International Journal of Peace and Development Studies Vol. 2(1), pp. xx-xxx, January 2011
Available online at http://www.academicjournals.org/IJPDS
ISSN 2141-2677 ©2011 Academic Journals

Full Length Research Paper

Creating space for community-based conservation initiatives (CBCLS)in conventional academics

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Accepted date 19 December, 2010

Government promoted protected areas (PAs), and large integrated conservation and development projects (ICDPs) such as joint forest management (JFM) are normally mentioned as the only means of conservation and locals are mentioned as the source where 'biotic pressure' comes from in most of the curricula which could make the professional conservation biologists and policy makers biased and may consider locals as a threat to conservation. Education based on the western-centric approaches to conservation in India have left the forest department officials and the officials of line departments concerned with conservation, such as agriculture, live-stock and irrigation indifferent to people's initiatives. Besides, it made the policy makers inefficient to design holistic and appropriate inclusive policies related to conservation and development. This situation could be attributed to the hitherto existing gap in formal education due to lack of inclusion of community-based conservation initiatives (CBCIs) and humanities especially in the academic curriculum of conservation biology. Hence, it is hypothesized that the existing gap between scientific world and ground realities in India could be abridged if the issue of CBCIs and humanities finds their way into academic curriculum and research domains of conservation biology, natural resource management and environmental sciences.

Key words: Community-based conservation (rfCBC), community-based conservation initiative (CBCI), Forest Survey of India (FSI), forest department (FD), Indian Forest Service (IFS), International Union for Conservation of Nature and Natural Resources (IUCN), Joint Forest Management (JFM), the Theme on Indigenous and Local Communities, Equity, and Protected Areas (TILCEPA), integrated conservation and development project (ICDP).

INTRODUCTION TO COMMUNITY-BASED CONSERVATION (CBC)

Community-based conservation (CBC), as a means of achieving integrated conservation and development, has emerged as the dominant paradigm among non-governmental, national and international organizations. CBC is based on the idea that if conservation and development could be simultaneously achieved, then the interests of both could be served (Berkes, 2004). The emergence of CBC is part of a larger international movement to develop new approaches to environmental and social advocacy that link social justice and ecological health (Brosius et al., 1998). This movement is critical of the separation between advocacy for nature and advocacy for people, recognizing that environmental health is intricately linked to issues of poverty, justice and indigenous rights (Brosius et al., 1998; Damian, 2005).

The community centric approach to conservation stresses complementarities and trade offs in place of conflict between conservation and development (Brown, 2002). For example, one of the failures of past protected area, "fences and fines" approaches to biodiversity conservation is that they have ignored the link between human livelihoods and conservation. Community-based conservation strategies, however, are often based on the

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"indirect" and "direct" understanding of the livelihoods-conservation linkage (Brown, 2002; Damian, 2005).

An approach based on indirect linkages tends to focus on compensation or substitution of alternative livelihoods to offset conservation related community costs. Compensation can take the form of monetary or development related incentives given to the community as a form of "payment" for restrictions on resource use (Abbot et al., 2001). Substitution, on the other hand, prescribes the development of alternative income sources or livelihood options in place of those restricted by conservation. This may also involve the promotion of new agricultural technologies to increase the value of livelihoods based activities outside of the area being conserved (Abbot et al., 2001; Brown, 2002). In many cases, this involves the development of buffer zones around protected areas or the creation of biosphere reserves. Although these approaches may seem conceptually straightforward, they often backfire in practice. In some cases, compensation and substitution promote the further commoditization of biodiversity, and increased income generation. In turn, local residents are better able to access new technology, and thus become more efficient at extracting these resources (Langholz, 1999). In the end, compensation and substitution may lead to acceleration in destructive practices as local communities attempt to capitalize on the increased value of these livelihood options (Damian, 2005).

The community-based approach to conservation often strives to reduce poverty through the conservation and sustainable use of biodiversity. More often, community-based conservation recognizes a direct linkage between conservation and livelihoods. This direct linkage recommends that focus is placed on increasing the value of the species and areas being conserved, so that they make a larger contribution to local livelihoods and well-being. As such, a dependent relationship between biodiversity and user groups is developed, with local communities benefiting directly from the conservation initiative. The value of this biodiversity will thus, in theory, provide local incentives for conservation. Rather than just being compatible, the livelihoods of resource users drive the need for conservation (Brown, 2002; Damian, 2005)

Community-based conservation reverses top-down, centre-driven conservation by focusing on the people who bear the costs of conservation. In the broadest sense, community-based conservation includes natural resource or biodiversity protection by, for, and with local communities (Western and Wright, 1994: 7; Forgie et al., 2001).

People are usually proactive in protecting things of value to them, and it is in this context that biodiversity conservation initiatives have to be understood. Community-based conservation seems compelling because it starts from the most fundamental principle: Individuals will take care of those things in which they have a long-run, sustained interest (Bromley, 1994: 428;Forgie et al., 2001).

