

The Role of Indigenous Knowledge in Sustainable Development: A Case Study of The Vietnam Mountain Regions

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INTRODUCTION

Vietnam has 54 ethnic groups, of which 50 groups are living in the uplands. These ethnic minorities have lived for many centuries practising complex cultural norms and rules that have successfully regulated human activities to integrate and blend them with the natural environment. For a long time, their knowledge and practices had developed to adapt to the natural conditions for their survival in sustainable ways.

IKS in upland Vietnam are rich and greatly varied - in every aspects of development including conserving nature, health protection, farming systems, plant and animal varieties. This reflects the vast differences in physical conditions and the different needs of different local people. Such knowledge and diversity have been developed and practiced over many centuries of local experiences.

According to many research works, it is clear that when local knowledge is left out of the planning and policy making process, the results are that the development is either less successful or, in some cases, disastrous (Ty and Cuc, 1998). While western techno-scientific approaches are (in themselves) insufficient response to today's complex web of social, economical, political and environmental challenges (Grenier, 1998).

The role of indigenous knowledge has just been recognized in recent years by some research institutions and NGOs in Vietnam. But many obstacles such as environmental degradation, lack of sound policy and economical development make preserving and promoting IK become difficult.

This paper discusses the role of IK in sustainable development in the upland of Vietnam and the challenges for promoting IK by case studies in the upland of Vietnam.

CHARACTERISTICS OF ETHNIC MINORITIES IN VIETNAM

Vietnam's upland comprises 3/4 of the whole

nation. It is characterised by the diversity in terms of physical environment, ethnicity, and culture.

Regarding the physical environment, the topography of the northern mountain is very complex with high mountain, deep streams, high slope and feralite soils. It is more flat in the Central Highland with bazan soils which are suitable for industrial crops such as coffee and cashew. Located in the monsoon tropical climate, the annual rainfall can reach 1,800 mm in the Northern, and 2,500 - 3,300mm in Central Highland.

The upland is home to about 25 million people of which there are more than 10 million of ethnic groups and the remaining are Kinh people migrating from the lowlands. The fifty different ethnic groups with more than eight million people or 12 - 14% of the Vietnamese population inhabit an amazing variety of ecological zones in the midland, upland and highland areas of the country.

Different ethnic groups, each with a distinctive culture, are associated with different ecological settings. The most important characteristic is that distribution of the ethnic group is closely related to the ethnic group and the landscape, the so-called ecology of the ethnic groups (Ngo Duc Thinh, 2002). The landscapes include:

- Valley landscape: is inhabited by the Thai, Tay, Nung, and the Muong.
- Middle landscape: is occupied by the Cao Lan, Kho Mu, Xinh Mul, Laha, and the Mang.
- High mountainous landscape: is settled by the Hmong, Dao, Tang, and the Mien.
- Highland landscape: The ethnic people groups such as Bana, Giarai, Mnong, Ede belongs to two language groups: Austrasitic and Austranesia.

Each ethnic group has its own of adaptation and behaviour to specific nature in their territory. For instance, wet rice cultivation culture of the Thai, Tay and Muong people has been formed due to their adaptation with the valley landscape. Swidden cultivation on the slope land (the slash and burn cultivation) has been practiced by the Dao, and the Mong.

Every ethnic group has its key character-istics with regard to nature resources conservation and



Fig. 1. Terraced wet rice fields in the valley of the Muong people in the Thanh Hoa province, Central region



Fig. 2. Landscape in the Central Highland



Fig. 3. Terraced wet rice field of the H'Mong people in Sapa District, Lao Cai province

uses through their traditional knowledge and customary laws. Based on the formation of the ethnic group's ecological areas, the traditional culture, adaptation and local knowledge have been produced. These ecological and social factors play a key role in sustainable development.

INDIGENOUS KNOWLEDGE SYSTEMS IN SUSTAINABLE DEVELOPMENT IN THE UPLAND OF VIETNAM

Indigenous Knowledge Systems in Conserving the Nature

An interesting example regarding the role of IK in conserving nature resources comes from a village in North West Mountain Region of Vietnam.

