INDIGENOUS KNOWLEDGE, ENVIRONMENT AND DEVELOPMENT

Background

- The United Nations established in 1983 the World Commission on Environment and Development (WCED – the Brundtland Commission) to enquire into environmental issues in developing countries. It involved indigenous people in its work and its report *Our Common Future* (1987) stressed the value of traditional knowledge, called for the empowerment of local communities and protection of their land and resource rights.
- The international community further acknowledged that indigenous people should play a key part in sustainable development at the United Nations Conference on Environment and Development (UNCED), in 1992 at Rio de Janeiro, the so-called Earth Summit (Noejovich 2001).
- The Rio Declaration (Principle 22) notes the part indigenous people have to play in the drive for sustainable development: 'Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices.

Indigenous Knowledge

- Indigenous knowledge is a term that has emerged over the last two decades to describe the knowledge of a group of people local to a given situation, sometimes used interchangeably with local knowledge (Ellen and Harris, 2000: 1–2)
- The concept of indigenous knowledge has come to play a prominent role in contemporary debates on development.
- Indigenous knowledge versus modern technology there are no fundamental ontological differences between the various bodies of knowledge these categories refer to.
- From the instrumental point of view, the rationality of modern technology compared to indigenous or local knowledge cannot a priori be assumed. Modern technology is always applied in specific social conditions which determine its outcome.

Indigenous Knowledge and Relations to Land

- Studies on indigenous communities argues that the use of land as the primary medium for the location of cultural knowledge engenders ‘place-based’ identity and affective environmental relations which are not experienced to the same degree by more transient cultural groups.
- Implicit in this argument is an assumption that indigenous knowledges and identity have specific characteristics and are located in ‘place’ in ways that are meaningfully different to the more fluid knowledge and identity constructions of other societies.
- Environmentalists have often represented indigenous groups as ideal models, not only of ‘harmony with nature’ but also of social and emotional coherence, and continuity.
- Indigenous knowledge systems provide a powerful rationale for their use as ideal models of sustainable resource management and environmental values which integrate human and ecological needs.

Indigenous Rights and Development

- As indicated by the fragment from ILO Convention 107, the broader agenda of development included human rights to the extent that ‘integration’ of Indigenous peoples was supposedly aimed, in part, at extending to them some socio-economic human rights, or ‘second-generation rights’ (Messer 1993: 222).

- The role of Indigenous peoples and the environment is not the only feature that has changed in the new official visions of ‘sustainable development’. Development is no longer the responsibility of the state; rather, the state sets the wider framework, the market must be its motor, and civil society would give it direction (Rist 1997: 223–6).

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- Guha and Martinez-Alier (1997) point out what they call the fundamental difference between ‘the ecology of affluence and the environmentalism of the poor’.
- The dominant thrust of environmental movements and NGOs among relatively affluent urbanites has been the preservation of wilderness and protection and respect for other species.
- By contrast, the environmentalism of peasants and Indigenous peoples is often wrapped up in the problems of subsistence (see also Taylor 1995; Esteva and Prakash 1998).

Life Projects and Indigenous People

- Indigenous communities do not just resist development, do not just react to state and market; they also sustain ‘life projects’.
- Life projects are embedded in local histories; they encompass visions of the world and the future that are distinct from those embodied by projects promoted by state and markets.
- Life projects diverge from development in their attention to the uniqueness of people’s experiences of place and self and their rejection of visions that claim to be universal.
- Thus, life projects are premised on densely and uniquely woven ‘threads’ of landscapes, memories, expectations and desires.

‘Life Projects’ vs ‘Development Projects’

- (a) The contrasts between Indigenous peoples’ life projects as place-based perspectives and the universalist visions that justify and shape development projects;
- (b) How Indigenous peoples pursue their life projects against those development projects being done at their expense and in the context of emerging structures of governance and subordination; and
- (c) How, in spite of Indigenous peoples’ willingness to share land and resources with other users, development projects are unwilling to recognize and seek to obscure coexistence.