The rationale behind CBCIs is that, by working together, people are able to achieve more than individuals or organizations working on their own, and involving those affected is likely to result in a better and more acceptable long-term solution. These desired outcomes have led to increased acknowledgement of participatory activities as a means of achieving environmental and sustainability goals. While these concepts are not new, their application has increased dramatically in the last 10 years (Forgie et al., 2001).

WHAT ARE COMMUNITY-BASED CONSERVATION INITIATIVES (CBCIS)?

The recent times have been marked by the emergence of a powerful new trend in conservation and management of natural resources. It has been noticed on many occasions that despite the increasing alienation of local communities, when an ecosystem has been under threat of degradation and destruction, or when the officials have just not cared enough to cope, it has been the local communities that have come to the rescue (Rasika, 2003). Such self-initiated efforts by the communities to conserve natural resources are otherwise known popularly as community-based conservation initiatives (CBCIs).

CBCIs, by definition, operate at a local or community level. They tend to be voluntary, people-centered and participatory, with community members making management decisions (Murphree, 1994: 419). Expertise may be provided by outside agencies but management responsibility remains with the community group (Forgie et al., 2001).

Little (1994: 348) defines community-based conservation as "voluntary initiatives involving a minimum of several households in which at least one of the outcomes of local management practices is either for the maintenance of habitats, the preservation of species, or the conservation of critical resources and another outcome is improvement of social and economic welfare" (Damian, 2005).

Community-based conservation (CBC) could be a self-initiated process by the community, or triggered by an NGO, government agency or donor. It could be exclusively handled by the community or be some form of collaborative or joint management with outside agencies. The motivation could be 'biodiversity conservation, livelihood security, water harvesting or others'. Whatever is the nature or origin of the effort, the fact remains that CBC is gaining importance. And naturally so, the results of community initiatives are more widespread and far-reaching (Rasika, 2003).

Although there is an overwhelming rhetoric in support

for the integration of conservation and development agendas, community-based conservation still means different things to different people. Conservatives tend to see local involvement and community participation in resource management as a means of maintaining environmental integrity. On the other hand, development professionals often interpret the approach as a means of maintaining a local pool of resources that supports sustainable development at the community level. Conversely, indigenous groups often see community-based initiatives as a means of gaining respect and increased recognition of indigenous rights, culture and knowledge. Brosius et al. (1998) defines the focus of a community-based conservation initiative has significantly influence on how the core objectives of conservation and development are approached. Even at the community level, there are a diverse range of perspectives and problem definitions. This is often ignored in community-based initiatives, where the generic use of "community" assumes a static and homogenous entity (Brosius et al., 1998; Agrawal and Gibson, 1999; Brown 2002; Damian, 2005).

Although the underlying assumption of successful community-based conservation is that the community can influence decision-making and problem definition (Little, 1994), attention must also be paid to the power structure, diverse players and perspectives involved at the community level (Agrawal and Gibson, 1999; Damian, 2005). But an understanding could be developed among conservation professionals only when the information on existing community-based conservation initiatives (CBCIs) are integrated in the academic curriculum and studied meticulous. This is necessary because CBCIs represent ground realities existing in countries like India.

Presence of CBCIs in India

The history of community-based forest and wildlife protection in many parts of Indian sub-continent dates back to pre-colonial period. These CBCIs are much older than any government initiated conservation projects in India. For instance, in the year 1798, in a small village called Vedanthangal near Chennai, British soldiers shot some storks in the local wetland. The villagers stormed the collector's office and made him issue a 'Koul' or order that no one was to harm the nesting birds. This is long before the concept of protected areas (PA) as we know them today was even thought of. Indian history is peppered with numerous of such examples, many reported by the British and in recent times by many other scholars and researchers such as Chandran and Kalam (1997), Chandrasekhara and Shankar (1998), Das and Malhotra (1998), Gadgil (1995), Gadgil and Guha (1992) and Pathak (2009).

These initiatives were the result of spontaneous reaction to increasing resource scarcity caused by government's commercial exploitation of the forests, decrease in wildlife, depletion of vital natural resources such as water, or cultural linkages with nature are among other reasons. There are thousands of forests and wildlife protecting groups spread all over India. For instance local communities have been protecting around two million hectares of forest and many species of wildlife in the State of Odisha, India. These initiatives exhibit an array of diversity in origin, management systems, institutional arrangements, benefit sharing mechanism and conflict resolution, that signifies situation specific conservation models evolved due to various interacting factors.

