THE INTEGRATION OF ECONOMIC MEASURES INTO THE NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS OF VIET NAM AND SOUTH EAST ASIA

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List of Acronyms

AFTA	ASEAN Free Trade Area
APEC	Asia Pacific Economic Cooperation
ASEM	Asia Europe Meeting
ASEAN	Association of South East Asian Nations
BAP	Biodiversity Action Plan
BPSP	Biodiversity Planning Support Programme
CBD	Convention on Biological Diversity
CVM	Contingent Valuation Method
DoSTE	Department of Science, Technology and Environment
EIA	Environmental Impact Assessment
FAO	United Nations Food and Agriculture Organisation
FDI	Foreign Direct Investment
FPD	Forest Protection Department
GDP	Gross Domestic Product
GEF	Global Environmental Facility
ha	Hectare
HCMC	Ho Chi Minh City
IUCN	The World Conservation Union
MARD	Ministry of Agriculture and Rural Development
MoF	Ministry of Finance
MoFI	Ministry of Fisheries
MPI	Ministry of Planning and Investment
MoSTE	Ministry of Science, Technology and Environment
MoT	Ministry of Trade
NEA	National Environment Agency
NCD	Nature Conservation Division
NCS	National Conservation Strategy
NEAP	National Environmental Action Plan
NPESD	National Plan for Environment and Sustainable Development
NPV	Net Present Value
NSEP	National Environmental Protection Strategy
NTFP	Non-Timber Forest Product
PPP	Polluter Pays Principle
TCM	Travel Cost Method
SFE	State Forest Enterprise
SME	Small and Medium Enterprises
SOE	State-owned Enterprise
TCM	Travel Cost Method
UNDP	United Nations Development Programme
WTA	Willingness to Accept
WTO	World Trade Organisation
WTP	Willingness To Pay

1. Background to the Study

Lying along the South-Eastern coastline of Asia, Viet Nam benefits from diverse types of landscape and seascape and is one of the richest country in the region and the world in terms of biodiversity endowment.

The country can be divided into a number of key ecosystems that provide habitats to 276 mammal species, 249 reptile species, 80 amphibian species, 828 bird species, 2,740 fish species and 5,500 insect species. Approximately 12,000 plant species are found, of which 40% are believed to be endemic[1]. Viet Nam possesses also a rich variety of endemic agricultural species and its genetic resources contributed to the creation of a large amount of medicines (about 3,000 plant species are used in traditional medicine).

Viet Nam's global biodiversity significance was highlighted on the occasion of the discovery in the past decades of four large mammal species: the saola, the large-antlered muntjac, the Annamite muntjac, and the khting vor. At the beginning of the year 2000, scientists working on the development of an illustrated guide of selected flora of Halong Bay in Northern Viet Nam found seven new and endemic plant species, including four plants belonging to the African violet family, a palm tree, a ginger and a balsam.

Scientists estimated that the current loss of ecosystems, due to the high density, rapid growth and migration of the population, economic development and over-exploitation of natural resources is endangering 28% of mammals, 10% of birds, and 21% of reptiles and amphibians.[2] In front of the necessity to tackle the root causes of biodiversity loss and allocate more human and financial resources to its conservation, and in response to the ratification of the Convention on Biological Diversity (CBD) in 1994, the Vietnamese government adopted the National Action Plan on Biological Diversity or Biodiversity Action Plan (BAP) for Viet Nam in 1995.

The BAP designs a policy framework for biodiversity conservation in Viet Nam and "...represents a national strategy to meet new challenges and to encourage sustainable growth"[3]. It recognises the impact of the global and sectoral economic development on biodiversity and endorses the achievement of a sustainable development. However, the rapid economic development occuring in Viet Nam has been so far imposing an accrued stress on the environment and biodiversity.

Viet Nam is currently in a transition phase, as it is switching from a centrally-planned economy to a market-oriented system and is progressively integrating into the world economy. New opportunities are offered for reaching an optimal level of natural resources exploitation while avoiding over-exploitation similar to the past. The economic growth rate that reached 4.77% in 1999[4] is expected to rise during the next decade, together with the government promoted industrial production and related pollution.

