

Community behaviours towards nature conservation: A theoretical analysis for practical approaches

Nguyen Viet Dung, Trinh Le Nguyen, Hoang Xuan Thuy, Nguyen Danh Tinh
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Changing human behaviour and preserving natural resources are ones among the greatest challenges to the perspective of sustainable development for the world today. Human existence is inevitably engaged with the utilisation and consumption of natural resources for their survival and reproduction. However, under the pressure of population growth and poverty, these resources have been over-exploited at a high rate. The way humans behave through their livelihoods exceeds the carrying-capacity of the ecosystem, and that ecosystem will die (Smith, 1995), and could directly lead to a human crisis (Matarasso *et al.*, 2003).

Sustainable conservation of natural resources on which our humans depend is increasingly become vital. Smith (1995) determined that our future rests on a belief that human behaviour matters, and that it can change to more sustainable patterns. Our humans can do it because we are able to recognise the damage to the environment that we are creating. Therefore the key point will stay in the question that: *how best we can influence human behaviour to be more environmentally sound* (?). Responding to this, it hardly requires a full understanding of the nature of human behaviour, how human behaviour shapes, and what determinants of human behaviour. Actually, these issues are extremely sophisticated, however as Byers (1996) concluded, a full understanding of behavioral motivations is probably impossible, but some level of understanding is necessary for planning effective interventions to influence behaviour.

1. Human Behaviour: the Interface between Ecosystem and Social System

1.1 What is Human Behaviour?

There is no unique and strict definition about human behaviour. In general, according to the *Free Encyclopedia*, human behaviour refers the collection of activities performed by human beings and influenced by culture, attitudes, emotions, values, authority, rapport, persuasion, and/or coercion (WIKIPEDIA, 2005). Behavioural sciences differentiate the behaviour of people from different angles, whether it is common or unusual/abnormal, acceptable and/or outside acceptable limits, positive and/or negative. Human behaviour can be the most basic human action and/or more advanced action social one.

In a simple form, behaviour is what people do (Hernandez and Monroe, 2000). In complicated forms, it comprises a process of making decisions, engaging in practices and taking actions. These collective patterns are defined upon to what human perceives to be in their best interest and based on their values, social-economic situation and other factors (Byers, 1996; Matarasso and Nguyen Viet Dung, 2002). Behaviour therefore could be a single and observable actions performed by an individual as the outcomes of his/her habits or of a conscious decision. So it is necessary to provide fundamental insights into

human behaviour. According to Chisnall (2001), behaviour of individuals contains personal and group aspects, in which the former comprises mental processes (cognitions, perceptions and learning process), motivations (needs, wants and inspirations), personality (social learning) and attitudes. The latter copes with culture (as a set of behaviour patterns), social stratification and group influence.

In the context of studying the nature of human behaviour and behavioural change, particularly in the field of nature conservation, goods consumption, and health care, there is a controversy about the relations between knowledge, attitude, and behaviour. Knowledge is commonly seen as a necessary precondition for a person's behaviour, and regarded as essential for successful action (Frick *et al.*, 2004). But scientists found that there is a gap between knowledge and behaviour, that people do not always do what they know they should do (Smith, 1995). For example, fishermen "know" not to dynamite coral reefs for fish, but many do; many people "know" how to protect forests, but they don't. Laying down in this gap is specific attitudes towards respective behaviours, which play an important role in determining the understanding of lifestyle related problems. Mullins (1996) defined human attitudes as the state of readiness or tendency to act or react in a particular way to certain stimuli, in which it relates to individual's value system guiding them in dealing with life's problems. Actually, people may not respond in action as what they tend to do (real behaviour), therefore Fishbein, a social psychologist in the University of Illinois (USA) pointed out this inconsistency as "behavioural intentions" which are placed in the interrelationship between attitudes and behaviour with four things: attitudes, beliefs, behavioural intentions and behaviour (Chisnall, 2001).