Kind of CBCIs found in India

CCAs for forest ecosystems

1. The Gond tribal community in Mendha (Lekha) village of Gadchiroli district, Mharastra, initiated protection and de facto controls over 1800 ha of forest over two decades ago.
2. Jardhargaon village in Uttarakhand has regenerated and protected 600 to 700 ha of forest and revived several hundred varieties of agricultural crops.
3. Van Panchayats like Makku in Uttarakhand are protecting tens of thousands of ha of high-altitude pasture lands and forests.
4. Villagers in Shankar Ghola in Assam are protecting forests that are inhabited by the highly threatened golden langur.
5. Community forestry initiatives in several thousand villages of Odisha have regenerated or protected forests. Elephants are reportedly being sighted here now.
6. Areas have been conserved as forest and wildlife reserves in Nagaland by various tribes in dozens of villages, including a people's sanctuary for the endangered Blyth's tragopan in Khonoma village.
7. In Tokpa Kabui village of Churachandpur district in Mnipur, 600 ha of regenerated village forest have been preserved in the Loktak Lake catchment by the Rhnmei tribe.
8. With the help from the NGO Tarun Bharat Sangh (TBS), dozens of villages in Alwar district have restored the water regime, regenerated forests and in one case (Bhaonta-Kolyala), declared a 'lok abhyaranya' (people's wildlife sanctuary) (Pathak, 2009).

CCAs for wetland, coastal and marine habitats

1. Uttar Pradesh is a locus of traditional wetlands conservation. In Amakhera village of Aligarh district, the traditional wetland is used for irrigation and fishing. The wetland hosts a large number of migratory birds, whom

villagers are careful not to disturb. Patna Lake in Etah district is home to one lakh water birds during favorable seasons. Though the lake was declared a wildlife sanctuary in the year 1991, it has been protected for centuries by the local communities as a sacred pond. Sareli village in Kheri district supports a nesting population of over thousand open-bill storks, which are considered as harbingers of a good monsoon (Pathak, 2009).

2. Communities in hundreds of villages across India have been protecting heronries (eg: Sareli in UP, Nellapatu in Andhra Pradesh and Chittarangudi in Tamil Nadu). At Kokkare Bellur, Karnataka, villagers offer protection against hunting and untoward treatment, sometimes even foregoing their tamarind yield so that nesting birds are not disturbed. In Tamil Nadu, the 700 ha Chittarangudi tank attracts storks, ibises, herons, egrets, cormorants and other migratory birds. Villagers do not allow any hunting or stealing of bird eggs. They do not burst crackers during Diwali festival, and avoid commercial fishing. Local communities are protecting similar tanks throughout coastal and wetland regions of India (Pathak, 2009).

3. Fisher folk in Manglajodi and other villages at the Chilika lagoon, Odisha, are protecting a large population of waterfowl (once extensively hunted) (Pathak, 2009).

4. A number of coastal communities are protecting critical coastal wildlife habitats sich as mangroves (in Odisha) and sea turtle nesting beaches (in Odisha, Goa and Kerala) (Pathak, 2009).

CCAS for protection of individual species

1. Protection of sea turtle eggs, hatchlings and nesting sites by fisher folk communities is found at Kolavipaalam in Kerala, Galgibag and Morjim in Goa, and Rushikulya and Gokharkuda in Odisha. In the year 2006 and 2008, over one lakh Olive Ridley turtles are reported to have nested at Rushikulya (Pathak, 2009).

2. Youth clubs from the villages around Loktak Lake (Manipur) have formed the Sangai Protection Forum to conserve the greatly endangered Brow-antlered deer, which is endemic to this wetland. They take part in the management of the Keibul Lamjao National Park, which forms the core of the Lake (Pathak, 2009).

3. The Buddhist Morpa community in Sangti Valley in Arunachal has co-existed with the endangered black-necked cranes for generations, viewing them as a harbinger of better rice yields (Pathak, 2009).

4. In Khichan village of Rajasthan, the local population provides refuge and food to a wintering population of up to ten thousand demoiselle cranes, ungrudgingly spending up to several hundred thousand rupees annually on food grains to feed them (Pathk, 2009).

5. The Bishnoi community in Rajasthan, famous for its self-sacrificing defense of wildlife and trees, continues strong traditions of conservation. In neighbouring Punjab, lands belonging to the Bishnois have been declared as the Abohar Sanctuary in recognition to their respect for wildlife. At all the Bishnoi sites, blackbucks and chinkara are found in abundance (Pathak, 2009).

6. At Buguda village in Ganjam district, Odisha, inhabitants have been protecting blackbucks for centuries. Buguda was recently awarded with the Chief Ministers Award for their wildlife conservation efforts (Pathak, 2009).

Sacred sites as CCAs

1. Sacred groves and landscapes are found throughout India, serving to protect rare and endemic species, as well as critical biodiversity assemblages. Such groves also help meet the religious, cultural, political, economic, health and psychological needs of communities. Local livelihood needs are sometimes met through restricted harvesting of biomass. Sacred forests (orans) in the desert regions of Rajasthan are typically managed by the gram sabhas (An assemblage of villages and the lowest administrative body approved by the government of India). Some are open to limited grazing by livestock. Orans are important components in the recharge of aquifers in the desert, where every single drop of water is precious. In most orans, particularly in western Rajasthan, the dominant tree, khejari, is worshipped for its immense value, as the tree enriches soil nitrogen, and during drought and famine its bark is mixed with flour for human consumption (Pathak, 2009).