Development and Life Projects

- Indigenous peoples were located closer to nature than the modern West, the dynamics of progress justified the treatment of the ‘Natives’, along with nature, as objects of domination. [That is to say, their life projects are socio-cultural in the broadest sense rather than narrowly strategic. Their life projects are also place-based but not limited to the local.]
- In contrast, development promoted by market or state-backed agents, with its claims to political necessities, the greater good and market demands in the context of globalization, appears to be disengaged from place conditions.
- Development as a practice and discourse embodies the European Enlightenment’s implicit project of making specific local worldviews and values, those broadly described as modern and Western European, into universals.

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- The world-views and values of modernity that are promoted by development are taken to be disembedded from place, made entirely abstract and equated ultimately with ‘the global’. Thus, situating life projects in contrast to development requires a discussion of place and how it is related to the politics and epistemology implicit in the ideas of local and global.
- Place is ‘grounded’; that is, place is an emergent of the specific everyday engagement of specific peoples with specific landscapes, environments or ‘natures’ (see Dirlik 2001: 21; Escobar 2001: 6).
- The emergence of modernity has been marked by a persistent blindness to connections and hybridity not only between nature and society (Latour 1993) but also between the vertical and horizontal threads that make up place.
- Development, as a project that privileges horizontal threads, is hegemonic, other place-based projects appear, by contrast, as favouring the vertical threads making up places, identities and traditions.

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- Two kinds of ‘threads’ shapes place: Vertical threads refer to those links and connections that ground place in specific histories and landscapes; Horizontal threads refer to trans-place linkages in a spatial sense.
- Deborah McGregor (2004) points out that traditional indigenous knowledge, which is critical to Indigenous identity-making, emerges not only from a history of engagement with the landscape (the vertical threads) but also from the struggles that Indigenous peoples sustain with the newcomers (the horizontal threads).
- She further argues that framing Indigenous peoples and their knowledge within the dichotomous terms of modernity amounts to losing the richness and complexity of their life projects, including their ingrained criticism of power asymmetries and the possibilities they can offer for the survival of ‘Creation’.

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- Life projects are to a large extent aimed at transforming the structures of power that constrain Indigenous peoples to act and live according to criteria of indigenousness that have no regard for their own ways of conceiving themselves and their being-in-the-world.
- According to the anthropologist Von Bremen (1987), Indigenous peoples of the Chaco display the moral ecology of hunter–gatherers since they live in harmony with nature and gather whatever nature has already produced without transforming it. [Thus, development projects have failed because they have tried to transform people who do not transform nature (hunter–gatherers) into people who do transform it (agriculturalists).]
- According to the anthropologist John Renshaw (1989, 1996), the moral economy of hunter–gatherers is revealed by the Indigenous peoples' maintenance of mechanisms of 'generalized reciprocity' that determine their 'cultural preference' for wage labour.

Traditional Ecological Knowledge and Sustainable Development

- TEK is increasingly viewed as a viable alternative to the status quo that caused the problems in the first place. Thus, TEK has received increased attention over the last couple of decades, particularly in the area of sustainable development (Williams and Baines 1993; WCED 1987).

- Although there are protocols (the Convention on Biodiversity, for example) that promote and encourage the recognition and utilization of TEK as an integral part of moving towards sustainability, there has been little evaluation of the methods being implemented to achieve this sustainable future.

What Does ‘Sustainable Development’ Mean?

From a Western perspective

- Sustainable development is a concept derived from conventional Western ideology. It is the product of a particular world-view and its interpretation and implementation reflect Western culture and values.
- Though it is touted as a framework for addressing challenges faced the world over, these challenges and their solutions are defined through Western eyes.
- Throughout the history of colonialism, Indigenous people have been dispossessed of their lands and subjected to policies aimed at ‘developing’ them, often with devastating effects.
- Sustaining this kind of development may indeed be counterproductive so far as Indigenous people are concerned.

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From an Indigenous perspective

- There are superficial similarities between Indigenous views of sustainable development and those of Western society.
- Creation stories provide the fundamental understanding of indigenous peoples ‘place’ in the world. [Teachings and lessons – how they relate to the rest of Creation.]
- A concept or construct (such as ‘environment’, or ‘traditional ecological knowledge’ or ‘sustainable development’) for which Aboriginal people are assumed to have an automatic affinity.
- It becomes apparent that Indigenous views of development are based not on taking but on giving. Indigenous people ask themselves what they can give to the environment and their relationship with it.