In this quickly evolving context, it is becoming even more crucial to design and implement economic measures addressing adequately the negative effects of economic development on biodiversity. Such tools will be necessary to internalize the costs and benefits of biodiversity within the global and sectoral economies, and to channel additional funding to biodiversity conservation, in response to Viet Nam's obligations under article 6, 10, 11 and 20 of the CBD. So far, the BAP contributed extensively to the achievement of natural resources conservation in Viet Nam, however addressing adequately these new

[1] Bao cao tom tat hien trang moi truong Viet Nam, p. 23

[2] BAP, p. i

[3] BAP, p. 1

[4] General Statistic Office, *Statistic Yearbook 1999*, Statistical Publishing House, Hanoi , p. 20

challenges will necessitate an additional step toward an intensified use of economic instruments within the biodiversity conservation framework of Viet Nam.

Therefore, the national case study examines in its first part the impacts of sectoral economic activities on the Vietnamese biodiversity. In its second part, the study analyses the economic measures incorporated into the text of the BAP. The third part of the study reviews the existing economic instruments implemented subsequently to the adoption of the BAP and draws lessons from these experiences. Finally, the study proposes some follow-up options for promoting the use of economic tools for biodiversity conservation in Viet Nam.

2. Major Biodiversity Impacts of Economic Activities

Interactions between economic activities and environment have to be clearly understood by biodiversity planners in order to efficiently tackle the source of ecosystems degradation and threats to biodiversity. In Viet Nam, the environmental impacts of sectoral economic activities can be analysed as follow:

2.1. Macroeconomic conditions

Since the late 1980's, under the *Doi Moi* or renewal process, economic reforms were initiated in Viet Nam and the current situation is a combination of governmental planning and liberalism targeting the stabilization of the macroeconomic conditions. In this purpose, a set of measures was adopted including the following: liberalisation of prices; development of the export oriented economic sectors; increase of investment through domestic savings; establishment of a positive interest rate regime; development of the banking system and budget deficits reduction; expansion of the private business; modernisation and "equitisation" (partial privatization) of the State-owned Enterprises (SOE); adjustment of the foreign exchange rate; and liberalisation of Foreign Direst Investments (FDI).

Despite these efforts, Viet Nam's Gross Domestic Product (GDP), that reached an average of 7.6% per annum between 1990 and 2000, is progressively slowing down since 1997[5]. This is not only due to the financial and currency regional crisis, but also to the slow pace of the economic reforms, and a drop in FDI (from US$8.3 billion in 1996 to less than US$2 billion in 1999)[6]. Nevertheless, Viet Nam draft Socio-Economic Development Strategy 2001-2010 is targeting a doubling of GDP by 2010 thanks to an economic growth of over 7% per annum and raising investment up to 30% of GDP[7].

Viet Nam is progressively integrating into the global economy, becoming member of the AFTA, APEC, and ASEM, signing a Bilateral Trade Agreement with the United States and acceding the WTO in a near future. These new opportunities are expected to bring into the country up-to-date technologies and information, including biodiversity-friendly technologies. In addition, quality of domestic production and competitiveness of enterprises should be improved, promoting a more efficient use of natural resources, and raising the business sector awareness on the necessity to preserve those resources at both the macro and micro-economic levels. But boosted FDI, based on Viet Nam's comparative advantages of low-wages and natural resources, might also lead to over-exploitation, the import of polluting technology and serious industrial pollution due to the currently obsolete industrial management, infrastructure, and process and production methods.

2.2. Agricultural sector

Agriculture is still the most important economic sector for the government of Viet Nam, although the industrial sector is rapidly developing and already represents more than 32% of the GDP of the country, against approx. 21% for the agriculture sector[8].

Before the 1990's, the agriculture sector was organized, together with the forestry sector, around a centrally planned system. The main goal of the agricultural policy was to reach food security for the country with a strong focus on rice production. Levels of national production were fixed annually and lands were reclaimed on forest, wetlands and coastal areas to increase the arable surface to the current 27% of the country global surface. High yield varieties of crops were preferred over locally adapted

[5] GSO (General Statistic Office), *Statistical Yearbook 1999*, Statistical Publishing House, Hanoi , 2000, p. 19

[6] *Goodnight, Viet Nam*, The Economist, January 8th 2000, p. 64

[7] Communist Party of Viet Nam, Central Committee (2000), *Socio-Economic Development Strategy 2001-2010* (draft)

[8] GSO, *op. cit.*, p. 23

agricultural species, leading to a loss of agro-biodiversity. Today, five genetically engineered varieties of rice are cultivated, instead of the about twenty traditional rice varieties from the past.