2. The Khasi Hills of Meghalaya are characterized by pockets of rich biodiversity that have been protected by the Khasi tribe and form the basis of nature worship practices in the area, manifest in the trees, forests, groves and rivers. The Khasi people believe that those who disturb the forest will die, and that sacred animals such as the tiger bring prosperity, happiness and well-being. In fact, the people of Thaianing believe that the destruction their forest by their forefathers has brought bad fortune to them as the Tigers left their forest. Sacred groves are limited in area, which ranges from 50 to 400 ha. There are at least 40 of them in Meghalaya (out of the total recorded 79) including the famous Mawphlang sacred grove (Pathak, 2009).

3. There are several thousand sacred groves in Maharastra, some still managed well, others under grave threat. These include the famous Bhimashankar and Ahupe ‘deoraj’ in Bhimshankar Wildlife Sanctuary, Durgubaicha Kila and others between Bhimashankar and Kalsubai Harishchandragad Wildlife Santuaries. Ajeevali village in Pune district manages a protected site for both spiritual and commercial reasons (Pathak, 2009).

4. Often entire landscapes are considered sacred (e. g. the Rathong Chu/Khangchendzonga valley in Sikkim)

(Pathak, 2009).

IMPACT OF CBCIS ON FOREST AND WILDLIFE

Throughout history, local communities have responded in their own way to the threat posed by colonizing and centralizing forces. One of the best examples of this process is the existence of a number of self-initiated forest protection groups which are reported to be protecting more than two lakh hectares of forests on both state and community lands near their villages in the eastern states of Odisha and Bihar and, on a smaller scale, in parts of Rajasthan, Gujarat, Karnataka and Punjab (Sarin, 1996). Their efforts appear to be very effective, particularly where they have successfully negotiated area boundaries and access control rules with other settlements.

Local institutions are also marked by various levels of organizational complexity. The 'Shamilat' (common property) forests in Punjab not only involve collective management by several villages but also reciprocal agreements with nomadic pastoral groups (Sarin, 1996).

In many areas, villagers are themselves protecting habitats with an explicit rejection of any government involvement. Inhabitants of some villages in the Alwar district of Rajasthan have declared 1,200 ha of forests as the Bhairodeo Dakav 'Sonchiri', promulgated their own set of rules and regulations which allow no hunting, and are zealously protecting the area against any outside encroachments. Several patches of forest in the Himalayas have obtained strict protection from the communities associated with the Chipko movement (Kothari, 1997).

PROVISIONS UNDER DIFFERENT LAWS FOR THE RECOGNITION OF CBCIS

Community-based conservation initiatives per-se has no legal recognition by the Indian Law and Policies. However, there are some provisions in the laws and policies which could help to bring recognition to CBCIs. Some of the provisions in the laws and policies are:

1. Article 51 A (g) of Indian constitution reiterates that "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures".
2. The Section 28 of the Indian Forest Act, 1927, provides the State Government to decide over assigning rights to local communities on a patch of Reserve Forest by declaring it as "Village Forest". The villagers can meet their subsistence needs from the forest but they should protect it in return. However, the ownership and decision making power remains with the state government.
3. The recent amendment and inclusion of Section 36 to the Wildlife Protection Act 2002 has now allowed for the provision for Community Reserves. This means it officially recognizes the efforts of certain communities that are conserving habitats and wildlife around them, and will hereafter support them (Ashish, 2003).
4. The provision in the Wildlife Protection Act, Section 33 (c), provides ample scope for serious experimentation. It says that the Chief Wild Life Warden 'may take such measures, in the interests of wildlife, as he may consider necessary for the improvement of any habitat' (Ashish, 2003).
5. The Section 37 of the new Biological Diversity Act 2002 has a provision for Biodiversity Heritage sites. The above Section of the Act accentuates the participation of the local communities in the conservation and management of biodiversity. The state governments in consultation with the local institutions can declare biodiversity rich areas as "Biodiversity Heritage Sites", (Vasundhara). This could be made effective if the rules can be appropriately framed, this Act could be used by/for communities (Ashish, 2003).
6. The Section 3 (1) (k), of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, for the first time in the legal history of India acknowledges traditional rights of forest dwellers to conserve and nurture forest resources.
7. The panchayat laws (especially the Panchayat (Extension to Scheduled Areas) Act 1996) have provisions that could be used by communities' conservation initiatives (Ashish, 2003).

