obstacle to social evolution itself? An obstacle in the sense of attracting the attention to knowledge that has been important for the past but may now distract the view from the demands of the future.

To develop its own capacity to cope with the challenges of environmental stress and social marginalisation may be a community's prominent goal. The achievement of this goal decides whether its socio-cultural identity may persist or an integration into the social mainstream of a mass society in transition will happen. It remains to be seen whether traditional ways of life and indigenous knowledge can be revitalised or operationalised within the context of development. We do not have enough experience at the moment to predict to what results international attention, financial support, research and political encouragement will lead. If after some time these communities and NGO's will be left alone with their efforts and enthusiasm to uplift the living conditions of poor marginal communities with the help of their own traditional concepts it will be seen, how sustainable they are.

That these concepts have largely failed so far in a contest with so-called modern knowledge is more or less evident, for instance, for at least those poor members of a forest dwelling community, who have seen a bit of the wealth of the cities. Why should they cling to their traditional knowledge and life-styles? Why should they keep a way of life that has proved to be inferior in achieving technical assets and all the

amenities of the agrarian or urban middle classes? Why do some of the western technical experts favour a knowledge that stands for a social status that is widely considered to be economically underdeveloped?

The appeal of indigenous knowledge lies for once in its underlying assumption that a bottom-up strategy including locally available capacities concerning the management of resources is always better than to transform local villagers or forest nomads into clients of the Forestry Department or any Government service. The transfer of purely technical know-how is considered not to lead to a sustainable use of resources.

Forests, trees and their products are to be managed by indigenous people with the help of their knowledge for local consumption in largely self-sustaining communities. Scientific forestry with its specialised knowledge manages forest resources, predominantly timber for the market. The dilemma of the two ways to deal with forests and their products is that one type of knowledge serves one purpose only. Local self-determination in the supply of locally available resources is contrasted by the needs of the ever-rising population in the mass-agglomerations of the cities that have to be met with products from the forests as well. Consequently there is an idea of decentralisation and local autonomy to regulate the use of any resource behind the argument to favour local forms of forest management for the local population instead of serving the economical purposes of city-dwellers and wood-traders. However, what seems to be the most relevant appeal of indigenous knowledge that emerges out of the principles of a local subsistence economy is independence. The use of local indigenous knowledge does not turn independent forest dwellers into clients of the state administration, at least not the elder ones, because they stick - right or wrong - to their own traditions and customs. In a phase of de-regulation and decreasing administrative capacities an independent and self-sustaining social performance matters very much. Low-cost-considerations and the recognition of the important principle of subsidiarity make its appeal for policy makers and development experts.

In a society in transition, market economy and a remarkable division of labour has entered social life even in the remotest pockets of the country. And division of labour means as well division and exchange of resource supply from other than local communities mostly represented by the state and commercialists in the first instance and later on followed by other sections of the society. In a political perspective there has to be a balance of commercial exploitation and an environmental as well as a

social consideration of the use of resources for mass-consumption. The ethnic and natural diversity of a subcontinent such as India shows, for instance, the different interests of people in remote and sparsely populated regions with dense forests and overpopulated areas where there is practically no more tree cover at all. The interconnectedness of the interests and regions has to be seen in a perspective of balancing the environmental weights of development politically. Local and global knowledge ultimately have to share in complementary roles to serve various interests of resource utilisation, production and consumption within the larger setting of the multicultural Indian society.

