Traditional knowledge and SFM: experience from Malaysia

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Healthy forests provide local communities in Sabah with wild vegetables and herbs

Forest knowledge held by indigenous communities has a vital role to play in forest management.

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Traditional management practices have contributed enormously to the world's natural and cultural heritage by creating and maintaining landscapes that sustain the production of multiple goods and services and therefore livelihoods. Traditional forest knowledge is based on long historical experience and deep insight into the dynamics of forest ecosystems and the behaviour and characteristics of a wide range of animal and plant species. Most of the world's primary forests and biodiversity hotspots are in regions with high diversities of indigenous cultures and their associated traditional knowledge and wisdom.

Today, owners of traditional forest knowledge face significant challenges, especially encroachment onto their lands and expropriation of those lands, leading to forest degradation and the erosion of traditional cultures, values and lifestyles. If disconnected from their natural environments, indigenous communities inevitably lose their traditional knowledge and usually end up among the world's poorest people.

There are some hopeful signs, however. There is growing awareness among forest scientists, for example, that local

communities who possess traditional forest knowledge can play important roles in co-managing forestry sustainably (e.g. Fortmann and Ballard, 2011; Ramakrishnan, 2007; Pei, Zhang and Huai, 2009; Herrmann, 2006). Collaboration between decision-makers, forest managers and local communities is increasingly recognized as a key to sustainable forestry (Parrotta and Trosper, 2012). And there are many initiatives by indigenous peoples' organizations, non-governmental organizations (NGOs), national governments, intergovernmental organizations and others related to safeguarding traditional knowledge (UNCCD, 2005).

In Malaysia, collaboration between international agencies, government, NGOs and communities to promote sustainable forestry has been on the rise for 20 years (UNDP, 2008; Escobin, Gonslaves and Queblatin, 2008; SFD, 2012). This article describes efforts to integrate traditional forest knowledge with sustainable forest management (SFM), the strengths and weaknesses of such integration, and obstacles to it in Sabah, a state in Malaysian Borneo.

TRADITIONAL FOREST KNOWLEDGE IN SABAH

The indigenous peoples of Sabah

About 62 percent of Sabah's 3.2 million people are indigenous, comprising several groups such as the Kadazandusun, Bajau, Murut and Malay (Department of Statistics Malaysia, 2010). The Dusunic, Murutic and Paitanic ethnic groups (King and King, 1984) are mostly found in rural areas, and a large percentage of the total population lives in forested areas. These rural communities depend on three major resources – land, forest and water – to sustain their traditional livelihoods. They need enough land to farm because in most cases agriculture is a major source of their daily food. Where rural communities and people have legal ownership of land, permanent crops like fruit trees and rubber are planted on a small scale. The forest is important as a land bank and as a source of food, medicine and materials to make houses, handicrafts, utensils and farming equipment. Although there is no specific regulation regarding forest use, it is understood by local people that forests near a given village belong to the community and are usually claimed under native customary rights. Streams and rivers are the main source of water for household needs. Clean rivers are required to maintain fish populations, an important source of protein.

A typical rural village surrounded by natural forest located within a designated class II commercial forest reserve, Sabah

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Traditional forest knowledge

Traditional knowledge related to forest management is yet to be documented systematically in Sabah. To the extent to which it is known, traditional knowledge can be classified broadly into three categories: landscape diversity; biodiversity and resource use; and traditional governance.

The long association of indigenous communities with their physical surroundings for gathering, hunting and farming makes them highly knowledgeable about local topography, landscapes and micro-ecosystems. For example, indigenous communities have intimate knowledge of their water catchments, including the location of springs, which in Sabah are sacred places for indigenous communities and are associated with high plant diversity. Indigenous communities have knowledge of trails and the migratory paths of certain animals, and they know the locations of caves and waterfalls. Based on this knowledge, indigenous communities usually assign the use of their ancestral areas by function, such as burial grounds, community-owned sacred forests (primary forest), farms (secondary forest), and hunting grounds.

The dependence of indigenous communities on forests to sustain their traditional livelihoods makes them very knowledgeable about the types and richness of plants and animals present in their areas. There is knowledge of the trees most associated with certain animals, birds, bats and insects. Sabah's indigenous communities have detailed knowledge of specific types of trees, vines and other plants suited to their daily needs.