Import of chemical pesticides and fertilizers was organised by the State, which also subsidized 20 to 30% of their prices, contributing to their over-use. It is estimated that the number of pesticide application by farmers on vegetables and fruit trees is still exceeding from 2 to 45 times the advised number of application[9]. Side effects are known as increased tolerance and resistance of pests and diffusion of toxic chemicals into the environment, polluting soil and water and contributing to the 33.1 million hectares (ha) of infertile lands of Viet Nam[10]. Today, pesticides and fertilizers import are increasing, distributed this time according to the market demand. Awareness about the impacts of chemicals on human health and environment is still low among farmers.

Under the *Doi Moi*, important reforms were introduced and the agricultural sector is now focusing on better productivity and diversification of the production, with special emphasis given to cash crops. Liberalisation and promotion of export-oriented production is also an important element of the reforms and the country became rapidly the second biggest exporter of rice of the world (8 million tons/year), as well as the third biggest exporter of coffee (600,000 tons a year). Land use rights were clarified and most agricultural lands were allocated to farmers with leases of 20 to 50 years, although further legal improvements by the Ministry of Agriculture and Rural Development (MARD) are still needed.

2.3. Forestry sector

The history of the forestry sector in Viet Nam is characterized by a dramatic loss of forest cover (from 14.5 million has in 1943 or 43% of the country surface to 9,3 million has in 1997 or 28% of the country surface). Reasons are the USA-Viet Nam war and since 1975 the unsustainable use of forest. In the past, about 1 million cubic meters of commercial timber was extracted annually by the State Forest Enterprises (SFEs) mainly for export, while today, the forestry production is hardly meeting the national demand for timber. The objective of the SFEs was to maximize the yield of the exploitation of commercial timber, as a source of foreign exchange and fiscal revenue for the development of the country, without paying enough attention to sustainability until 1985, when damages to forest vegetation became critical. Simultaneously, cleared forests constituted new fertile lands for cropping that were allocated to agriculture and human settlements, especially in the deltas.

Root causes of deforestation are multiple. Population density of Viet Nam, one of the highest in the world, put pressure on rural and urban environment. Rural poverty and shortage of arable land push people to migrate within forest areas or within the so-called "new economic zones" established by the government, putting additional burden on local natural resources. Resettled people generally tend to maximize their productivity and profit over a short period of time and adopt a more distant relationship with biodiversity than in their native location[11]. The traditional practice of shifting cultivation, fuel wood collection, logging and illegal logging, harvesting of wood and non-timber forest products (NTFPs), fires, and development works, such roads, dams or high voltage power plants are activities that contribute to deforestation and forest degradation.

Limited abilities of the local authorities to protect forests and inadequate land tenure policies (the system of land use planning and land allocation in forest areas often gives an open access to natural resources) are participating in the loss of forest cover with heavy consequences on the environment:

[9] TUAT, *Nguyen Van, Current Use of Plant Protection Chemicals for Organic Crops Production and Integrated Pest Management*, in JHA, Veena, Greening Trade In Vietnam, UNDP/UNCTAD, p. 3

[10] HY, Nguyen Dac and HA, Trong Hong, XXXX, p. 2

[11] Thu Ba

soil erosion increasing the release of sediments in water, destruction of habitats, etc. In front of these problems, forest plantation became a new element of the forestry policy and subsidies to the State sector were eliminated. In 1991, the National Forestry Action Plan - a review of the forest sector - was adopted and since the beginning of the *Doi Moi*, additional reforms were introduced, as well as numerous legal and policy documents promoting the sustainable management of forests. For instance, in 1993, the government introduced a new system of land allocation: forests remain the property of the State, but are allocated to SFEs, households and other economic entities for a period of 50 years renewable. Nevertheless, this arrangement failed to motivate households and local communities and needs further development. A long term programme, aiming at increasing the forest coverage from the current 28% to 43% of the country surface by 2010 was introduced.