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- The idea of sustaining, maintaining and enhancing relations with all of Creation is of utmost importance from an Indigenous point of view. [Indigenous ways of life focus on this type of relationship with Creation.]
- Indigenous people understand that with this special personal relationship with Creation comes tremendous responsibility; it is not something to be taken lightly.
- Creation is regarded as a gift. To be sustainable means to take responsibility and be spiritually connected to all of Creation, all of the time.
- Everyone and everything carries this responsibility and has duties to perform. All things contribute to the sustainability of Creation.

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- Since colonization, the ability of Indigenous people to live up to the responsibility of caring for all of Creation has been seriously inhibited. The sustainability of Indigenous peoples' lives has been compromised in every aspect of everyday life, resulting in destroyed lands, infant mortality, high suicide rates, and so on.
- Colonization and the accompanying oppression have been so pervasive that even Indigenous people themselves are sometimes disrespectful and harmful to Creation.
- Indigenous views of sustainable development are concerned with 'giving' rather than 'taking', and with what it is that we can contribute to creation. [Indigenous views also include active resistance (sometimes to sustainable development itself) and the process of reclaiming their traditions.]
- Resisting and reclaiming form an integral part of their concept of sustainable development.

What Does ‘TEK’ Mean?

- The knowledge that Indigenous peoples have in relation to the environment has come to be referred to as ‘Traditional Environmental Knowledge’ (TEK).

Martha Johnson defined TEK as:

- a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. The quantity and quality of traditional environmental knowledge varies among community members, depending upon gender, age, social status, intellectual capability, and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, traditional environmental knowledge is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socioeconomic changes of the present. (Johnson 1992: 4)

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Knowledge is regarded as inseparable from the land. According to Gleb Raygorodetsky (in Gwich'in Elders 1997: 14):

- The term 'Land' . . . is not restricted to the physical environment only. It has a much broader meaning, used by indigenous people to refer to the physical, biological and spiritual environments fused together. The closest scientific equivalent of the 'Land', taken without its spiritual component, is 'ecosystem'.
- Raygorodetsky also observes (in Gwich'in Elders 1997: 14) that 'Spiritual and ethical values have been woven into this knowledge, creating a system that has guided the people and helped them survive.'

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- Taiake Alfred (1999: 9) states: ‘The Indigenous belief, reflecting a spiritual connection with the land established by the Creator, gives human beings special responsibilities within the area they occupy as Indigenous peoples, linking them in a “natural” way to their territories.’
- Traditional knowledge is practical common sense, good reasoning, and logic built on experience. It is an authority system (a standard of conduct), setting out rules governing the use and respect of resources, and an obligation to share.
- The wisdom comes in using the knowledge and ensuring that it is used in a good way. It involves using the head and heart together. Traditional knowledge is dynamic, yet stable, and is usually shared in stories, songs, dance and myths. (Roberts 1996: 114)

Barriers to the Use of TEK in Sustainable Development

- Barriers to TEK use include the cultural disruption that has occurred in Aboriginal communities as a result of colonization.

Kemp and Brooke (1995: 27) summarize this issue as follows:

- The most important lesson learned . . . is that indigenous peoples must first and foremost control their own information. It has also become clear over the years that the knowledge base of indigenous peoples is vital, dynamic and evolving. Merely ‘collecting’ and ‘documenting’ indigenous environmental knowledge is in fact counter-productive. These knowledge systems have been under serious attack for centuries, and the social systems that support them have been seriously undermined. However, indigenous peoples must not just support ‘salvage’ operations of what now is often referred to as ‘a rapidly disappearing knowledge base.’ It is not just a question of recovery and recording indigenous knowledge; it is one of respect and revitalization. This information has to remain current and not be considered a relic of the past.

Coexistence: Re-creating an Old Relationship

- TEK is about relationships, not just about understanding the relationships in Creation, but about participating in those relationships. TEK is about sustaining a creative reciprocal relationship with all of Creation, and about fulfilling our lives as human beings in relation to Creation, as T'Seleie (1977) so eloquently points out.
- From a **Western perspective**, TEK and sustainable development (and sustainability) are discrete concepts. From an **Aboriginal point of view**, they are intimately related and are in fact part of the same continuum (or circle). They are both about relationships. They are both about relating to Creation in a certain way. If people do not take care of their relations, then they are not fulfilling their duties and responsibilities; they are denying their relationship with Creation, and dysfunction will result. In a reciprocal fashion, non-human elements are expected to fulfil their responsibilities to Creation. Traditional teachings offer profound guidance about how to work with Creation and not to interfere with the other beings' ability to fulfil their duties and responsibilities.