Indigenous communities have their own mechanisms for the orderly use and management of their forests based on their *adat*, or customs (Tongkul, 2002). *Adat* operates on the simple principle that everything is interconnected – physically and spiritually. All things, living or dead, have spirits and are somehow related to and need each other. This relationship needs to be kept in balance to create a harmonious environment for all beings. The natural resource is seen as God-given and should be taken care of by all. Thus, it is generally the accepted norm that users will take only what is needed when collecting from the forest. Every user is expected to look after common resources, based on a concept called *gompi–guno* ("use and care"). Should an area become overused it is the responsibility of everyone in the community to leave it to regenerate. Traditional agricultural practices, often seen to be in conflict with forest conservation, are in fact highly dependent on the availability of forestland for their continuation. To ensure that forests are kept healthy and productive, unnecessary clearing and tree-cutting is prohibited. The opening up of farmland is usually done on a small scale based on a family's capacity and need, and is restricted to secondary forest. When the fertility of the land is reduced by farming, a fallow period, usually five to seven years, is observed to give the land a rest and to restore its fertility.

COMMUNITY FORESTRY IN SABAH

Sabah's forests

Sabah is richly endowed with forests. Of the total land area of 7.4 million hectares (ha), about 60 percent, or 4.5 million ha, is under forest cover. Of the total forest area:

- 3.6 million ha (49 percent) is allocated as forest reserves ("permanent forest estate") and managed by the Sabah Forestry Department (SFD);
- 0.25 million ha is allocated as national parks and managed by Sabah Parks;
- 0.03 million ha is allocated as water catchment and managed by the Drainage and Irrigation Department;
- the remainder (0.9 million ha) is designated as state land, which ultimately will be deforested, mainly for agriculture.

Forest reserves gazetted under the Sabah Forest Enactment, 1968, are classified into seven classes according to function. A large part (about 2.7 million ha) of the forest reserve estate is classified as class II commercial forest reserves. In the past, these reserves produced very large quantities of timber – they contributed more than 50 percent of the state's revenue between the 1970s and the early 1990s. Nearly all class II commercial forest reserves are now logged-over or secondary forests, and extraction in the past was largely unsustainable. Timber production in Sabah plummeted from a high of about 12 million m^3 in the early 1980s to about 2.2 million m^3 in 2011, in which year it contributed only about 5 percent to state revenue (SFD, 2012). It is expected that timber production will decline further in the future. Despite this, forestry is still considered an important sector, and the state government has committed to bringing all forest reserves under SFM.

A model SFM area, the Deramakot Forest Reserve, was developed during the Malaysian–German Sustainable Forest Management Project that operated from 1989 to 2000. The model recognizes the multiple functions and uses of forests and addresses the future productivity of the forest and the environmental impacts and economics of the forest operation. A comprehensive planning procedure, implementation guidelines and monitoring at various management levels were introduced to resolve the many economic, social, environmental and technical challenges of SFM. Based on the model, in 1997 the Deramakot Forest Reserve became the world's first tropical rainforest to be certified under the Forest Steward Council (Malaysian Timber Council, 2008).

In September 1997, the state government adopted the SFM concept, as embodied in the Deramakot Forest Reserve model, for state-wide application to some 2 million ha of forest by signing long-term SFM licence agreements (SFMLAs) with ten private companies. SFMLAs are vehicles designed to expedite SFM adaptation and implementation. As of 2011, a total of 27 such licence agreements had been signed, under which the companies, in cooperation with the SFD, are required to manage the production forest reserves within their forest management units in accordance with SFM. Apart from the

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Indigenous women tend sweet potatoes grown between young rubber trees planted as part of a Sabah Forest Department agroforestry project

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Young villagers pose in a community nursery to supply seedlings of indigenous tree species to enrich community forests in the Ulu Moyog area, Penampang District. The development of the nursery was supported by the EC–UNDP Small Grants Programme for Operations to Promote Tropical Forests

Deramakot Forest Reserve, several forest reserves covering a total of 864 000 ha of forest are now subject to some form of certification (SFD, 2012). Since 2011, the SFD has been taking the lead in developing a roadmap for the uptake of REDD+ (reduced emissions from deforestation and forest degradation in developing countries) in the state (World Wide Fund for Nature, 2011).