An important question raising in behavioural research is: *Is it possible to predict what she/he going to do if we know an individual's attitudes?* Researchers suggested the answer is "No" (Mullins, 1996). This response sounds pessimistic, but in reality it shows that people do not always behave in a way consistently to what we believe; what we say and what we do may be very different. This rationalises why Chisnall (2001) stated that "...almost universal agreement that attitude tends to have only comparatively low relationship to our actual behaviour towards the object of the attitude". Recent GreenCOM's researches concluded that "behaviour, of course, must be supported by knowledge and attitudes, but research in the field of environmental education and in commercial marketing has shown that there is no cause-and-effect progression from knowledge to attitude to behaviour as educators have long believed (Monroe *et al.*, 2000). In contrast, in a study about ecological behaviour, Kaiser *et al.* (1999) confirmed that environmental attitude can play as a powerful predictor of ecological behaviour if we can overcome shortcomings such as the lack of a unified concept of attitude and the lack of proper measurement. Thus it is important to correctly set a full understanding of behaviour and its determinants – many factors other than awareness, with an attention that awareness and attitudes alone do not lead people to change their behaviour (Robinson and Glanznig, 2003).

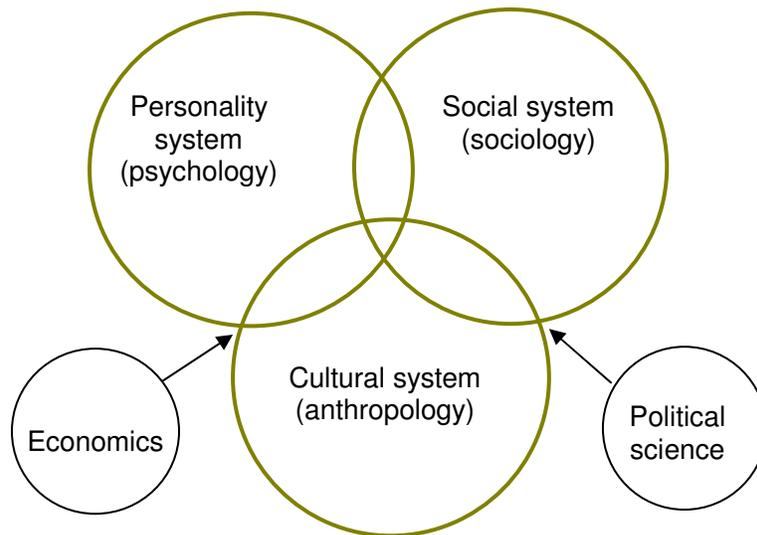
When defining a behaviour, Hernandez and Monroe (2000) quoted the work of Ajzen and Fishbein (1980) in which it suggests that behaviour has four distinct elements: action, target, context and time. Cutting down trees, poaching wildlife, reporting forest fires

and/or planting a green fence are all *action* elements. The *target* element refers to whom (individuals or groups) affected by those actions. Wildlife poaching is related to hunters/poachers while reporting forest fires would be targeted to forest guards and local authorities. The *context* of behaviour refers to how such actions are carried out. Incidental wildlife hunting for crop protection would be different from commercial hunting, and/or cutting trees for timbers is different from cutting trees for swidden cultivation. The *time* element of behaviour concerns when the action is taken place, for example, reporting forest fires usually happens in hot summer season when forests is sensitive to fires, and/or hunting usually occurs in spring season when people have free time and wildlife likely herds together out for foods. All these elements are important to take into consideration as they help to specify concrete behaviour for appropriate interventions.

1.2 Interdisciplinary Approach in Human Behavioral Studies

Due to the complexity of human behaviour, so one single discipline cannot help to provide entire understanding of it. Making interventions to change behaviour would require a comprehensive approach, or another way of saying, behavioural science is an interdisciplinary approach, even it has no strict scientific definition (Mullins, 1996). At the most common, the study of behaviour can be viewed from the integration of three main disciplines – psychology, sociology and anthropology, in which they are represented for personality, social system and cultural system respectively. Between these disciplines some other related social disciplines such as economics and political science are parts in a whole (**Figure 1**).