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- The model of coexistence is viewed as holding promise for environmental and resource management (Brubacher and McGregor 1998; Chapeskie 1995; McGregor 2000; Ransom 1999).
- Coexistence may serve as a potentially promising bridge between two worldviews. Brubacher and McGregor (1998: 18–19) anticipate that the coexistence approach can function as a starting point for renegotiating an old relationship in a contemporary context:
- A co-existence approach would promote a focus on formally acknowledging Aboriginal people as legitimate partners in resource management. It would ensure their rightful place in the development and implementation of management policies and decision-making. . .. By drawing upon principles which express the values and perspectives of both Aboriginal and non-Aboriginal cultures, there is potential for developing an effective co-existence model, one that bridges distinctions by building upon shared values.

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- The coexistence approach does not devalue Western or Indigenous resource management practices and the knowledge that informs them.
- Coexistence does not allow for the domination of one over the other. Both systems are valued, and, most importantly for Aboriginal people, their cultural survival is assured. The Aboriginal world-view and all it has to offer will no longer be threatened, dominated or distorted.
- Relationships based on coexistence, if established on a broad scale, would greatly facilitate a global move towards sustainability.

Science and Traditional Knowledge

- Traditional knowledge is a cumulative body of knowledge – know-how, practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment.
- TK is embedded within specific worldviews. In this respect modern science is not different, it is also anchored in a specific worldview and, more to the point, a specific view about man's relation to nature that is strongly instrumental (see, e.g., Keith Thomas, 1983: *Man and the Natural World*. Oxford UP).
- In contrast, the worldview embraced by TK holders typically emphasizes the symbiotic nature of the relationship between humans and the natural world. Rather than opposing man and nature as in occidental thought, traditional knowledge holders tend to view people, animals, plants and other elements of the universe as interconnected by a network of social relations and obligations (see, e.g., Ann Fienup-Riordan, 1990: *Original Ecologists? The Relationship between Yup'ik Eskimos and Animals, in Eskimo Essays*, A. Fienup-Riordan, ed. London: Rutgers UP).

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- "Ethnoscience" is a scientific approach to traditional knowledge, based on the work of Harold Conklin among the Hanunoo of the Philippines in the 1950's. [Through elicitation of responses to both natural objects such as plants, diseases, soils, and animals, and human activities such as agriculture, scientists developed an appreciation of the coherence of indigenous knowledge systems, their empirical precision, and their attunement to local environmental contexts.]
- As ethnobotany grew during the 1970s and 1980s, scientific interest increased as well, with contributions not only from anthropology but also from biological systematics, structural linguistics, cognitive psychology, and logic. It should be noted that the debates continue on the extent of universality of classification systems (Berlin 1992, Ellen 1998, Atran 1991).

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- The relationships between scientists and indigenous communities have been criticized by some advocates of postmodern perspectives that emphasize hegemonic power relationships embedded in certain forms of knowledge. Western science, insofar as it embodies cultural constructions that disenfranchise and subordinate traditional populations, tribal groups, and women, is viewed as an enemy of the indigenous knowledges that are inherently consistent with the political aims of empowerment and land rights for these groups.
- Recently, traditional knowledge (TK), through modern ethnobotanical research, is informing science in many areas of natural resource management. TK helps scientists understand management of biodiversity; TK informs science about natural forest management; TK is providing scientific insight into crop domestication, breeding, and management; TK gives scientists new appreciation of the principles and practices of swidden agriculture, agroecology, agroforestry, crop rotations, pest and soil management, and other areas of agricultural science.

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- Traditional knowledge has informed modern science in many areas, most notably in taxonomy, medicine, agriculture, natural resource management, and conservation
- Agricultural sciences and natural resource management are being influenced by traditional knowledge, through modern ethnoscience research.
- Traditional knowledge informs science about natural forest management (Posey 1985)
- Conservation strategies can be based on traditional knowledge and resource use (Redford and Padoch 1992, Redford and Mansour 1996).
- From the harvesting of individual plant or animal resources to the management of entire landscapes and ecosystems, learning from local people allows conservationists to integrate their programs with real human needs and practices.