"All these recognize the potential and promise of community based conservation, though they do not go far enough in backing such initiatives" (Ashish, 2003). "In none of these laws are the provisions explicit and strong enough for this to automatically happen…there will have to be considerable lobbying and struggle before the potential is utilized,". For example, the Wildlife Protection Act undermines its own potential by disallowing community reserves to be declared on government land (Ashish, 2003).

STATUS OF THEIR RECOGNITION BY LAW AND ACADEMICS

Considering the aforementioned, the efficiency of CCIs in conserving the natural resources, addressing the issues of poverty, focus of the national and international organizations, etc are agreed without any dissention but the basic question remains "why there is no mention of CBCIs in the conventional academics, in particular conservation biology curriculum?" where the future

conservation professionals are expected to emerge from. Was this intentional or unintentional? Why only government promoted conservation projects are being discussed in the academic curricula as the only means of conservation? Why such age old valuable practices are being ignored? Why are they confined only to the interests of the few NGOs, few research institutes, few funding agencies, but not the government and academia?

As mentioned earlier except for some provisions in the law, CBCIs per-se has no legal recognition by the Indian Law and Policies. Fortunately, important international agencies such as the IUCN (the World Conservation Union) are also now adopting this approach. A milestone in this regard is the World Parks Congress that was held in Durban, South Africa, in 2003. For the first time in the history of this Congress that is held every 10 years, a cross-cutting theme on communities, equity and protected areas has been incorporated. This is thanks to the work of the TILCEPA (the Theme on Indigenous and Local Communities, Equity, and Protected Areas) that was set up in 2000 by the World Commission on Protected Areas and the IUCN. This inter-commission initiative advocates, in all countries, the recognition of community conserved and managed areas that are significant from biodiversity point of view, and the development of management partnerships with the communities resident in or surrounding official PAs (Rasika, 2003). This work under the auspices of IUCN builds on decades of experience and lobbying during general assemblies such as the 1987 meeting in Costa Rica where local, national and international community conservation and development organizations, such as campfire, and Indigenous peoples organizations and others set out an agenda for local involvement using the World Conservation Strategy as a foundation.

The Forest Survey of India (FSI) reports of 2001 and 2003 have recognized the achievement of these initiatives by clearly mentioning that most of the open forests in the Odisha have been converted into dense forest due to community conservation efforts. Community practices have been accepted as a body of knowledge and experience in the international world under a cross-cultural curriculum introduced in Britain in 1988, “Thengapalli” as an innovative method for forest protection and social mobilization was introduced at the 6th standard level in the Hampshire County in Britain covering 35000 students in 6000 schools. A formal education material package was prepared by the Hampshire Development Education Centre.

Unfortunately, CBCIs are not discussed in the academic curriculum of neither conservation studies nor environmental studies or natural resource management studies. It was found that there is no mention of CBCIs even in the syllabus prescribed for the Indian Forest Service Entrance Examination 2010. Here too only Government promoted Joint Forest Management has been mentioned. Except for an occasional recognition in the name of conferring awards, majority of these priceless CBCIs remain unrecognized. There is almost no space, recognition and appreciation for CBCIs in the academic sphere of conservation biology, natural resource management and environmental sciences. Moreover, the social sciences and humanities are essentially absent from most conservation biology or wildlife management courses in the developing world. This is a critical shortcoming because of human dependence on natural resources within the protected areas and escalating conflicts between humans and wildlife and between local communities and state agencies over access to resources. (Vasant et al., 1996).

The situation is quite similar to that of the neighbouring country, Pakistan. Here too, conservation has so far been the domain of the line departments of the government, all of whom, including extension agencies, are used to operating in the authoritarian mode. Though the Forest Department (FD) has taken a lead in CBC, barely 10% of its officer cadre may so far be convinced of the merit of the approach other government line departments concerned with conservation, such as agriculture, live-stock and irrigation, may only have a nodding acquaintance with the approach as part of a donor-assisted project. A massive re-education of the conservation-related government line agencies would be essential to enable CBC to take off in real earnest (Khattak, 1998).

WHY IS IT NECESSARY TO RECOGNIZE AND DISCUSS ABOUT CBCIS IN ACADEMICS?

To get convinced with the argument of inclusion of CBCIs in the conventional academic curriculum of conservation biology, natural resource management and environmental sciences one should first know and recognize that CBCIs are bottom-up (or grass-root) activities that bring individuals and organizations together to work towards achieving desired environmental goals. These initiatives are fueled by a community force that is exerting pressure on government agencies in many parts of the world. Commonly referred to as localization or subsidiarity this force reflects peoples’ desire for a greater say in issues that affect them (Clark and Reddy, 1999; Forgie et al., 2001).