2.4. Fisheries sector

Fishery is a growing sector in the world and in Viet Nam, especially since developed countries decided to reduce their own catch. Seafood constitutes the principal source of animal protein for the Vietnamese population and a pillar in the governmental food security policy. Fishing and aquaculture are also seen as a rapid way to bring in foreign currencies. According to the government, annual fisheries output should reach 3.5 million tons per year in order for Viet Nam to meet domestic needs and become a major seafood exporter in Asia. Main products are shrimps, squid and fish. In the future, the variety of species caught should increased. In 1992, it was estimated that 60-70% of the fisheries products were derived from capture fisheries, while aquaculture contributes to 30% of the total fisheries production[12]. Today, the Ministry of Fisheries (MoFI) encourages the expansion of aquaculture activities and off-shore fishing through preferential taxation in an attempt to reduce pressure on near-shore marine resources. Some marine products are also used in medicine and as fertilizers.

Marine environment is heavily impacted by over-catch, use of destructive fishing methods (poisonous substances, chemicals, explosive and fish mesh nets) and pollution from agricultural runoff of pesticides and fertilisers. Marine habitats, such as coral reefs, coastal habitats, wetlands and mangrove forests are also degraded by siltation, reclamation of lands, and the rapid expansion of aquaculture. As a consequence, fishing yields started to decrease over the past ten years. Industrial, urban and tourism development constitute additional stress for marine biodiversity.

Since the *Doi Moi*, the economic activities of the fishery sector started to be regulated with the adoption of a fisheries master plan and a ban on damaging fishing methods. The draft National Fisheries Law, under development by the MoFI, is going to establish a system of allocation and lease of land, land with water surface and marine areas to local organizations, households and individuals for conducting aquaculture and developing fisheries resources over a period of 20 year. It will also encourage the creation of a rehabilitation fund for aquatic living resources to ensure their sustainable development. Government investment capital, fishery taxes and fines should contribute to the fund.

2.5. Industrial sector

Developing the industrial production and increasing the share of the private sector in the GDP is among the highest priorities of the government of Viet Nam. Industry currently focuses on oil, gas, coal, steel, chemicals, pulp and paper, and food processing. Major exports include crude oil, textiles and garments, and footwear, equivalent to 44% of GDP.

Today production still relies on more than 500 inefficient State-Owned Enterprises (SOEs) that represent about 67% of the industrial GDP of the country. However, under the *Doi Moi*, the development of the private sector is strongly encouraged through a comprehensive set of measures.

[12] BAP, p. 35

The government is in the process of "equitizing"[13] major SOEs and non-performing loans will stop to be allocated. Unprofitable SOEs are doomed to disappear.

Aware of the necessity to avoid introducing additional pressure on the environment and maintain and improve foreign markets access for Vietnamese products, the government decided to adopt measures to upgrade the process and production methods, improve the environmental management of enterprises and the disposal of industrial waste. For instance, Small and Medium Enterprises (SMEs), already accounting for 40% of the country's exports and major job creators, are offered low interest loans to help them upgrade their equipment and are given new opportunities for export.

Few reliable data are publicly available on the environmental impacts of industrial activities. However, the use of coal as major source of energy for industrial development represents an important threat of atmospheric pollution and acid rain, while coal dust is already a hazard for human health and the environment in the North of the country. Transport-related air pollution is also becoming critical especially in urban areas. Toxic pollutants, heavy metal, and hazardous wastes, such as hospital waste are generally released untreated or partially treated directly in the sewage system or dumped in landfills, leading to freshwater, marine water and soil pollution. Marine and coastal activities such as marine transport, mineral and oil exploitation are source of pollution and siltation damaging coastal and marine ecosystems, especially mangroves and coral reefs. Important development projects, such as roads, industrial sites and hydroelectric power schemes and dams are destabilizing sensitive ecosystems like wetlands and are disturbing important wildlife (migration path of birds, etc.).

2.6. Other economic activities

The Viet Namese tourism sector has been characterised by a rapid, uncontrolled and unregulated development. The improvement of the social welfare led to the development of a new domestic market. In general, national tourists have a low level of environmental awareness and add stress on wildlife by accessing remote areas and consuming special foods often made of endangered or protected species. Tourism development and infrastructure construction are likely to increase the pressure on ecosystems. Alternatively, nature-based tourism constitutes a strong economic incentive for biodiversity conservation and could constitute a source of benefit for local community and for conservation itself.