IMPORTANT QUESTIONS CONCERNING LOCAL INDIGENOUS KNOWLEDGE

Resources may be defined as local wealth that is, however, not always available to the local inhabitants. The incorporation into a state society and the respective state authority that is concerned with the administration of resources decides upon its use, exploitation and management. This relates first of all to those resources which are underneath the earth or technically difficult or costly to exploit. Indigenous knowledge is a sort of "soft exploitation" of what is at hand to bypassing nomads or hunters and gatherers who have acquired an intricate knowledge about the use and management of several items over generations. They make use of what they take for granted to them, i.e. what is useful and manageable for them at their capacity level. The knowledge applied in this process reflects the state of a community's rationality and its application at the lowest available social cost. It also sheds light on religious restrictions and taboos that are connected with particular aspects of an environment. Thus the question for a tribal forest dweller is not "to use or not to use", but to use in social and spiritual accord with the prescriptions of his culture. The conduct of his lifestyle is thus a representation and pattern of resource use, which he would rarely alter or transgress without being forced to do so.

For development approaches trying to integrate these patterns of traditional resource use into a multicultural concept of civilisation the question arises, *whether indigenous knowledge is to be equated with ecologically sound knowledge?* There is, e. g. an overall notion of cosmos in any tribal society that encompasses all physical, social and spiritual aspects of life in a form of animism or natural symbolism and ritualism. This does not mean that all interactions between physical aspects are known to rural people as interconnected in the sense of the natural science's term "ecological". If

one, however, understands ecology as "to know about the interconnectedness between all forms of life as such", in this case indigenous knowledge can be called ecological. Yet ecological does not necessarily mean that tribal forest-dwellers are caring for a sustainable resource use in a sense of sustainability that is emphasised in the recent western environmental discussions. Ecology should much more be understood as a reproduction of a passed on cultural life-style and not as an economical rationale. It is an open question whether the alteration from outside that is forced upon a forest dweller's community is a much more serious threat to it than the adaptation of this culture to the changing environmental conditions. On the whole, I might say, a member of a tribal community living in the forests is very well aware of natural processes that happen in the jungle, but cannot (or dares not) alter these processes because he considers himself not an authorised change agent but a part of his cosmos, who himself is directed by spiritual and cultural powers in and around him. Consequently technical experts should not trap themselves in an imagination of "the good and ecological wise savage".

Researchers and development executives are both keen to know, whether indigenous knowledge, as far as its environmental aspects are concerned, *can be transferred out of its local context into another one and used e.g. for a regional inter-ethnic, national, or even international network?* From what has been said above, it seems obvious that indigenous knowledge cannot be displaced, because it is autochthonous empirical experience and only valid as a *world* in its place of origin. Authenticity means to know things from personal experience in places where they originate and thus experiencing them in their proper context. What can be transferred is the *rationale*, how indigenous people deal with nature and cope with times of scarcity of resources and social competition to gain access to other means of livelihood. What else is comparable is the way of looking at natural, social and spiritual phenomenon in an ultimately unseparable way. The modality, how tribal forest dwellers perceive things, live with them and use them is a mode of appropriation that they may share with many other tribals all over the world. To collect them and use them for a network presumes that rural dwellers can anticipate what may be useful for them. It contradicts the principle that those who know and what is of local relevance to be known is part of the same environment. Hence man's thinking is inspired by the whole physical, social and spiritual world he is living in, it would be impossible for him to put in a nutshell what has been appropriated

individually over one's lifetime and make it a transferable "information". What occurs to a person in his daily life or is passed on as knowledge in his culture from times immemorial cannot be easily applied in another context. His knowledge is appropriated authentically, but in other places his knowledge may not be effectively applied, because the circumstances and conditions of these places are different from those, where his knowledge has been generated.