In recent years there have been substantial efforts to promote community forestry in Sabah, both by the SFD and through an external small-grants programme. These efforts are described below.

SFD community forestry projects

One of the challenges faced by the SFD in implementing SFM is the issue of ensuring the rights of local indigenous communities living within and adjacent to forest reserves. The SFD estimates that there are about 20 000 people living within forest reserves statewide, and an unknown number of people live in the fringes of forest reserves. Most of these people are extremely poor, with little or no access to basic facilities and amenities and with a heavy dependence on forests for survival.

The SFD has undertaken various measures to improve the living conditions and livelihoods of communities and to help safeguard forest reserves from further degradation. One such measure is the introduction of community forestry projects in several key areas (SFD, 2012), beginning with the Kelawat Forest Reserve joint forest management community project in 1992. As of 2012, four projects had been implemented in the Kelawat, Lingkabau, Mangkawagu and Bengkoka forest reserves, with variable success (Table 1). Community forestry projects involve the conservation of primary forest, the restoration of degraded forest, the development of agroforestry and the provision of housing and basic amenities to affected communities.

EC–UNDP community-based forestry projects

In 2004–2007, several community forestry projects were implemented throughout Malaysia with funding from the European Commission (EC)–United Nations Development Programme (UNDP) Small Grants Programme for Operations to Promote Tropical Forests, with a long-term development objective of improving the livelihoods of poor, forest-dependent communities by strengthening the links between economic enterprise and sustainable forest use and management. Some of the projects demonstrated good practices that brought about positive change and reinforced the commitment of communities to look after their forests (Kadazandusun Language Foundation, 2006). In Sabah, seven projects were initiated and implemented by indigenous communities themselves, some in collaboration with NGOs, community organizations and the SFD (Table 2). They involved a range

TABLE 1. Community forestry under the SFD in Sabah

Project; initiated; community	Background	Joint activities	Achievement
Kelawat Forest Reserve Joint Forest Management project; initiated in 1992 between the SFD and local communities; Kampong Ponopuan, Kota Belud District	• 70% of forest areas under the Kelawat Forest Reserve are degraded and devoid of forest cover • The forest reserve has been opened for farming and rubber cultivation by local communities	• Biodiversity protection of remaining natural forest • Replanting of indigenous tree species and rubber and fruit trees in degraded forest • Alternative socio-economic activities	• Biodiversity of undisturbed natural forest protected • Biodiversity in degraded areas restored (20 000 trees planted) • Basic subsistence needs addressed
Gana Resettlement and Integrated Development project; initiated in 1998; Kampong Gana, Kota Marudu District	• Forests in the Lingkabau Forest Reserve are degraded • Ten villages are scattered within and adjacent to the forest reserve • The Sabah government wants a development model that meets the needs of the communities and at the same time protects and conserves the forest	• Complete settlement of all villages in one area • Alternative socio-economic activities for the resettled communities • Agroforestry programme • Forest restoration of water catchment	• Basic infrastructure provided • Critical access road to settlement in progress • Basic subsistence needs addressed • Training in “modern” agriculture provided • Rubber plantation implemented
Mangkuwagu Forest Reserve project; initiated in 2006; Alatang, Mangkawagu, Saguan, Tampasak Darat and Tampasak Laut kampongs, Tongod District	• The forest is degraded • Several villages are located within the forest reserve	• Capacity-building of communities • Development of economic alternatives • Community forestry • Establishment of forest management and certification committee • Review of current legal framework for forest management	• Community forest compartments set aside for local communities • Physical development (road access) provided • Agroforestry project (rubber plantation) implemented in community compartments
Bengkoka Forest Reserve project; initiated in 2006; Sorupil, Ungkup, Gumpa and Bongkol kampongs, Pitas District	• Forest is degraded • Several villages are located adjacent to the forest reserve	• Forest restoration programme (tree-planting) • Agroforestry programme	• Physical development (road access) provided • Agroforestry project (rubber plantation) implemented in community compartments • Forest restoration of forest reserve implemented (40 000 trees planted)