While government agencies may set strategies and prepare plans and policies, their ultimate success depends on the support of a wide spectrum of society, so this desire for involvement needs to be acknowledged and acted upon. Collaborative governance (defined as collaboration between spheres of government, stakeholders in society, and working in closer cooperation with citizens, not simply representing them) is argued to be the appropriate mode of governance as

we enter the new millennium (Clark and Reddy, 1999; Forgie et al., 2001). The rationale behind CBCIs is that, by working together, people are able to achieve more than individuals or organizations working on their own, and involving those affected is likely to result in a better and more acceptable long-term solution (Forgie et al., 2001). Experience in other jurisdictions with institutionalized co-management has demonstrated the viability of collaborative approaches example Ayles et al. (2007). Even the concepts surrounding natural resource and wildlife conservation are changing too. For instance, ecosystem management is an emerging ecological philosophy and approach that requires conventional scientific natural resource management to develop more holistic management approaches (Park, 2000). The ecosystem management concept is a response to a significant shift in social values, scientific understanding and land management interests from that of the past (di Castri and Younes, 1996).

Szaro's definition of ecosystem management is:

''Ecosystem management is a goal-driven approach to restoring and sustaining healthy ecosystems and their functions and values. It is based on a collaboratively developed vision of desired future ecosystem conditions that integrates ecological, economic, and social factors affecting a management unit defined by ecological, not political boundaries. Its goal is to restore and maintain the health, sustainability, and biodiversity of ecosystems while supporting communities and their economic base''.

The IUCN (1997) developed a list of ecosystem management principles, some of which include: Maintaining ecosystem management in policy development, maintaining ecosystem functions and integrity, maintaining biodiversity, ecosystem boundaries and trans-boundary resources, People as integral parts of the ecosystem, ecosystem management (is a goal-driven approach to restoring and sustaining healthy ecosystems and their functions and values) has to accept that change is inevitable, 'The need for knowledge-based adaptive management, and Multi-sector and multi-actor collaboration'.

Though government initiated Joint Forest Management is being thought in academics as an example of CBC, it cannot be considered as the true representation of CBCIs. Moreover, is not without problems. Increasingly, those associated with the JFM movement feel its restricted framework dealing with only degraded forests, inability to provide a more solid foundation for community rights, inequity between the two partners – the FD and the communities, internal inequities in the community organizations and absence of a greater role for the communities in management functions rather than only protection functions (Sarin et al., 1996; Raju, 1998). Hence, it is necessary to deal with examples that are more realistic, holistic, comprehensive, which represents and presents the true spirit of CBCIs.

On the contrary CBCIs represent a complex adaptive system often has a number of attributes not observed in simple systems, including non-linearity, uncertainty, emergence, scale, and self-organization (Levin 1999; Holling, et al., 2002). These characteristics of complex systems have a number of important implications for conservation and environmental management, as can be seen from a consideration of non-linearity and scale (Berkes, 2004).

The evidences collected by researchers' points out that (a) community protected forests are more bio-diverse, (b) community extractions from their forests have been less than ecologically permissible limits, and (c) the annual outputs from forests are more important for communities than their terminal timber value (Arvind, 1998), which is emphasis of the forest department and forest work plans in India.

However, the experience of JFM, provides many valuable lessons for CBC: (a) Tenural security is an effective incentive for the communities than monetary incentives; (b) If the communities are organized into their own institutions they exhibit an exemplary resource prudence and are able to exert considerable social pressure on the erring members of the group; (c) Biodiversity provides a greater assurance of livelihood security than the timber value of forests, and (d) Assurance of rights elicits responsible behavior (Arvind, 1998). The self-initiated CBCIs convey exactly the same message but unfortunately neither CBCIs nor the experiences of JFM are being ploughed back into conservation academic curricula!

Many communities practicing traditional resource use systems have also developed a systematic body of knowledge regarding the natural environment, the functioning of the ecosystem and different habitats and how to manipulate these for human use without damaging the natural processes and cycles. This is not to say that all such communities have done so; those which have not succeeded have either been destroyed or have moved on to new localities on the exhaustion of the resources. However, the very survival of thousands of communities which are directly dependent on the utilization of natural resources indicates that they had accumulated knowledge of natural processes (Arvind, 1998).

Traditional knowledge, like modern 'science-based' knowledge, is also a system of knowledge, in that it is based on the accumulation over thousands of years of human observation and practice and the working out of inter-relationships and cause-and-effect relations of different processes. Such knowledge apparently seems to be more observational than modern knowledge, but spans multidimensional aspects of natural processes and is more holistic because it is accumulated through the

process of human intervention *in situ* (Arvind, 1998).

Despite of all, these CBCIs have remained as the "Cinderella" of conservation, they hitherto did not get the recognition and respect they truly deserve. Moreover, government promoted protected areas, and large integrated conservation and development projects (ICDPs) such as joint forest management (JFM) are normally mentioned as the only means of conservation and locals are mentioned as the source where 'biotic pressure' comes from in most of the curricula which could make the professional conservation biologists biased and consider locals as a threat to conservation. Biased understanding thus gained could make it difficult for them to logically connect the thin yet strong connecting links between conservation and local people.