Another question that is discussed vehemently is, *whether indigenous knowledge is common property, respectively can individuals – either tribals or non-tribals – claim intellectual property rights over it?* Knowledge is common as far as it deals with common everyday knowledge that everybody knows. But it should not be called a common property, although an insider can hardly be excluded from this knowledge. Experts, say anthropologists, who know some of a tribal's standard knowledge, can appropriate it individually, write books on it and sell the information to their readers. As authors they can claim copy-rights. Nobody, however, neither an insider nor an expert outsider can claim property rights of what is thought or done in the everyday life of a region. "Professional" or specialist's knowledge, emphasising special skills, is usually the "property" of a family, a clan or in a more stratified society a guild. The appropriation of intellectual property rights is based on proto-economic thinking which claims that ways of thinking or social performance in general are or can be commercial commodities. Indigenous knowledge is a way of social performance of what is at the disposal of individuals in a community under conditions that would represent its typical cultural pattern. Social performance denominates the options of individuals or social institutions to act within the guidelines of cultural "do's" and "don'ts". For a folksong for instance nobody can claim a copy-right and ask for royalties, if it is sung anywhere in the world. The same applies to Swiss cheese, English marmalade, French fries or Indian tea etc. Indigenous knowledge in general is an authentic world heritage of particular cultures, who have contributed to it in their characteristic ways.

If one asks, *whether indigenous knowledge can be taken as an alternative to the technologically dominated mainstream development*, the answer from my point of view should be definitely negative. Indigenous knowledge has a distinguished profile and cannot be replaced by nor replace other forms of knowledge. Different sorts of knowledge may contradict each other particularly in the fields of primary production such as agriculture, fishing, forestry, where various cultural concepts have led to

different rationales over time. The mainstream of internationally valid technological knowledge is free from any cultural attachment and is a claim of professionals from whatsoever culture they may come. Agricultural extension in agroforestry for instance is applied by international experts in any country of the world. The actual contradiction between global and local knowledge is that global knowledge draws its legitimisation from its claimed technical effectiveness, which is not linked to any specific place and cultural setting. Local indigenous knowledge, however, is "work to measurement" and only effective in its cultural context. Global knowledge makes sense if it is most effective to achieve a purpose or a technical objective; the sense of local knowledge lies in its appropriateness concerning the whole cultural context it refers to. If it is made a technical or mechanical "tool" it may never be effective or sustainable in its achievements. Competition between both forms of knowledge for resource utilisation and sustainable forest management has to be seen on the background of different needs and interests of users. As I argued above, different sections of a society try to fulfil their respective demands and needs by applying different sorts of knowledge. Subsistence farmers or forest dwelling nomads do it naturally with the help of their locally acquired traditional knowledge, town dwellers make use of the highly stratified professional know-how that is provided in densely populated and economically developed areas. If one looks at the situation from the point of view of a resource supply that has to take the needs of a larger state unit into account, the use of knowledge has to be seen complementary, according to the context in which each form of knowledge has been appropriated.

WHY DOES INDIGENOUS KNOWLEDGE MATTER TODAY?

Indigenous knowledge matters today, because it covers a very important aspect of the survival options for subsistence communities in the 21st century. In a process of world-wide deregulation the administrative capacities of the state are supposed to be no more sufficient to handle and tackle only the major problems of large populations, who have become in one or another way dependent on the services of the state. The problem solving capacity of the state in transitional societies of Third World countries is decreasing. This is not only due to the notorious financial crisis of the state, but the political legitimacy of democratically elected governments and their administrations is more and more challenged and disputed. Communalism and strong ethnic or religious movements propagate a separatist policy struggling for

political autonomy. In the wake of these political developments the role of forests has become highly political. Forests have only partly been integrated into the socio-economic mainstream, either as highly productive agricultural, industrial or settlement areas. They have been so far claimed for wood production through scientific forestry over the last one hundred years in a process of state appropriation thus reducing the possibilities of a self-sustained existence for local forest dwellers. In this context it is important to realise that state power still enacts its political mandate over the forests to adjust them and their inhabitants to the rationality of markets and the regulations of administration, although there is a common trend towards deregulation.