TABLE 2. Community forestry activities under the EC–UNDP Small Grants Programme for Operations to Promote Tropical Forests, Sabah, 2004–2007

Project; community; organization (organization type)	Background	Activities	Achievement
Community initiative on natural resource management and poverty eradication; Ulu Moyog area, Penampang; PACOS Trust (NGO)	• Forest areas in water catchments, national parks and forest reserves and on state land were threatened by farming • There was no existing formal cooperation between several communities • Traditional forest knowledge was not promoted	• Reviving traditional knowledge on forest management using the *gompi–guno* concept • The establishment of a network among ten villages on resource conservation • Capacity-building • The development of new economic activities	• Forest in water catchment enriched • Several medicinal gardens established in community forests • Indigenous tree nursery established
Replanting, conservation and maintenance of communal forest and water catchment areas; Kampong Kalampon, Keningau; *Pertubuhan Rakyat Kampong Kalampon* (community organization)	• Forest area in water catchment was degraded	• Enrichment of water catchment area • Revival of interest in a small sacred hill within the catchment	• Forest enriched • Heightened interest in looking after the hill
Creating alternative economic activities to conserve and protect the community's forest resources and water catchment zones; Kampong Tiong, Tamparuli; *Pertubuhan PUSAKAG* (community organization)	• Forest area on state land was threatened by farming because it was located on an individual title	• Work with the owner to conserve forest in the water catchment area by planting fruit trees • Development of an agreement between the owner and community management	• Forest enriched • Agreement for long-term community use signed
Conservation and management of natural resources at Bukit Gumantong communal water catchment; Kampong Tinanggol, Kudat; *Pertubuhan MONUNGKUS* (community organization)	• Forest areas in water catchment was degraded by forest fire and invasion by *Acacia mangium*, an introduced tree species that seemed to have a negative effect on water supply • There was a decreased supply of materials for handicraft-making	• Weeding of *Acacia mangium* and replanting in catchment areas • Conserving remaining forest • Training in handicraft-making to younger generation • Capacity-building	• Water catchment rehabilitated • Medicinal garden established
Knowledge-based integrated management of forests for the benefit of the local community; Kampong Bundu, Keningau; *Pertubuhan MAMAKAT* (community organization)	• Forest area in water catchment was degraded due to illegal logging	• Planting of trees in water catchment areas • Repair of gravity pipes • Capacity-building • Income generation by planting ginger	• Forest enriched • Water source secured • Community organization strengthened • New source of income established
Management and conservation of water catchment area; Kampong Gana, Kota Marudu; *Kelab Belia Kampung Gana* (NGO)	• Communities resettled by the SFD in Gana Resettlement and Integrated Development Project • The forest area in forest reserve was degraded • There was limited economic activity	• Mapping of catchment area • Planting of indigenous trees • Capacity-building • Creation of food-processing house	• Forest enriched • Youth organization strengthened • New industry established
Maintenance and management of natural resources in water catchment; Kampong Liu Tamu, Pitas; *Pertubuhan KOMOKITUKOD* (community organization)	• Forest in water catchment was invaded by *Acacia mangium*	• Control of *Acacia mangium* • Replanting in catchment areas • Conserving remaining forest • Capacity-building	• Forest rehabilitated • Fruit trees planted • Medicinal garden established

of activities, such as the conservation of communal forests; the replanting of indigenous tree species in degraded forest in water catchments, national parks and forest reserves and on state land to secure community water supplies; the establishment of medicinal gardens; and the setting up of new economic activities.

CHALLENGES IN INTEGRATING TRADITIONAL KNOWLEDGE IN THE SFM CONCEPT IN SABAH

Observation on community forestry programme

The on-going community forestry projects by the SFD and community-based forestry projects under the EC–UNDP Small Grants Programme for Operations to Promote Tropical Forests have made some progress in integrating traditional knowledge in forest management in Sabah. The SFD has shown a willingness to engage local communities in addressing the long-standing problems of deforestation and land degradation in its forest reserves. The

linking of socio-economic incentives and forest development has been instrumental in eliciting community participation. The success of most of the projects has demonstrated that local communities are equally committed to protecting their community forest if given the opportunity to participate meaningfully.