Figure 1: Behavioural science as an interdisciplinary approach (Mullins, 1996)

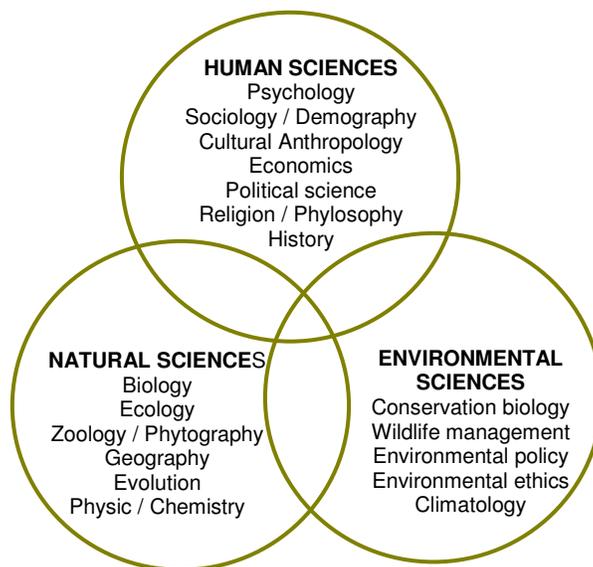


In this model, personality system focuses on personal aspects about perception, attitudes and motives with traits of the individual and membership of small social groups. Sociologists are concerned with the study of social system, which is specified by social behaviour, relationships among social groups and societies, and the maintenance of order.

It focuses on social structures, positions and functions of discrete institutions [or sub-systems] in the society. Anthropology focuses its attention to the cultural system which comprises a wide range of various settings within a group or society such as knowledge, beliefs, rituals, customs, values, morals, norms, laws and any other capabilities and habits acquired by man as a member of society (Mullins, 1996; Eriksen and Nielsen, 2001).

Regarding to consumption behaviour, Chisnall (2001) emphasised that understanding behaviour acquires comprehensive and reliable knowledge about every aspect of [buying] behaviour, taking not only of economic factors but also many other complex motivations that may arise from psychological, cultural and social influences. In real life conditions, these delicate influences might not easily be identified but they should not be ignored. In the field of environment protection and nature conservation, it may be more sophisticated to recognise fundamental insights into human behaviour. Behavioural science here is not only to understand current behaviour and to identify solutions for change, but it has to ensure quality of the environment when alternative behaviours are adopted. **Figure 2** presents an interdisciplinary model for applied behavioural study in the environmental field. It shows that, to understand and change environmental behaviour, it does not only require human sciences but includes many disciplines from natural and environmental sciences. Chisnall (2001) and Harmon (1994) appreciated this model in such a way that it requires a more systematic approach in dealing with conservation behaviour. They stressed that a broader approach encompassing disciplines of social sciences (anthropology, economics, psychology, sociology, political science) and cultural research, including history and its applied branches, will have the potential to contribute to both behavioural understanding and nature conservation.

Figure 2: Interdisciplinary approach to applied environmental behavioural study
(adapted from Machlis, 1995 and Penn, 2003)