· *Thai ritual management of natural resources - a model of community based forest management* (Vi and Trung, 2004)

The ritual and worldview of the Thai ethnic minority group in the village named Ban Banh of Muong Luan in Dien Bien Dong District of Lai Chau province promotes a social mechanism that helps them maintain an ecological balance in resource management. Their beliefs in spirit and magic power have been the basis of setting up

their customary laws to manage the natural resources, which is directly related to the spiritual life of all local Thai people. It is also under management and monitoring by a local management board and local leaders. Based on the belief that their management of "sacred" forest of local people's ancestors are "living" in the forest, local rules have been created for the sake of stability in the local people's lives, and the forest must be well looked after and protected. Because this forest is the common property of the community, encroachment into it is forbidden. With their traditional knowledge, the Thai villagers know how, when, and what they should collect from the forest. Only dried branches and fallen trees are collected and the profits from selling these go into a common community fund. Moreover, harming the forest means damaging the safety and tranquillity of all villagers. They believe that encroaching into the sacred forest not only disturbs the lives of villagers' ancestors but also means offending "spirit", who will react by kidnapping the souls of the offender and, may be, other villagers; as a consequence, this person and some others could become insane or die. Thus, any villager who gets caught breaking the laws not only suffers himself/herself from the anger, but the offender must also give a buffalo and pay other expenses to the sick person(s)



Fig. 4. Communal forest in Ban Banh village

family(s) in the village to offer to the spirit to release them from the sickness. If any one dies in this period the offender must leave the village to live elsewhere. With these rules which form the Thai ritual beliefs, the sacred forest in the Lai Chau has been maintained very well.

The system and methods for effectively managing and developing the community forest in Ban Banh have become a model of “real” community-based forest management in Lai Chau Province. With technical support from Da River Social Forest Development Project (funded by the German Society for Technical Co-operation [GTZ]), Lai Chau Province’s Department of Forest Protection (DFP) has adopted the Ban Banh model to change their approaches to forest protection and management. Guidelines called the “Participatory Constructing of Community Regulations of Forest Management and Development” have been designed by the DFP, based on the foundation of the Ban Banh initiative, for application in the whole province. In the last three years (2000-2003), 1,785 communities in the province have completed formulating their community rules of forest management under the DFP guidelines.

In this case, there are many reasons for a successful community forest management. It is clear that community forestry is successful due to its appropriateness to local customs of Thai -

characteristic of common property, their self-regulation, based on their indigenous knowledge in flora and biodiversity, and the role of local leadership. Because of the rules and common benefits, all villagers have followed the local regulations during the forest management process.

In conclusion, the relationship between culture and natural resources in general and biodiversity in particular, reflects the cultural characteristics of each ethnic group through their behaviour and adaptation to the nature.

Indigenous Knowledge Systems in Food Production

The second example is a special farming system of an ethnic group in the Northern Mountain Region.

- ***Food production of the H’Mong people*** (Hung, Trung and Cuc, 2001).

In Vietnam’s northern region, especially the Dong Van and Meo Vac Districts of Ha Giang Province, the topography is made up of karst limestone mountains and deeply-cut valleys and gorges. The H’Mong people cultivate maize by means of “rocky pocket agriculture”. The pockets are found on the mountainsides from the valleys to the higher reaches. Maize is grown in these pockets as long as there is enough soil to support it.

The pockets act as catchments for both soil and water, and provide some protection for the plants from the wind and other elements. The sizes of these pockets vary depending upon the slope. On mountainsides, the pockets are densely distributed, but they are often small. The soil in rocky pockets is fertile, having formed over long time periods by accumulation of sediment and organic matter. Each pocket can accommodate only one to three hills of maize. Each hill normally consists of three plants, and they are tied together to keep them from falling over. The maize is a traditional type that villagers have planted for many generations, and it has a number of advantages. Among these is the fact that it is unique regardless of the soil type it grows on. It requires very little fertilizer. It also has thick and tough cornhusks (called “lampshade husks” by the local people) that cover the cob until the seeds are dry, effectively protecting it from the rain, insects, and birds in the fields. In the rocky pockets the local people often use their indigenous knowledge through intercropping and crop rotation methods between maize, beans and peas, and other vegetables.

Efforts by the aid groups to introduce new crop varieties (seeds) into this area, in order to increase production, have not worked because the new varieties do not fit into the farming system nor the traditional customs of the local people.

Moreover, the inputs required realizing increased production cost too much. For instance, the traditional maize variety has lower productivity than the introduced varieties. Its advantages include the following: it does not require fertilizers, it is not attacked by many insects, it can dry in the field, the flour made from it is dry, nutty and fragrant, it can be steamed into a coarse flour, it is glutinous and more delicious than the introduced varieties, it stores better and is less susceptible to worm infestation.

The lesson learned from this case is that the local maize variety has been developed and used for many years and is very good in terms of being adapted to the local physical conditions and culture.

Therefore, any external interventions can be failure if they do not take into account “local” characteristics. It should be noted that the weakness and strengths of indigenous knowledge systems, is that they are local (Billie, 1994; Ty and Cuc, 1998).

Indigenous Knowledge Systems in Forestry Development

The next two examples illustrate the failure and success in re-greening forest by the government and the indigenous people.