The absence of CBCIs and humanities in the conservation biology and natural resource management curriculum could be attributed to the influence and adoption of conservation ideology developed in the industrial nations, primarily North America and the curriculum of these courses in India are patterned after the ideologies of the developed countries. An unfortunate consequence of this process has been the veritable absence of the social sciences and humanities from these courses (Vasant et al., 1996).

As Vasant et al., (1996) remarked, "We see the need for incorporating course material in two broad categories; social issues, focused on the politico-economic and cultural origins and patterns of human resource use; and policy issues, focused on an analysis of existing and alternative forms of policy, legislation, and management strategies related to conservation".

This is because, there is a tendency for conservationists to assume that all forms of human resource use lead to resource depletion and habitat degradation. There are three main problems with such assumption. First, all forms of resource use do not lead to degradation. There are numerous examples of resource use occurring along with high levels of biological diversity: Nomadic pastoralism in the African Savannah (Arhem, 1985; Western, 1989), long-cycle shifting cultivation in Northeast India (Ramakrishna, 1992), traditional agroforestry in Indonesia (Michon and De Foresta, 1990), and hunting-gathering communities in the Amazon (Posey, 1985), to name a few. Second, there is a failure to differentiate between different groups of human users; thus, for instance, traditional lopping for domestic fodder and fuelwood is often equated with tree-felling for urban fuelwood demands simply by comparing their volume of demand, though their ecological effects are very different. Third, there is a failure to identify the kinds of political, economic, or cultural processes that underlie individual human resource use (Vasant et al., 1996).

Regarding the first problem, it was assumed that conservation courses do provide students with a sense of the biological mechanisms by which humans can coexist with biodiversity, though most researchers like Vasant et al., (1996), suspect that conventional biases against human use may be restricting even this possibility. There is, however, an urgent need to address the second and third problems in these courses, including an understanding of the cultural mechanisms that may ensure coexistence of rural communities and high levels of biodiversity (Vasant et al., 1996). Moreover, the old narrative of 'fortress conservation' was largely displaced by counter-narrative of development through community conservation and sustainable use (Murphree, 2002: 2; Berkes, 2004). Such is the popularity of the CBC concept that it soon may be difficult to find a rural conservation project that does not define itself as community-based (Hackel, 1999: 730; Berkes, 2004).

Furthermore, a major change in the science of the last few decades is the recognition that nature is complex (Levin, 1999; Berkes, 2004). Natural processes are seldom linear and predictable. Ecosystems and social systems tend to be organized hierarchically. Each level in the hierarchy is independent, to some degree, of the levels above and below, and each level operates under somewhat different principles. Exploring the scale issue further in community-based conservation, centralized management is a poor fit for complex systems: It works neither at the level of the central government nor at the community level and it creates mismatches in scale (Folke et al., 2002; Berkes, 2004). If conservation issue is complex-systems problems, they have to be addressed simultaneously at various scales. That is, a cross-scale approach to conservation is necessary, addressing governance and "community" at the various scales appropriate for the conservation problem in question (Berkes, 2004).

Hence, cross-scale conservation requires linking institutions horizontally (across space) and vertically (across levels of organization). Horizontal linkages may include for example, networks of communities involved in community-based wildlife conservation initiatives, comparing experiences and learning from one another (Berkes, 2004). Therefore, the inclusion of CBCIs in academics is necessary as it would provide an opportunity to enrich the learning of both professionals and communities simultaneously, leading to better conservation.

WHAT NEXT?'

It is expected that if CBCI issues are taught and discussed more in the academic curriculum of conservation biology, natural sciences and environmental sciences (other related fields), would create awareness, understanding, among the future professionals (future citizens), thereby motivating them to take up research on

diverse issues related to CBCIs. The outputs of which could be used as substantial evidence to advocate for necessary policy amendments. It is also believed that academicians and scientists have the power to influence policy, and their advocacy could contribute towards framing progressive policies, improvement of livelihoods of the local communities thereby contributing to better conservation of nature, forests, and wildlife.

Conclusion

Our definition of conservation had been western-centric perhaps it is the right time to start looking seriously at some time-tested traditions of resource use and to develop a cross-cultural pluralistic definition of conservation? This may be an important question to ask if the challenge is to broaden the base and build more inclusive robust constituencies for conservation (Berkes, 2004).

There is absolutely no gainsaying that government promoted conservation projects and programmes are efficient and important, however, the self-initiated community-based conservation systems do exist and proved to be efficient in their own right. Hence, they shall neither be ignored nor sidelined in the process. In this connection it is necessary to discuss about them in the larger discourse and there is no better platform than education to discuss and thereby bringing recognition to such noble initiatives. So, it is absolutely imperative and indispensible to include such issues in the academic curricula which are directly connected to forest, natural resource, and wildlife conservation and governance. Moreover, the shift in the natural resource governance paradigm from highly centralized to democratic makes it even more significant to include them in the curriculum of conservation biology.