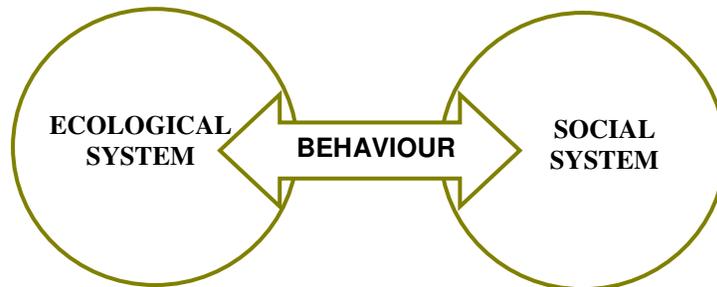


1.3 Conservation Behaviour – a Bridge Linking Ecosystem and Social System

As mentioned above, human behaviour of individuals or groups in principle is the outcome of the interaction between personal system, social system and cultural system associated with their subsystems such as economics and politics. In particular, human behaviour towards the environment – so-called environmental behaviour, ecological behaviour or conservation behaviour, exposes its own characteristics. According to Kaiser and Fuhrer (2003), “ecological behaviour is defined as actions which contribute towards environmental preservation and/or contribution”, and that is why Kaiser and Wilson (2004) referred ecological behaviour as a goal-directed behaviour.

Human beings interact with natural resources by many ways, cause both positive and negative impacts, vary from gathering, logging, hunting, grazing, littering to planting crops, protecting forests and water, warning fire, etc. All these behaviours are happened through a process where individuals and groups make decisions, engage practices and take actions. They cannot directly log if they do not live nearby forests or unable access into forests. They also cannot fish if fish resources are not available. According to Byers (1996) the behaviour of individuals and groups forms the interface between ecological system and social system, or in other words, behaviour mediates the interaction between these two types of systems. (**Figure 3**)

Figure 3: The behavioural interface between ecological and social systems (Byers, 1996)



In this model, ecological system or ecosystem implies to all natural resources available where individuals or groups are affected for their existence. It includes soil/land, water and air; plants and animals; forests and biodiversity resources including ecological principles and processes, as well as habitats and food chains and the interaction between them. These ecological factors relate to different dimensions of ecosystem such as productivity, diversity, variability of physical environment (e.g. seasonality, daily periodicity), history of disturbance, resilience, successional stage and competition. All elements of ecosystem affecting human behaviour are defined in certain spatial and temporal boundaries.

Social system refers to a wide range of social factors which influence, determine or motivate individuals and groups to interact with the environment. In a certain degree, important social factors should be potentially considered include knowledge, values, social norms, socio-cultural conditions, options, skills, economic conditions, laws, policies, resource accessibility and ownership, ethnicity, and gender. Social system might also be considered in a larger scale by following factors: demographic factors, social diversity, socio-economic determinants, social organisation, socio-political context, needs and values (Byers, 1996). Duffy and Wong (2000) recognised that these social and environmental factors affect behaviour as they occur at individual, group, organisational, and societal levels.

2. Livelihood-based Community Behaviour Towards Conservation

2.1 Livelihood-based Community Behaviour

According to Duffy and Wong (2000), community traditionally means a locality or place such as neighborhood. The sense of community is the feeling of relationships which an individual holds for his/her community, in which it is specifically thought to include four elements: membership, influence, integration, and a sense of emotional connection (Duffy and Wong, 2000). The interpretation of these elements is given in **Box 1** below. An important point here is that these elements are mutually interconnected. Since individuals are members of a community society in which they grow up and by whose standards they are influenced and shared in social, cultural, economic aspects through their livelihoods (Chisnall, 2001). So it is believed that new interventions for behavioural change can diffuse among a community where members have mutual interconnections.

Box 1: Elements of the sense of community (Duffy and Wong, 2000)

1. **Membership** means that people experience feelings of belonging in their community
2. **Influence** signifies that people feel that they can make a difference in their communities
3. **Integration**, or fulfillment of needs, suggests that members of the community believe that their needs will be met by resources available in the community
4. **Emotional connection** implies that community members have and will share history, time, places, and experiences.