While the partnership between the SFD, NGOs and community organizations is commendable, however, the incorporation of traditional knowledge in forest management is yet to be fully realized. The community forestry projects under the SFD in production forests are mostly geared towards providing basic infrastructure and introducing agroforestry practices (rubber planting), with minimal inputs of traditional knowledge from the local communities. Communities participate little in the actual management of natural forest areas; their task is mainly to assist the SFD in the reforestation (seedling preparation and planting) of degraded natural forest. Except for the Kelawat Forest Reserve Joint Forest Management project, no proper joint management of natural forest has been implemented in which there is a clear mechanism by which local communities and the SFD will meaningfully co-manage the forest and share the benefits.

None of the private companies under SFMLAs has shown significant progress in the co-management of community forest with local communities. Similarly, about half the community-based forestry projects under the EC–UNDP Small Grants Programme for Operations to Promote Tropical Forests are geared towards forest enrichment in water catchment areas and building capacity among local communities to meet their immediate economic needs. Except for the Kampong Tiong project, where a long-term agreement has been established between the community and the individual owner of the land to conserve the forest area, there has been little effort to establish proper joint forest management between local communities and relevant government bodies such as the SFD, Sabah Parks and the Drainage and Irrigation Department.

Outstanding issues related to SFM

The implementation of SFM in Sabah is a work in progress, and there are still many hurdles to overcome (SFD, 2012). One of the key issues hampering the implementation of SFM is the determination of local community ownership of land inside forest reserves – the Sabah Forest Enactment, 1968, does not allow for native title ownership within forest reserves. This issue came up strongly during the recent National Land Inquiry by the Human Rights Commission of Malaysia (Vanar, 2012). Forest reserve boundaries were not drawn and marked on the ground until very recently – in most cases only after 2000. Therefore, many affected communities were unaware that their lands were within a forest reserve until the arrival

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Community members work to rehabilitate a highly degraded forest invaded by* Acacia mangium *with indigenous tree species in Kampong Liu Tamu, Pitas District

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Project staff document a community herbal garden established during a project in the Ulu Moyog area, Penampang District, with the support of the EC–UNDP Small Grants Programme for Operations to Promote Tropical Forests

of logging companies or the posting of notices by authorities warning against trespassing. Since the establishment of many forest reserves did not involve ground surveys that could have ensured that communities and their native customary rights territories were excluded from the reserves, the SFD issued a circular in 1998 allowing communities living within such reserves to stay there and to continue their farming activities. However, they are not permitted to expand their farms within the forest reserves.

Land is critical to the survival of indigenous communities. For them, it is insufficient to be allowed to farm or cultivate rubber in assigned community forestry areas. They want formal ownership of the land that they consider rightly belongs to them under native customary rights. As custodian of the forest reserves, the SFD does not entertain such claims. Affected local communities therefore view the SFD with suspicion, despite the SFD's efforts to encourage them to participate in community forestry projects such as those in the Mangkawagu and Bengkoka forest reserves. To the communities, such participation would be akin to relinquishing their ancestral land to the SFD in exchange for minimal benefits from projects that do not guarantee secure tenure. Establishing genuine partnerships between the SFD and local communities in this kind of situation, therefore, is challenging. Despite the requirement under FSC certification and more recently REDD+ – both of which the SFD is actively promoting – to recognize the rights of local communities to their ancestral lands and to fully consult them prior to development, the situation on the ground has not improved.

CONCLUSION

The Sabah experience shows that traditional knowledge on the use and management of forests still has a vital role in forest management. Local communities who possess this knowledge are willing to participate in managing community forests sustainably, if given the opportunity. Collaboration between government departments, NGOs and local communities is getting stronger, but the integration of traditional knowledge in SFM still has a long way to go. For traditional forest-related knowledge to be fully incorporated in SFM, the communities, who possess this

knowledge, must be fully acknowledged, properly consulted and genuinely engaged. Local community requirements to maintain their traditional livelihoods, and their ownership of the land, must be respected. More capacity-building for communities and research support on traditional knowledge is needed. There is also a need to further explore benefit-sharing and other joint-management arrangements.

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