Local Knowledge in the Environment Development Discourse

- Local knowledge as practical, collective, and strongly rooted in place. According to Geertz (1983: 75), local knowledge forms a relatively organised body of thought based on immediacy of experience.
- In this call for the location-specific, ethnoscientists have revealed sophisticated insights into indigenous knowledge systems and world-views.
- The concept that local people produce ‘shared knowledge’, which serves as a ‘cultural totem’ about ‘how we know’ (Cohen, 1993: 37), includes an implicit assumption of people living in closed communities and having unique ways of knowing.

Local knowledge as non-knowledge

- Traditionally, scientists and development experts have simply not wanted to see local forms of knowledge as having anything important to say.
- Scientific knowledge has been defined as a paradigm of knowledge, and the only epistemologically adequate one. This has resulted in a view of local knowledge as non-knowledge, that is based on irrationality and ignorance (Murdoch and Clark, 1994).
- Among the development experts working in Río San Juan, local knowledge was commonly seen as a constraint on progress and local settlers as confined by their traditional modes of thought.

Local knowledge as a holistic way of knowing

- Today, there is an increasing number of environmentalists and alternative movement activists criticizing the hegemony of science and emphasizing the necessity of creating space for competing modes of knowledge.
- According to many of them, it is time to replace the reductionist framework of science with a methodology that draws its guidelines from non-Western traditions, based on holistic ways of knowing and ecologically evolved learning to live in equilibrium with nature.
- Western science has for centuries oppressed rural people and their traditional knowledge. Instead of considering us as experts, we should admit that we are apprentices and have enormously to learn from the local people. They know their environment intimately and they have deep knowledge of the local ecosystems.

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- According to alternative developmentalists, local settlers were ‘minimal disturbers of nature’, and ‘admirable scientists of the concrete’ (Malkki, 1992: 29), genuinely unfolding the hidden innards of the local habitats.
- Western science was constructed as reductionist and theoretical while non-Western knowledge was considered holistic and practical.

RELEVANCE OF INDIGENOUS KNOWLEDGE: A CASE STUDY

Background

- There are strong reasons to argue that the ecosystem and biodiversity are best protected by the indigenous people themselves. This is evident from my discussion about Kuki indigenous knowledge in relation to shifting cultivation and socio-religious beliefs and practices around it.
- There exist an inseparable linkages between different ecosystems, namely, land, water and air – linking ecology, economics and ethics, sustainable management of natural resources.
- This presentation follows a humane approach by incorporating social, cultural and ethical/spiritual dimensions into it, and recognizing at the same time the in-built limitations of traditional economics and the developmental paradigm, which are still being implemented.

Inter-connectivity between the ecology and social system

- Traditional societies maintain a close connectivity with Nature, tend to view themselves as part of a cultural landscape, for e.g. *jhum* (meaning shifting cultivation) is an integral part of socio-cultural definitions of people in Northeast India. [Indigenous cultures see nature as sacred because they see it as having a close relation to their spirit world]

- Of late, realization has crept in that the ecological health of these fragile mountain mountains is vital not only for the traditional societies living there, but also for those living in the neighboring plains.

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- There is a symbiotic relationship between nature and culture, making it essential for us to acknowledge the rich 'traditional ecological knowledge' and forming an important discursive link between the complex and diverse biophysical ecosystem with an equally complex and diverse social system.
- The traditional knowledge possessed by local communities should be validated and integrated as knowledge with the 'formal' knowledge in designing adaptive management strategies with community participation.
- Traditional people are in close interaction with the natural environment, which has shaped their cultural identity, value system, and indeed economic well being. In this living relationship, they respect Nature as a sacred entity.

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- TEK is the culturally and spiritually based way in which indigenous peoples relate to their ecosystems. This knowledge is founded on spiritual-cultural instructions from "time immemorial" and on generations of careful observation within an ecosystem of continuous residence (Brosius 1997: 65).
- For indigenous people, Ingold writes, "it is in their relationships with the land, in their business of dwelling, that their history unfolds. Both the land and the living beings who inhabit it are caught up in the same, ongoing historical process" (2000: 139).
- Indigenous peoples have their own 'effective science' and resource-use practices (Sillitoe 1998: 204).