THE POLITICAL DIMENSION OF FOREST RELATED INDIGENOUS KNOWLEDGE

Environmental problems do reflect the state of political controversy, in which various sections of a society are involved according to their respective interests and political bargaining power. Usufructuary rights and benefits connected with the use of resources are subjects of such controversies. If they relate to resources to be taken from forests, i.e. from areas of national interest and importance, these controversies indicate a lacking political consensus over the role of the state as a political representative of the distribution of national wealth. This lack of consensus, for instance between ethnic groups and the social mainstream, is shown by some political groups, who are emphasising conservation and working for the survival of poor and marginal sections of the society and others, who are favouring the economic development interests of the advanced sectors of a society in a nation-wide struggle over the appropriation of resources.

The recent history of the expropriation of tribal societies in post-colonial nations is in most cases a depressing account of an environmental colonialism, where ethnic sections of young developing nations are pauperised, expelled from their territories and vanish with the forests they used to live in. To read the great and still increasing number of books and many documentation's of misery and poor living conditions in tribal societies makes the reader uneasy and raises protest. People, who to a large extent still live a life very much exposed to the powers of ruthless nature and live at the mercy of the hierarchies of administrators in modernising societies who are more interested in the achievements of urban middle class development standards in countries which are inhabited by an overwhelming majority of rural masses.

The knowledge of forest dwellers or poor peasants is the legacy of a cultural heritage and tradition that shaped the face of the forests and from where some of today's cultures took their origin, but is at the crossroads of a new era. Concern for ecology and environment reflects a commitment of a world community that considers itself to be aware of the linkages between knowledge and conservation. Ecology and sustainable management of the environment are but other terms for the common future of all people of this globe favouring diversity and pluralism against "monoculturalism". However, national and international politics indicate that the struggle for survival and control over the use of resources inside and outside the boundaries of a country is perennial. The dispute over what is looked at to be a resource for the whole society and what is left at the disposal for those ethnic groups who claim ancestral rights over it, is socially contested. The role of indigenous knowledge is to be seen in the perspective of this contest, because it cannot transcend it. It is up to a society's political will to acknowledge and safeguard the value of the country's spiritual and intellectual heritage not as a goal in itself, but for the sake of having common future options. Forest management as a contribution of tribals to a national environmental policy may be a possibility to share social responsibility for a country's forests and its renewable resources.

CONCLUSION

The plead for an integration of indigenous knowledge into the development process of a society in transition would be naïve if it remained blind against the massive political obstacles it is confronted with. Contemporary environmental problems ask for solutions which are a match to them. Although it may sound odd to some people, it is widely accepted among development experts that local knowledge is a valid match for contemporary problems, because it is not only environmental knowledge in a technical sense. It is accumulated wisdom of cultural traditions that has messages for those who are prepared to listen to them. Although they are lacking essential political bargaining power, tribal people and their knowledge may survive and be helpful in times of administrative deregulation and a self-responsible management of resources in the regions where they live. One may have doubts, whether scientific knowledge alone will be in a position to become "socialised" through formal education one day. There will be no, as I see it, common knowledge of all for all in one world in the 21st century and solve, among others, the environmental problems

which future generations will have to face. As I put it before: environmental problems have to be tackled locally and by those who live in their dwelling place over a longer period of time. Their commitment to claim their chances of survival with the help of what they know and how they perceive their situation will ultimately count and decide upon the destiny of people in their respective environments.

This plea for research and the propagation of indigenous knowledge to contribute to a social and culturally more appropriate way of management of local forests is made from a social scientist's position and aims primarily to stimulate local non-governmental organisations (NGO) to integrate people's knowledge as a major component into their work. Indigenous knowledge operationalises itself to the extent tribal people are allowed to live their way of life according to their own ways and values. It matters most, what they consider to be useful for them and what an obstacle to their social development. It is not that tribals should stick to their indigenous knowledge only or be excluded from other sources of knowledge they might consider necessary to cope with modernity which is invading their world. The decision to face the future with a cultural identity that has evolved from a tradition that has developed from having been exposed to the hardships of particular natural surroundings has to come out of a self-esteem and conviction of the appropriateness of one's knowledge to meet the challenges of one's own future.

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