The spirit of Article 51 (A) of Indian constitution can be strengthened through this activity and the final goal of the activity should be to 'Promote the Culture of CBCIs by many communities across the nation covering different types of resources'. Towards this, advocacy also is necessary before developing protocols for recognizing and rewarding the CBCIs.

In places such as Asia there is no doubt that community conservation is the future because to ignore the vast populations of people living adjacent to and within many forests and other habitats is to ignore the inevitable and the ultimate failure of conservation. Community conservation practitioners and small-scale community conservation projects deserve the conservation establishment's focus, attention and support. They represent one of our best chances for conservation success (Robert et al., 2007).

It is evident that many of our environmental problems, including those related to conservation; do not lend themselves to analysis by the conventional, rational approach of defining the problem, collecting data, and making decisions based on the results. There is too much uncertainty; targets keep shifting, and the issues must often be redefined (Kates et al., 2001).

These make a class of problems that Ludwig (2001) and others have called "wicked problems," those with "no definitive formulation, no stopping rule, no test for solution," problems that cannot be separated from issues of values, equity, and social justice. Ludwig (2001) argues that where there are no clearly defined objectives and where there are diverse, mutually contradictory approaches, the notion of an objective, disinterested expert no longer makes sense. Hence, a new kind of approach to science and management must be created through a process by which researchers and stakeholders interact to define clear cut objectives, referred to by Kates et al. (2001) as sustainability science, requires place-based models because understanding the dynamic interaction between nature and society requires case studies situated in particular places and there could be no better models in this respect to study than CBCIs.

HOW CAN UNIVERSITIES FOSTER CBCIS? HERE ARE EXAMPLES FROM PHILIPPINES AND HONG KONG

Besides imparting knowledge through education and research to future professionals and citizens, Universities can contribute a great deal to foster CBCIs. Universities and academic institutions can contribute directly towards supporting the CBCIs. One of the best examples of such efforts is the association of University of the Philippines Los Baños (UPLB) Department of Forestry and the local communities of Mt. Makiling Forest Reserve (4244 ha). In Philippines, Mt. Makiling Forest Reserve was established as a field laboratory for the University of the Philippines Los Baños (UPLB) Department of Forestry in 1910. By 1960, when the administration of the reserve was handed over to the university, an estimated 45% of the area had been converted into farmlands and settlements. After failing to achieve an effective eviction of squatters, the university eventually turned to participatory processes facilitated by community organizers (Bagadion, 1999; Stephen et al., 2003).

UPLB initiated the Mt. Makiling Community Based Conservation Program (MCBCP) and assigned community organizers in the barangays. It funded training courses on sustainable upland farming practices and alternatives sources of livelihood. The community organizers set up residence in three pilot barangays, allowing them constant, intensive interaction with community leaders and members. The communities began to mobilize and organize around needs and issues

they perceived as being urgent, such as the lack of an accessible source of water, the encroachment of the Makiling Center for Mountain Ecosystems projects on their lands, and garbage dumping. (Stephen et al., 2003).

The community's function centered on conservation and protection while the university pledged provision of livelihood, education and health services to the community members. These services were in the form of training in farm practices, informal education courses, scholarship grants to qualified youth, discounts to the facilities and services of the university infirmary and an assurance that forest dwellers would not be evicted. Essentially, the forest dwellers were granted access to forest resources in exchange for their commitment to protect it (Stephen et al., 2003).

In another instance, the Global Institute For Tomorrow (GIFT), independent think tank based in Hong Kong with links throughout Asia, especially in China, Malaysia, Japan and India, have realized that globalization is requiring new ways of doing business but bringing with it the risk of poor decisions when business leaders are unable to judge politically, ethically and culturally sensitive situations. GIFT understood that business leaders must thus learn how to manage in this evolving world where uncertainty prevails. In order to do so, they must question and re-examine past practices so that they can acquire new skills to deal with the present and the future. With this understanding, the Young Leaders Programme (YLP) has been established by GIFT to address this gap in leadership skills (GIFT 2007).

As first in Asia, the YLP emphasizes learning through the eyes of others. Candidates in the programme witness for themselves how decisions made in one part of the world have impacts on other parts. For this current project, GIFT have selected the Gir Sanctuary, India as their site. The Gir Sanctuary is home to the Asiatic lions, a species that is diminishing due to men's encroachment on their habitats. For this project, Young leaders will be working with the local communities and learn from local NGOs and the communities about values, customs, needs, and concerns about wanting to become more self-sufficient and prosperous; yet at the same time recognizing the importance of ecological balance and conservation (GIFT, 2007). When business institutions have realized the importance of recognizing the values, customs, needs and concerns of the local communities, the conservation biology and the related disciplines should be far ahead of them in such understanding.

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