Land and Identity

- Saltman (2002: 7) defines the relationship between land and identity as the dynamic arena within which social realities are acted out in individual cognition and perception.

A Kuki chief explained:

- Land to us means identity, culture, uniqueness, heritage, and so on. Land is part of our social fabric, woven around kinship. Each family is given the land to cultivate and to take care of their very life and survival.

- In short, land is the basic foundation of the Kuki social, cultural and economic systems. Within the given village territory and its ecosystem the values, belief and cultural practices are regulated by the traditional social institutions. [Land use among the Kukis is patterned with kinship relations and structures.]

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- Land and forest provides not only an important element in their livelihood systems but also security and a sense of belongingness. Therefore, Kuki historical root is also strongly linked with the land that they live on.
- To the Kukis, knowledge is regarded as inseparable from the land.
- Land is inextricably linked to the Kuki's material and spiritual world. Furthermore, Kuki social and cultural system and identity are closely linked with land and forests. The political-economy of land holds an essential part of the Kuki existence.
- A Kuki elder recounted that land has been considered to be 'Mother Earth' and guardian to the indigenous Kukis for the past generations. He further stated that 'they share a close relationship with mother-nature who is their provider. These lands give us everything we need, so it is like a mother to us'.

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- For the Kukis, land includes village land (territory), rivers or streams and forest land.
- Land is the basic foundation of the Kuki social, cultural and economic systems. Every village has its own land and it is well demarcated by the rivers, stones and the hill ranges.
- Rivers are also used to define and sustain social boundaries. Kuki historical root is also strongly linked with the land they inhabit.

Land Use System of the Kukis

- The livelihood of the Kukis is mainly based on jhumming or shifting cultivation. The Kukis share multiple forms of relationship with land and forest.
- Land and forest provides not only important elements in their livelihood systems but they also form security and a sense of belongingness.
- Jhumming is both an agricultural activity and a means of livelihood for the Kukis. Jhumming is the very basis of their economic, social and cultural systems, and their identity as a community.
- The entire gamut of their socio-cultural life is woven around jhum fields, which can be seen as an ‘agricultural activity’, a ‘cultural practice’ or a ‘way of life’.
- The Kukis land-use system and management of forests are based on their age-old traditional knowledge.

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- For the indigenous Kuki people, jhumming is not just an agricultural activity to produce food for consumption or subsistence but it is also a way of life.
- The Kuki beliefs and culture centres around the practice of jhumming – the practice of jhumming is deeply integrated into their social, cultural, and economic aspects of their life.
- The Kuki people make use of the local ecological and environmental conditions to their advantage. The natural indicators, their magico-beliefs, rituals, and myths also condition their resource use. The entire gamut of their socio-cultural life is thus woven around agriculture.
- The Kuki villages are self-sufficient and pursue their economic activities within the given village land and territory they inhabit. The Kuki society is a close-knit society with strong family and clan bondage.

Use of Forest Land

- The Kukis have a close relationship with the forests traditionally. Forests are culturally significant and multi-dimensionally appropriated space, and are meaningful in every religious, social, and economic life. [A wide variety of non-domesticated resources, obtained from the forest are utilised by the Kukis.]
- The Kukis not only live in areas close to forests, but also rely extensively upon hunted, collected or gathered food and resources.
- Kuki folklore is full of references to the forest. Several sites of forest and specific rituals which are performed under certain trees are frequently alluded in their folklore. [Their manifold attachment to the forest has created many myths and legends, and ideas and perceptions.]

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An old man stated:

- The Kukis share a close relationship with forest as forest is the store house of medicinal plants. The stem of a certain leaf cures stomach pains, the inner bark of a tree reduces headache and fever within seconds of being applied to one's forehead.
- Living close to the forests, the Kuki have a clear understanding of various plants and trees which have been used for medicinal purposes. Their deep rooted knowledge of plants, roots, leaves, and herbs that are available in the forest which are used as medicines to cure different diseases.
- Living in the isolated forest region, their knowledge on medicine for curing diseases and common ailments are very much shaped by the immediate forest ecology.