Fig. 5. Dong Van high rocky mountain



Fig. 6. Rocky pocket agriculture of the Hmong people

· ***Cultivating exotic trees*** (Jamieson, 1998)

For more than 30 years, national and international support to re-green denuded hillsides has focused on the planting of exotic trees. Eucalyptus, acacia, tropical pines have all been planted, chosen in part because of their drought-resistance but also because experts knew so little about indigenous trees. The eucalyptus, which was used very widely, has been destroyed by fungi. Furthermore, it failed to counter soil erosion on hill slopes.

· ***Mac Rac native tree for forest development*** (Vi, 2003)

The local Nung An ethnic minority people's initiatives to grow a local native species, the Mac Rac tree (*Delavaya toxocarpa Franch* or *Delavaya Yunnanensis Franch*), to re-green limestone mountains in their area. The objectives of the local people's initiatives are to reduce the cost of reforestation for local people and to effectively re-green the forest by using indigenous knowledge in planting native trees that are freely available and ensured to grow in a way that suits local conditions.

The village named Phuc Sen is located in a valley surrounded by limestone mountains, which occupy 79 percent of the village's total natural land. The local economy is mainly based on agricultural production as well as traditional handicrafts, which form the basis of the Nung An

culture. Aware of the importance of forests in the local ecology, they eventually agree that with the present situation of their village, there was no choice but to grow native Mac Rac, only few of which still grew in the local forest, to re-green the barren hills and limestone mountains.

Within only three years after launching the afforestation programme, the local people have solved problems of firewood and water shortages. Local people also planted other higher value timber trees such as Thitka, Chukrasia, and Margose as inter-crops. These trees grow well due to the shade and moisture created by Mac Rac, thereby providing local people with further benefits. Consequently, forest in Phuc Sen are very diverse, with trees of different species and different ages. At present, the entire 1,010 hectares of stone mountains in the village are covered with forest, and local agricultural yields have improved significantly since then.

In general, re-greening results have improved because the local people know which indigenous trees to use under what conditions. On the contrast, the government has tried to use exotic trees which do not suit the local conditions. There is a tendency that the government always wants to find a "magic" solution for all communities and all areas in the upland instead of concerning the diversity of the upland region in terms of natural and social conditions.



Fig. 7. Mac Rac leaves and a view of Mac Rac forest in Phuc Sen village

Indigenous Knowledge Systems in Medicine

According to the statistics of the Institute of Material Medicine, the number of medicinal plants in Vietnam is 3,830 species. It is predicted that the number can reach 6,000 species.

Regarding the distribution of medicinal plants, based on statistics from 1961 to 1985, there are about 700 species in upland Vietnam, 400 species are found in the midland out of 1,863 medicinal plants. They are distributed in the area where the ethnic groups live. Each of the communes in the upland knows how to use about 300 to 700 medicinal plants for several purposes (On, 2003).

Most of the upland households can use tens to hundreds of medicinal plants which are available in the communities to heal normal diseases such as headache, diarrhoea, fever, etc. (An, 2000; On, 2003).

Many studies have shown that there are some herbalists in every community in the upland. They are the persons who hold knowledge and experiences in finding and using medicinal plants for healing in the communities. In addition, the knowledge in using medicinal plants have mostly been kept and maintained by women in the households in the uplands.

The medicinal plants not only protect public health but also contribute to hunger eradication and poverty reduction in the uplands. Medicinal plants have been regarded as special goods in the uplands of Vietnam. Several communities in the uplands are involved in collecting, processing and selling medicinal plants.

According to a study by On (2003), a Dzao community in the Ba Vi, Ha Tay collects about 160 species of medicinal plants to make tradition medicines. On average, a household in the area

can get an annual income of around 4,620,000 VND from selling traditional medicines. However, the benefits gained by manufacturers are much higher than that. For example, the cooperation of material medicine of Vietnam have earned 13 millions USD from exports, of which material medicine, essential oil and active elements from medicinal plants make up 74 percent.

With the enormous benefits and large demand, in recent years a large amount of wild medicinal plants have been harvested to supply to domestic pharmaceutical companies and export to China. It is estimated that 400 - 500 species of medicinal plants have been harvested in a unsustainable way. Many species have been over-exploited and are therefore exhausted (On, 2003). Clearly, the consequent biodiversity loss means an erosion of indigenous knowledge, which is a serious problem in Vietnam.

On the other hand, Vietnam is also suffering from intellectual property rights (IPR) with regard to medicine. Many cases of the stealing of IPRs have been observed and reported at the national and international levels. Moreover, it is also difficult to solve IPRs issues when many local people in the uplands are poor. Building a mechanism of IPRs that enables the registration of traditional medicines is quite urgent. Besides the economic and medical value of medicinal plants, many problems such as over-exploitation, unfair benefit-sharing, stealing of knowledge on medicinal plants must be solved.