In a community, members generally share the same life-style which represented by distinctive ways of living they adopt, and it appears in their livelihoods. This is due to they are influenced by the same ecological and social conditions in a roof. Resources such as soil/land, water, forests and biodiversity are utilized for their living demands through their production activities. Their life-styles are also driven by social, cultural and institutional forces known as their interests, values, beliefs, norms, regulations and governance schemes. However, the influence of such ecological and social settings to each individual or sub-group within a community may be different. An ecological and/or social condition may be perceived as benefits to a person but as barriers to another

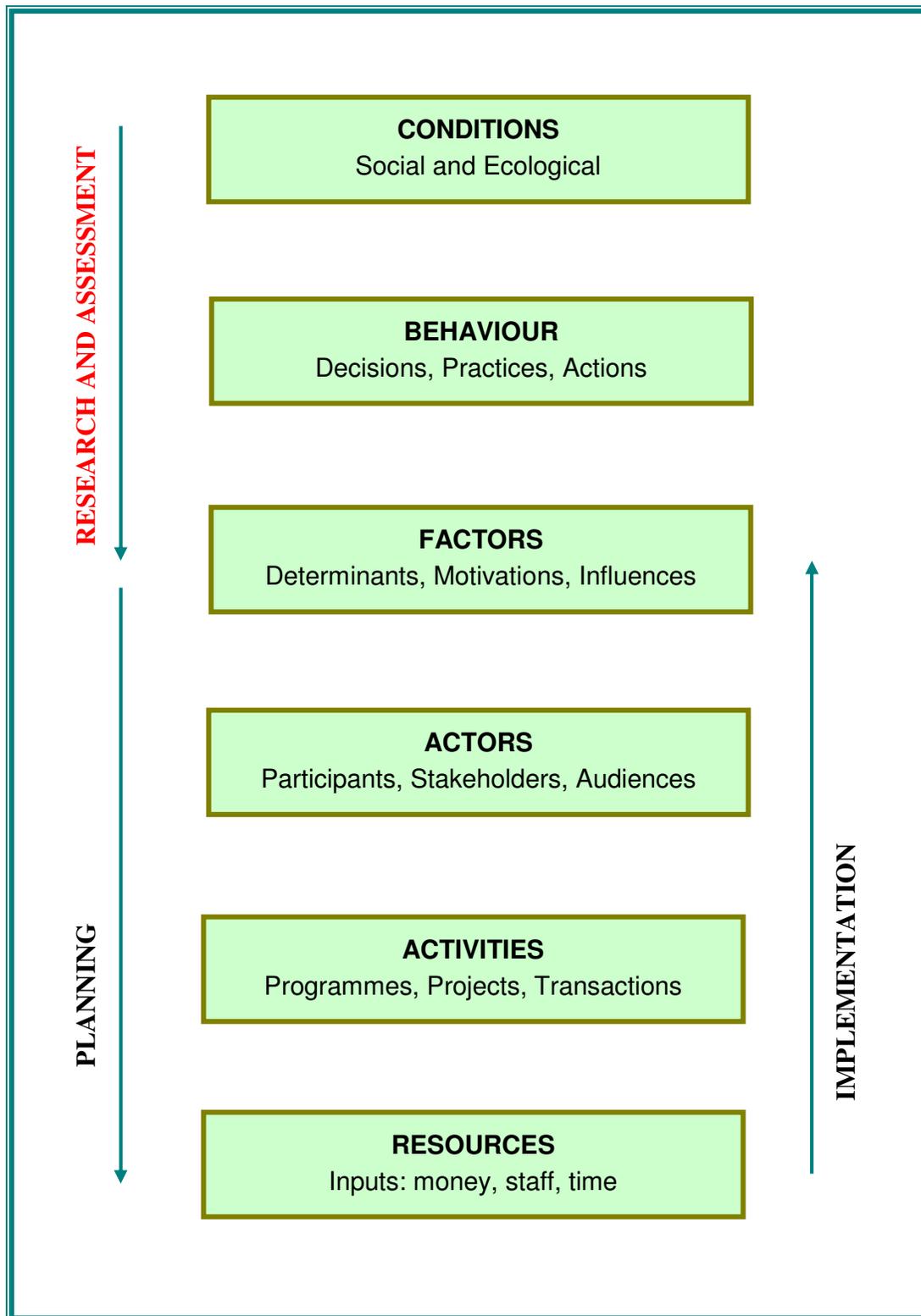
(Byers, 1996; OECD, 1999; Matarasso and Nguyen Viet Dung, 2002). Thus, choice and interest to make livelihoods appear in community to be individual behaviour, but values revealing in their behaviour are still community-oriented. To sustain and conserve natural resources, it requires to identify sustainable or positive livelihoods-based behaviours to maintain and promote, and unsustainable or negative ones to change. But, how do we decide which behaviour should be changed and which should be maintained? In principle, Byers (1996) suggested that we have to check whether the behaviour keeps natural-resource-use options open for the future or closes them because of extinction, resource depletion and degradation, and other kinds of irreversible environmental changes. To do this, it will need an inquiry to verify the situation and change of natural resources under community livelihoods with temporal considerations.