Rising over-gathering, hunting and fishing of vulnerable and sensible wildlife species - such as NTFPs - for legal or illegal consumption and trade (it was estimated in 1996 that about 700,000 animals were being taken from the environment each year to be used as food, medicines, decoration, etc.) reinforces the threatening effect of habitat loss and degradation. Valuable species are mainly collected from East Viet Nam, Lao PDR and Cambodia and transported through Viet Namese trade points to be exported to China, Thailand, Hong Kong, Singapore, etc.[14]

[13] Privatisation of smaller SOEs through the creation of stock companies allowing to sell 30% of their shares to foreign investors

[14] TRAFFIC,

3. Economic Measures Integrated in the BAP for Viet Nam

Biodiversity planning for Viet Nam dates back to 1985 when the National Conservation Strategy (NCS) was drafted by the Committee for Rational Utilisation of Natural Resources and Environment Protection. Although never formally adopted by the government, it has served as a groundbreaking document upon which the environmental and biodiversity planning process of Viet Nam can take off. One of the goals of the NCS was to define policies promoting sustainable use of natural resources and integrate them into Viet Nam's social and economic development. For instance, it was identified that the participation of the public in the conservation efforts could be encouraged by providing incentives including direct benefits, access to land use, and livelihood.

Following this, in 1991, the National Plan for Environment and Sustainable Development for 1991-2000 (NPESD) was developed by the State Committee for Sciences and then adopted as government policy. The NPESD, with its broad objective to further address the issues identified in the NCS, emphasized the need for a clear law on the environment, laid out government policy for conservation and listed and prioritised action areas. Sustainable development and equity are the major themes of the NPESD, conservation having to be improved simultaneously to people's quality of life.

The Tropical Forestry Action Plan (TFAP) developed by the Ministry of Forestry in 1991 constitutes a review of the Viet Namese forestry sector and highlight the interactions between economic activities and natural resources. This document mentions the need to improve livelihood of local people if forests are to be effectively conserved and the necessity to allocate forestland to households, while providing financial incentives and assistance to their activities of production, such as rural credit. The TFAP also promotes the elimination of perverse economic incentives particularly those encouraging trade in rare species, however, concrete measures are not proposed.

These experiences paved the way leading to the incorporation of economic measures into the BAP.

3.1. Preparation and adoption of the BAP

Viet Nam is one of the first Asian country to have completed and approved its Biodiversity Action Plan in response to the ratification of the CBD in 1994. In fact, the idea of developing a BAP for Viet Nam was already initiated in 1991. The Ministry of Forestry (now MARD) and the State Committee of Science (now MoSTE) submitted a proposal to the United Nations Development Programme (UNDP) to grant financial support from the Global Environmental Facility (GEF) for the establishment of a protected area system and the adoption of the BAP.

The preparation of the BAP began in February 1993 and extended over 10 months. A team of experts was formed to draft the BAP, which comprised a team leader (international expert specialised on biodiversity) seconded by three experts on marine ecology, terrestrial ecology and biodiversity policy and forty national experts from various field of specialisations and institutions. The drafting team did not include specialists on economy or finance as the main goal of this document was to establish an effective framework of protected areas.

The process involved close consultation with Government representatives at all levels, but excluding economy-related authorities, and included inputs from Viet Namese and international scientists and village people whose lives depend on the extraction and use of natural resources. Much of the information used to develop the BAP was compiled from interviews and consultations with authorities and communities in ten provinces of high biodiversity significance. Simultaneously, some forty experts from various backgrounds researched the status of biodiversity in Viet Nam and identified priorities for action. Workshops were convened to collate comments and suggestions on the draft BAP from in-country scientists.

The revised draft was then circulated to all relevant government organisations and non-governmental organisations (NGOs) for further comments. All together, the BAP went through four preparation cycles before the Prime Minister approved the final version in December 22, 1995, about one year after its publication and formal submission to the government.

In recognition of the importance of economic measures for biodiversity conservation and under the obligation stipulated in the CBD, linkages between economics and biodiversity conservation were taken into account during the process of developing the BAP. One of the innovative differences between the BAP and its predecessors is that it "...focuses more attention on the values and uses of biological resources. Matters of access to and sovereignty over biodiversity resources are discussed to safeguard the country's long-term economic potential." However, the BAP does not spell out detailed activities regarding the implementation of economic tools.