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- All these practices might have well begun with a trial and error process. Such knowledge systems are cumulative, representing generations of experiences, careful observations, and trial-and-error experiments (Grenier 1998).
- The forest is meaningful not just as a concept or as an abstract idea but as sometimes the particular forest people are surrounded by, which they appropriate in their everyday life and which they refer to as ‘our forest.’
- They have a highly sophisticated knowledge of their environment. For example, they had names for all the common plants as well as those of medicinal importance to them, such as *Anphui* (Clerodendron Colebrookianum), *Bahlong* (Oroxylum indicum) and are well versed in the edible properties of plants. [NTFPs are collected particularly for consumption and also for sale in the market.]

Traditional Farming Systems

- Ramakrishnan et al. show how traditional farming systems are different from modern agriculture with the kind of crop diversity and the associated biodiversity.
- The modern agriculture system is maintained artificially through external inputs, and this eventually degrades the soil, whereas the traditional methods use organically managed multi species cropping, unlike the monocropping in modern agriculture.
- The traditional systems are highly variable and designed to fit into a given socio-ecological system. For e.g. *jhum* essentially is an agroforestry practice.
- The ‘ecosystem people’, are an integral part of the natural cultural landscape around them (Ramakrishnan 2001, 2007).

Debate on *Jhumming* and Conservation

- Ecologists and environmentalists argue that the traditional forest dwellers and shifting cultivators/ *jhummias* are responsible for large-scale deforestation and harming the environment. In contrast, social anthropologists argue that the 'ecosystem people' have an explicit traditional ecological knowledge (TEK) or indigenous knowledge (IK), which is an integral part of their cultural landscape.

- *Jhumming* or shifting cultivation is basically a traditional farming system that involves the rotational cultivation of an area. The knowledge of burning, sowing/planting and weeding in *jhumming* is learned by observing one's kin and neighbors and through direct experience.

The Kuki Traditional/Indigenous Knowledge

- In Kuki understanding the world of spirits, men and natural phenomena are all inter-related and bound to this ideal.
- *Jhumming* is an integral part of socio-cultural definitions of many ethnic communities in Northeast India including Kukis of Manipur
- The Kuki indigenous knowledge lies at the core of their rituals and their understanding of themselves, and their environment.
- Rituals in *jhumming* allow local forms of environmental knowledge to be kept alive; It is such beliefs and practices that have resulted in sustainable management and conservation of natural resources in the past.

Rituals

- Rappaport in his essay ‘Ritual Regulation of Environmental Relations among a New Guinea People’ has argued that ritual actions do not produce a practical result on the external world. That is one of the reasons why we call them as rituals. But to make this statement is not to say that rituals have no function. Their function is not related to the world external to the society but to the internal constitution of the society. They provide the members of a society confidence, and dispel their anxieties. They further discipline their social organization (1967: 17).

- Rappaport (1968) also made a classic case study of human ecology in a tribal society in his book *Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People*. He argued that culture sometimes serves their own components, such as economic or political institutions, at the expense of men and ecosystems. Similar to the case of the New Guinea people, the Kukis too had depended entirely on killing mithun, pigs and fowls during different rituals.

Rituals in the Traditional Kuki Life

- In Kuki understanding the world of spirits, men and natural phenomena are all inter-related and bound to this ideal.

- The Kuki indigenous knowledge lies at the core of their rituals and their understanding of themselves, and their environment.

- Rituals have always remained an integral part of Kuki *jhum* cultivation and these activities are integrated with their belief and socio-cultural life.

- *Jhumming* forms an integral part of the tribal life style. It is not just a means of livelihood (entire sociocultural and religious activities are interwoven into the different stages of the cultivation cycle).

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- Rituals in *jhumming* allow local forms of environmental knowledge to be kept alive, which can be showed to play an important role in keeping the links of ecological knowledge with religious or spiritual practices within the ambit of ecological sustainability and environmental conservation.
- The rituals reflect the indigenous people's worldview of a sense of reciprocity and respect towards the other creations in the cosmos.
- It indicates that they have a special understanding of the cosmos and the place of humans in the processes of the cosmic whole.
- For instance, the *Hun* ritual – usually, the *Hun* (denoting 'time') ritual continues for the whole week. The concept of 'time' is linked to work on the land, to rituals, other social activities and to the cycle of the seasons.