Additionally, there has been a change in perceiving the role of community in natural resources management and conservation. Before (local) community used to be implied as resource users, but now they are recognised as both direct resource users and managers. To change or maintain their behaviours, we need to work with them to understand their behaviours and root causes of conservation / environmental problems that caused by their behaviours. Many conservation efforts have been failed due to the lack of understanding of community behaviours and their associated determinants. To avoid such failures, the following question needs to be critically and rationally answered: *why communities do what they do?*

2.2 Community-based Social Assessment to Understand Community Behaviour

Participatory social assessment approach has been widely accepted as a powerful tool to investigate community-based behavioural changes towards nature conservation, agricultural extension, communication and education, social marketing and consumption promotion, and health care as well as safety traffic (Smith, 1995; AFAO, 1996; Byers, 1996; Borrini-Feyeraben, 1997; OECD, 1999; Pietro and Hughes, 2003; USEPA, 2003; and White, 2005). Many applied behavioural change theories and models have been developed to help practitioners, managers and policy makers to understand human behaviour, and then design, develop and evaluate interventions which lead to change of behaviour on different scales. They may include the Hierarchical model developed by Claude Bennett in 1976; the Cyclical model developed by Gerri Pomerantz and Kathleen Blanchard in 1992 (Byers 1996); or KAP (Knowledge-Attitude-Practice) model introduced by OECD (OECD, 1999); or ABC (Applied Behaviour Change) Framework introduced by the Academy for Educational Development. In 1996 Bruce Byers introduced a Synthesis Model which combines Cyclical Model and Hierarchical Model introduced by Bruce Byers in 1996 as illustrated by **Figure 4**. In these approaches, the integration of “behavioural change model” and “participatory model” have already proven successful for behavioural research. This model is able to develop an understanding of the ecological and social contexts in which conservation behaviours occur, and of the factors that influence, motivate and determine those behaviours. It can provide powerful methods, tools, and techniques for working with people and understanding their decisions, practices and actions. It can help practitioners to move beyond their assumptions to precisely understand *why people do what they do and how people can do to conserve resources while still maintaining their livelihoods* (Byers, 1996; OECD, 1999; USEPA, 2003).

Figure 4: Synthesis model – a conceptual instrument to understand and influence human behaviour in conservation (Byers, 1996)



Participatory social assessment help to understand community behaviour is a process consisting of three steps: 1) assessing the situation, 2) identifying critical behaviour, and 3) identifying and understanding key factorsthat influence critical behaviour (**Box 2**).

The first step is known as the assessment or identification of problems of natural resource management and conservation. It aims to identify decisions, practices and actions which beyond that community interact with their environment, and to develop an understanding of the ecological and social contexts of those behaviours. To reach to these aims, a wide range of questions needs to be translated to figure out current behaviours affecting natural resources, actors and stakeholders of those behaviours, locations where such behaviours occur, and time when those behaviours take place and their trends (**Box 3**).