Box 1: Main obstacles to the integration of economic measures into the BAP during the preparation process

Linkages between economic activities and biodiversity conservation were identified and debated during the preparation phases of the BAP, however, few proposals for concrete use of economic tools were included into the text for the following reasons:

- insufficient awareness of policy and decision makers on the value of biodiversity and the necessity to take it into account in the planning and accounting process;
- non representation of economics among the expertise of specialists consulted during the preparation phase of the BAP;
- unavailability of adequate methodology for estimating the monetary value of biodiversity components both at the national and global level; and
- lack of broadly recognized data on the economic value of biodiversity constituting a base for developing relevant policies and a justification for decision makers to make sufficient investment available for conservation efforts.

3.2. Linkages between economy and biodiversity in the BAP

The interactions between biodiversity and economic development and activites and the direct economic causes for biodiversity loss are clearly acknowledged and described in the BAP and can be summarized as follow:

- over-exploitation of natural resources, such as wood and other forestry products, over-fishing and use of destructive fishing methods, destructive exploitation of coral;
- destruction of forest cover through the practice of shifting cultivation and slash-and-burn techniques, also contributing to forest fire, and reclaim of land for cultivation, aquaculture and human settlement;
- water pollution due to oil exploitation and maritime transport, and estuary and coastal sedimentation due to coal and clay exploitation;
- degradation of coastal areas through the construction of aquaculture ponds, land reclamation from the sea for salt exploitation, agricultural cultivation and human settlement, large-scale exploitation of sand and stones for construction and other mineral resources; and
- transition to the market economy, forcing farmers to switch to higher production yield species to stay competitive and meet the market demand to the detriment of locally adapted species.

More emphasis could have been given to the expected effects of the economic reforms introduced previously and simultaneously to the preparation of the BAP, as well as on the opportunities offered by this new situation to re-adjust negative economic impacts on biodiversity. For instance, useful lessons could have been learned from the expansion of industrial production in the region or in other economies in transition. The potential risks constituted by the lack of industrial waste management, air

and water pollution abatement, and control on emerging economic sectors potentially impacting on biodiversity, such as tourism, bio-prospecting, and services is lacking.

The over-use of chemicals in the agricultural sector and their impacts on soil, aquatic biodiversity and the resistance of pests would have deserved a better coverage in the BAP. Proposals to diminish or suppress economic disincentives like subsidies could have contribute to the rationalization of their use without jeopardizing the level of production aiming to ensure the food security of the country. Today, the MARD is promoting a balanced utilisation of organic and non-organic fertilizers and the practice of integrated-pest management[15].

The system of land use planning and land allocation in forest areas, which is - in most of the cases - similar to giving an open access to natural resources, is an important contribution to the unsustainable use of forest resources. Immediate causes of deforestation identified in the BAP include the reclamation of new lands for agriculture and human settlements, however, a deeper analysis of the impacts of land tenure practice on biodiversity would have been necessary. Valuation of goods and services provided by the forest ecosystems could have been promoted as it would constitute an important incentive to allocate land use in favor of forest. The same comment is applicable to coastal and marine areas' land use. The extensive commercial utilization of natural resources was identified as a critical issue for biodiversity conservation. The BAP in particular details the following species as being threatened:

timber and non-timber forest products, such as rattan, canes, honey and bamboo used by the paper industry and as fuelwood. The BAP recognizes that the value and quantity of domestic fuel and animal fodder harvested from forests are probably more important than those of timber harvested, however, the lack of commercial statistics on those activities prevent to have an accurate estimation. Therefore, such valuation would be extremely useful for the development of an effective forest conservation strategy, although the BAP doesn't spell out future steps of action in this domain;
wild fauna and flora species, exploited to provide medicines, food for human being and livestock, raw materials for industries and handicraft, etc. The BAP estimates that 2,300 plants species are harvested and recognizes the wildlife trade with neighboring countries is increasing. The value of such trade is not assessed. An estimation of the contribution of wildlife species and species products to local, provincial and national economies would certainly raise awareness of authorities and wildlife users about the necessity to adopt and implement sustainable use practices and justify further investment on trade monitoring; and
fish products, mainly sea fish, squids, prawns, crabs and mollusks, and also freshwater fish, soft-shell turtles, frogs and farmed fish. The BAP emphazises the importance of these natural resources for the national and local economy and provides figures regarding the quantity harvested and the value of the amount traded annually. Over-exploitation of fish products was demonstrated in the BAP by the decline in catch per unit effort despite the increase of the fishing fleet and economic incentives based on sound valuation revealed to be necessary but are not proposed in the BAP.