CHALLENGES FOR PRESERVING AND PROMOTING INDIGENOUS KNOWLEDGE SYSTEMS

The cultural diversity of the different ethnic people in the uplands reflects the diversity of IK,



Fig. 8. Collect medicinal plant by the Dzaao people

which is one difficulty with regard to planning of development projects. On the other hand, many scholars have pointed out that mountain people in mountainous regions in Vietnam and in Mountainous Mainland in South East Asia are often excluded from the decision making and planning process (Jamieson et al., 1998; Jianchu and Mikeshell, 2003). In fact, many policies and programmes tended to impose the same national development policy on the uplands without considering the diversification of ethnic culture and natural conditions. Both planners and technicians tend to pay attention to modern technologies that have often introduced from other places rather than relying on indigenous knowledge, which is considered primitive. The result is an erosion of traditional knowledge and the loss of an invaluable resource for humane and sustainable development (Jamieson et al., 1998).

Regarding documentation and dissemination, not many studies on IKS have been done in Vietnam. Up to now, there are only two main official publications on IKS including Indigenous Knowledge of the Vietnam Uplanders in Agriculture and Natural Resources Management

and the Role of Customary Law in Rural Sustainable Development. In addition, lack of IK resources centre or fragmented information and the absence of an academic institute on IK issues are obstacles. The IK studies have just been collecting works and published in the national language instead of conducting comprehensive research and publishing in ethnic minority group languages. Furthermore, IK contents have not been integrated in the curriculum of formal education system.

In the area of institution, although the role of IKS has been recognized and mentioned in Directive 36 – Environmental Protection Task by the Communist Party and government legislation, it still lacks an action framework to utilize it in the socio-economic development. To date, Vietnam does not have a national IKS development strategy.

Another important issue concerning IKS promotion related to the validation of IK in order to confirm its impact and potential value and replication possibilities. This requires protocols that fit the specific nature of IK and that effectively empower its practioners (Gorjestani, 2004). In this case, empowering local people and enhancing

the capacity of scientists are really needed. Moreover, it requires building partnerships among four stakeholders: farmers, government, scientist and enterprises.

Benefit-sharing and intellectual property rights (IPRs) are burning issues which must be taken into consideration at both national and international levels. It will be more difficult when the upland communities in Vietnam enter the open market. For instance, the Decree No.7- CP provides a legal framework for seed varieties management, but at the same time shows a shortcoming in protecting traditional knowledge and ensuring equitable sharing of benefits derived from its use (An, 2000). Since there is no guaranty for benefit sharing and protecting IPR, preserving and promoting IK will be a challenge.

Another serious problem in the uplands of Vietnam is environmental degradation. This has been observed in many areas due to population growth, open free economy and lack of sound policies. Over the past 35 years, extensive deforestation has seriously depleted the natural resources base (Quy, 2002). Thus, it leads to loss of biodiversity and indigenous knowledge, and a further deterioration of local livelihoods in the uplands.

CONCLUSION

From the case studies in the uplands of Vietnam, it is clear that IK plays an important role in development of several sectors, including forestry, agriculture, and medicine. IK is environmentally sustainable in many cases. Also, it is an important source of local subsistence and food security. It has been produced based on local resources, technologies and local culture. In addition, it is equitable in terms of access to resources, decision-making and management. Nevertheless, IKS have been eroded due to many social, economic and environmental driving forces. Therefore, it is really necessary to put the IKS back to work by undertaking the actions below:

- Collecting, documenting and disseminating IKS;
- Preserving and reviving IKS by empowering local communities and rediscovering the values of IKS;
- Building and strengthening national institutions relating to indigenous knowledge;
- Mainstreaming IKS in national development planning such as incorporating IKS in educa-

- tional curricula and sectoral development policies and programmes, especially poverty reduction and environmental protection programmes;
- Promoting and enhancing IKS through the development of partnerships and stakeholder networks;
- Recognizing the market value of IKS.

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KEYWORDS Indigenous knowledge; sustainable development; Vietnamese mountain regions; medicinal plants, natural resources management; Vietnam

ABSTRACT Indigenous knowledge systems (IKS) in upland Vietnam are rich and greatly varied - in every aspect of development including conserving nature, health protection, farming systems, plant and animal varieties. This reflects the vast differences in physical conditions and the different needs of different local people. Such knowledge and diversity have been developed and practised over many centuries of local experiences. This paper reviews few of these vast indigenous knowledge systems in Vietnam concerning local communities' experience and knowledge in conserving nature, ensuring food security, and using medicinal plants. However, protecting and promoting indigenous knowledge are quite difficult. Indigenous knowledge systems in Vietnam are rapidly being eroded. This paper looks at the difficulties facing the conservation of Vietnam's rich indigenous knowledge and proposes several measures to mitigate these difficulties.

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