Box 2: Steps of the assessment stage of a process for understanding conservation behaviour (Byers, 1996)



Box 3: Guiding questions for situation assessment on conservation behaviour (Byers, 1996 and Byers, 2000)

- **What** are people doing that affects the environment/resources in the area given?
- **Which** of these behaviour contribute to depletion/degradation of resources then recognized as problems affect others?
- **Who** are the actors/stakeholders involved or affected by those behaviour?
- **Where** are those behaviour taken place? or What is spatial distribution of behaviour that affect natural resources?
- **What** is temporal distribution of behaviour that affect natural resources? (**when**)
- **How** have those behaviour and change of resources been progressing? (trends)

The second step is to refine the understanding of ecological and social conditions that already developed in the first step, in order to identify critical behaviours of community. Critical behaviours refer to those have the largest impact on the sustainability of local natural resources, then these behaviours target for change (negative ones) or maintenance (positive ones). In principle, a negative or positive behaviour implies to whether it keeps natural-resource-use options open for the future, or closes them because of extinction, resource depletion and degradation, and other kinds of irreversible environmental

changes. This assessment depends very much on the perception of community on the understanding of sustainability. Those findings from ecological and social trends in the first step would be helpful to define the sustainability. To identify critical behaviours, a number of questions given in **Box 4** that needs to be critically answered.

Box 4: Guiding questions for identifying critical behaviour
(Byers, 1996 and Byers, 2000)

- **What** are people doing here that is ecologically sound and sustainable?
- **What** are people doing that is unsustainable, leading to the depletion or degradation of biodiversity and other natural resources?
- **Which** behaviour are most serious problem?
- **Which** behaviour have most potential for the sustainability of society and ecosystem?

The next step is to figure out the key factors as the determinants of, motivations for, and influences on the most critical behaviours which have been identified in the previous steps. The prime aims of this step are to understand why the community in research takes those behaviours (decisions, practices, decisions), and to define which factors likely influence them most, and whether they are perceived as benefits or barriers to the community. **Error! Reference source not found.** presents a set of questions needs to be answered for that tasks.

Box 5: Guiding questions for identifying critical behaviour driven factors
(Byers, 1996 and Byers, 2000)

- **What** social and ecological factors determine, motivate, or influence the critical behaviour?
- **Which** of those factors are most important?
- **Which** factors could be feasible to influence by possible interventions?

As mentioned in the section 1.3, there are several potentially important social factors can influence to a conservation behaviour of a community. They may be knowledge, values, social norms, socio-cultural conditions, options, skills, economic conditions, regulations and laws, policies, governance schemes, and gender. These factors also can be considered from other aspects such as age groups, educational levels, and ethnicity. In addition, ecological factors are potentially important for the assessment such as resources availability and productivity, diversity, variability of physical environment, competition, and hystory of disturbance and successional dynamics. Among these factors, some of

them would be perceived by the community as benefits to them, and some may be barriers.

In summary, by adopting a participatory approach, the social assessment is a logical and systematic process to investigate livelihood-based community behaviours affecting natural resources. This is a complex task involving different actors/ stakeholders and disciplines to achieve a comprehensive understanding of ecological and social contexts of a given community, then to verify the understanding of critical behaviours and their determinants. This assessment is very important and helpful for practitioners, managers and policy makers to develop behavioural change strategies for communities towards sustainable conservation.

3 Community Behaviour for Upland's Nature Conservation: Swidden cultivation does lead to resource depletion?

Investigating human behaviours has had a long history of development in line with the application of psychological, sociological and mental sciences in many fields, except in management and conservation of natural resources. It was probably got attention since 1970s when environmental movements emerged, and remarked by the United Nations' Conference on Population and Environment held in Stockholm in 1972, where scientists, researchers and politicians saw an urgent need of changing human behaviour for environmental sustainability and human survival in a world of resource limits. However, behavioural change studies towards nature conservation became widely-addressed since 1992 when the United Nations' Conference on Environment and Development urged the world with biodiversity conservation and sustainable development. Many studies in community behaviour towards resource use and management have been taken place in Africa (Fairhead and Leach, 1996; Byers 1996; and Byers 2000) and in the Amazon of America (Posey, 1985; and McElwee, 2003), and contributed to the success of wildlife conservation in that areas.