Box 2: Economically related objectives of the BAP

In response to the identification of economic causes for biodiversity degradation, the immediate economically related objectives of the BAP were determined as follow:

- Protect the country's endemic ecosystems and vulnerable ecosystems which are threatened by human economic activities;
- Protect biodiversity components subject to over-exploitation or at the opposite left out of the economy and ignored; and
- "Promote and identify the utilization values of all biodiversity components on the basis of sustainable development of natural resources in order to serve the country's economic targets."

Source: Summary from the Minister of MoSTE, BAP, p.6

[15] BO, Nguyen Van,

During the preparation of the BAP, biodiversity planners of Viet Nam agreed that human economic activities are the main cause for biodiversity degradation and loss and that valuation will constitute a privileged economic tool to contribute to the sustainable use of natural resources for a sound economic development of the country. Therefore, the BAP and its derived activities are rather focusing on valuation.

3.3. Economic measures proposed in the BAP

Economic valuation

In the BAP, "the great economic, scientific, cultural and social value that biodiversity can contribute to the present and future development of mankind" is recognised (Sum. of the BAP, p. 2) and indeed valuation is the main economic tool taken into account and recommended into the text.

The importance of biodiversity for the national economy is acknowledged and is estimated, on its introduction pages, to the total value of the agricultural, forestry and marine bio-products exploited and contributing to the GDP of the country, *i.e.* to about US$2 billion per year. This figure, while providing a general idea about the value of biodiversity, didn't convinced decision-makers and biodiversity planners and the need for more accurate data was emphasized. Other direct values of biodiversity, such as the value of the services offered by ecosystems, species and genes are not mentioned, neither are taken into account the indirect, option and existence value that would be necessary to set up coherent conservation policies. Another example is given in the BAP by the allocation of financial value to the forestry and the fisheries sectors. The forestry sector is reduced to its timber extraction (2% contribution to the GDP, BAP, p. 30) and NTFPs and other values, such as recreational values, are neglected. Similarly, the fisheries sector is poorly estimated through its products total export value (US$305 million in 1992, BAP, p. 35).

At the macro-economic level, decision-makers need to be informed about the total value and contribution of non-marketed biodiversity goods and services, in order to understand the benefit of conservation for the nation and support the implementation of the BAP. "A system of true natural resource cost accounting is the first step to developing economic tools for the maintenance of biodiversity" (BAP, p. 110) says the BAP, although it doesn't provide guidelines for readjusting the national accounting system by internalizing biodiversity externalities. At the micro-economic level, local users will use natural resources on a more sustainable manner if they are aware of the benefit which arise from better management and protection of rare species and natural habitats. "It is therefore important to carry out further studies on the economic values of biodiversity to the local people" (BAP, p. 110). Such information will be equally important to refine the management plan of protected areas and buffer zones and avoid conflicts between human development and nature conservation (BAP, p. 123).

Services provided by biodiversity and contributing to the national economy of Viet Nam, such as life support, supply of raw materials, contribution to the absorption of waste products and amenities, are thoroughly taken into account as follow:

- source of food, medicinal plants, timber, fibre, fuel, waterproof material, etc.;
- genetic pool for the development of new domesticated species;
- ecological function, such as protection of soil by creating fertility and avoiding erosion, watershed protection and regulation of the flow and cycle of water, coastline protection, distribution of oxygen and minerals in the atmosphere, the earth and the rivers, regulation of the climate, etc.; and
- research, educational and recreation function, for national and international tourism, mainly in marine areas.