Rituals Performed in *Jhum* Field

Lou-mun san ritual

- This ritual is performed right after choosing the site and before clearing the agricultural plots for *jhumming*.
- This ritual is undertaken to test the suitability of land chosen for *jhum*.
- A ceremony is conducted during this ritual to offer gifts as a sacred exchange, such as a sacrificed fowl.
- It is commonly believed that the conduct of this ritual establishes a dialogue between the spirits dwelling in the jhum fields and the cultivator. Thus an offering in the form of food as a sacred exchange is done to protect the land, the mythical deities, and humans in return

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***Twikhuh thoina* ritual**

- The *twikhuh thoina* (ritual after clearing the forest) is the second ritual performed in the *jhum* field.

A former *Thiempu* (priest) stated about the ritual as follow:

- After a new site is selected the villager started clearing the portion of the plot for jhum cultivation. Sometimes in the surface of the jhum fields if stagnant water or spring is found, it was believed to be inhabited by the spirits. While clearing the jungle, if such spot had been found, it is forbidden to be covered by leaves or branches. Rather, if such spot is located the owner of the field should immediately summon the *thiempu* to perform a sacrificial propitiation. This ritual is called *twikhuh thoina*.

Cont.

Daiphu ritual

- Rituals after clearing the forest. *Daiphu* is another agricultural ritual performed by every household.
- This ritual is carried out for good health and prosperity of the whole village in their *jhum* cultivation.
- Soon after the harvesting season is over, each head of the household in the village would go out in the forest supervised by the chief and the village council in locating the jhum site for the current year.
- When the site for cultivation was selected, all the necessary activities for cultivation are taken up; clearing of the jungles and drying of the leaves and burning of them would continue.
- Once the clearing and burning of the cleared jungle was completed, the *daiphu* ritual was performed. Until and unless the *daiphu* ritual was performed no work could be carried forward.

Cont.

Chang-nungah poh (Paddy deity ritual / appeasing the souls of the paddy)

- The *chang-nungah* is a rare paddy, which remains without sprouting flower or bearing a grain. It remains green throughout the entire paddy season even when others are turning yellowish and have ripened.
- In the Kuki mythology, this *chang-nungah* has an interesting significance. They were considered as a harbinger of good fortune and harvest.
- When such a rare paddy is found in one's field, it symbolises the presence of the sacred and a proper reception of it will augment the harvest manifold.
- Accordingly, the *thiempu* performs a special ritual called *chang-lhakou* to appease the *chang-nungah* to bring blessing to the household. The purpose of the ritual is to invoke blessing as also to foresee the fate of a family in terms of prosperity in a given agricultural year.

Cont.

Chang-lha kou

- *Chang-lha kou* or pleasing the souls of the paddy is another agricultural ritual performed by the village *thiempu* for the entire village.
- This ceremony was usually held in the month of May when the sowing of seeds in the fields was over. It was usually held in the courtyard of the village chief.
- Another practice was strictly observed by the entire village during this period. This was known as *khopi jechang* which mean the villagers were forbidden to leave the village and outsiders were not allowed to enter the village during this period.

Relevance of IK for Biodiversity Maintenance

How and why is indigenous knowledge relevant in the present development scenario?

- The rituals reflect the indigenous people's worldview of a sense of reciprocity and respect towards the other creations in the cosmos. It indicates that they have a special understanding of the cosmos and the place of humans in the processes of the cosmic whole.
- Kukis were biocentric in the past and much long before the concept of knowledge and understanding in the scientific and academic realm emerged.
- IK of Kuki continues to have relevance for conserving the Himalayan landscape. Science needs to validate Kuki IK

Conclusion/Findings

- The indigenous Kukis have for centuries maintained a very unique relationship with their environment including the protection of the environment which is essential for their livelihood.
- Kukis were biocentric in the past and much long before the concept of knowledge and understanding in the scientific and academic realm emerged.
- IK of Kuki continues to have relevance for conserving the Himalayan landscape.
- From the Kukis experience, there are strong reasons to argue that the ecosystem and biodiversity are best protected by the local people themselves.

Cont.

- For the Kukis, knowledge is regarded as inseparable from the land and forest.
- Indigenous knowledge as represented in *jhumming* practices continue to have relevance for the Kukis and can play an important role in conserving the fragile landscape
- The two (Science and IK) perspectives taken together would probably produce a more rounded understanding of natural and cultural environments and sustainable development potentials