In Vietnam and South East Asia, it has been for long to debate the controversial question that whether swidden cultivation [or shifting cultivation] and its associated activities done by local communities, basically indigenous people, are serious threats to deforestation, and if so how should it be changed. According to Thrupp *et al.* (1997), this livelihood refers to any temporally and spatially cyclical agricultural system that involves clearing of land, usually with the assistance of fire, followed by phases of cultivation and fallow periods. Early studies in Indonesia and Thailand done by anthropologists have found that swidden cultivation relies almost entirely on the inherent diversity of the forests for its success rather than inputs of water and/or fertilizer like lowlanders' wet-rice cultivation (Geertz, 1963). Spencer (1967) described that shifting cultivation in SEA is not a single system, but this practice "involves some multiple complex of motivations, factors, aims, culture traits, habits, political pressures, and causal forces". Later studies recognised a need of an interdisciplinary approach to understand the complexity of such behaviour because "it is not just a way to meet most of own needs of each household in swidden society" (Spencer, 1967). Studying slash-and-burn practice of the Karen people in Thailand's uplands, Grandstaff (1980) discovered that "swiddeners possess incredible amounts of information concerning their environment and have developed highly skilled and adaptive methods, utilizing complex decision-making processes, for practicing swidden cultivation".

Hecht *et al.* (1988) agreed that swidden cultivation is an adaptive way to certain conditions of geography, rain and [low] population density as it imitated the tropical forest in makeup and diversity of [vegetation] structure. He acknowledged that “it could indeed be a sustainable form of land-use”, and Mertz and Magid (2005) also called shifting cultivation as a conservation farming. Doing researches in Indonesia, Malaysia and Thailand, Hatch (1982), Forsyth (1994), and Mertz and Magid (2005) found that traditional shifting cultivation had the lowest amount of soil erosion and sediment loss from the system compared to other forms of land clearing and tillage systems. It also contributed to maintain biodiversity resources in forest garden systems (Jong, 1997). Thrupp *et al.* (1997) suggested that it should be aware of the myths and reality of shifting cultivation. He stated that shifting cultivation is not responsible for the majority of deforestation and land degradation, and it has varying and complex environmental impacts, some of which may be sustainable and enhance biodiversity. Researchers like Brown and Schreckenberg (1998) believed that “long fallow periods allow for a diverse and rapid regrowth of secondary forest”. However, like many other researchers, Darlington (1998) blamed swidden behaviour, together with others (commercial logging, fuelwood collection, and charcoal making) are the main causes of deforestation in Thailand and its neighbours. It was regarded as irrational, destructive and uncontrollable to the environment. Brunner (2000) also confirmed that shifting cultivation causes “unacceptable” erosion and sedimentation problems downstream. ICRAF (1996) recorded that slash-and-burn practices result in the cutting and burning of over ten million hectares of tropical moist forest every year. The fact that swiddeners, like in SEA, often occupy so much forest land in such areas that are usually targeted for purposes of environmental protection (parks, nature reserves) (McElwee, 2003). Though, only swidden cultivation behaviour that had become controversial in seeing its impacts to the environment. Thus, it always demands a fair understanding on it, with a focus on specific location, to ensure that interventions to it would be applicable.

Grandstaff (1980) discussed that slash-and-burn practices are influenced by many aspects, including environmental and socio-cultural (seasonality, distribution of labour, spiritual norms, etc.). In a particular case in Vietnam, slash-and-burn activities are not only carried out by indigenous uplanders, but also lowlanders who migrated to uplands under the government's resettlement programme (Hardy, 1998; Jamieson *et al.*, 1998), and these people valued forest resources differently to what indigenous people did (Jamieson, 1991). All these issues above have shown that local behaviour towards natural resources should be mirrored in different angles, and any intervention to change such behaviour for resource sustainability would require an awareness of the problem, knowledge of alternatives, motivation or benefits for change, and resources to implement changes (Padgitt and Perzelka, 1994).

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