It has to be noted that the option and existence values, unfamiliar at that time, are left aside the BAP. Despite the lack of national expertise on valuation, suggestions for appropriate valuation methods could have been linked to the particular services highlighted. For instance, ecosystem services could be estimated in terms of loss of rice yield (it is estimated that 50% of the fluctuation in rice yield is attributable to forest loss), water quality maintenance costs, opportunity for freshwater fisheries, costs of coastal human equipment reconstruction after storms, etc. The BAP indicates that no precise figures could be placed on the revenue lost because of soil erosion. Some investigations on farmers' Willingness To Paid (WTP) for restoring their soil would be equally useful in terms of policy making. The BAP also finds difficult to evaluate the contribution of biodiversity to marine-based tourism activities, while the Travel Cost Method (TCM) for instance could give a good indication at this regard.

Lack of knowledge about methodologies available for the valuation of ecosystem and genetic resources created difficulties for Viet Namese experts to promote the calculation and use of those values for awareness raising and policy making into the BAP. Biodiversity users usually perceive these values when a damage occurs to the ecosystem or species and restoration costs become higher than exploitation benefits. An example of this situation in Viet Nam was given by the destruction of wetlands, taken seriously into account by local authorities only when shrimp farm productivity started to decrease.

The five year plan (1996 to 2000) included in the BAP set up 59 projects to be implemented in priorities. Some of these projects rely on economic valuation, *e.g.* the establishment of protected areas with high biodiversity values, the formulation of regulations on the conservation, utilization, exploitation and exchange of biological resources which have immediate and long-term practical economic values, the awareness raising of the people and officials at all levels about biodiversity values, and the constitution of genes banks to protect precious and rare genetic resources with high economic value. The BAP also proposes a three year project for Hanoi and selected rural areas, intending to study the benefits perceived by local people as resulting from biodiversity conservation. Concretely, the project proposed to analyse the property rights and access to biological resources, biodiversity conservation incentives, economic values and benefit for local people from an improved management and protection of natural resources (Project Concept P3, cf. Appendix 1). This project wasn't implemented yet.

The BAP emphasizes the importance of valuation as a tool for awareness raising and better decision-making, but doesn't detail concrete steps for conducting valuation and integrating results into policy-making on a systematic basis.

Economic incentives and disincentives

As a Contracting Party to the CBD, Viet Nam has to "...adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity" (art. 11, CBD). In this context, the Minister of MoSTE in his summary of the BAP indicates that in order to enforce environmental law and regulation in Viet Nam, "...the introduction of economic instruments based on the market mechanism as well as punitive actions need to be studied and implemented" (Sum. of the BAP, p. 6). "The Government of Viet Nam is therefore encouraged to develop incentives and positive discriminatory actions to promote biodiversity conservation" (BAP, p. 101).

Furthermore, direct and indirect economic incentives and disincentives addressing behaviors leading to overexploitation and unsustainable use of natural resources, trade in rare species, and air, water and soil pollution were recognised as necessary by national experts. The text of the BAP suggests that small adjustments in planning regulations, such as fees, taxes, penalties, subsidies and zonation could provide greater incentives for biodiversity conservation at no cost, or even benefiting financially to the national economy (BAP, p. 91). Successful Thai experiences with economic incentives and disincentives are given as examples, such as the removal of the taxation, which penalised small fishermen over

commercial enterprises and led to overfishing and the establishment of mangrove rentals, which reduced mangrove loss and conversion to shrimp farms.

Analysis of perverse disincentives included into sectoral policies, regulations and practices in Viet Nam and potential economic incentives to be used for biodiversity conservation were not systematically and extensively conducted during the preparation of the BAP. The recommendations proposed in the text focus rather on the forestry sector, since the priority of the BAP was to develop an effective system of forest protected areas. Nevertheless, the system of land use planning and land allocation in forest areas, for instance, which constituted a perverse incentive encouraging the unsustainable use of forest resources by giving an open access to natural resources, could have been further addressed. In general, a deeper analysis of the impacts of land tenure practice and property rights over biodiversity in the main economic sectors would have been useful to identify appropriate tools to readjust deviations.

Box 3: Economic and social incentives proposed in the context of replanting and protecting forests

Economic and social incentives proposed in Decision 327/CP of the Council of Minister (cf. Part. III) in order to enhance local people involvement in forest protection are presented into the BAP as appropriate measures and can be summarized as follow:

- Encourage the employment of local people in forest restoration works;
- Allocate long-term use of forest land to individuals, families and larger unit, especially to local people who are restoring it;
- Remunerate local people for the protection of existing forest;
- Allow local people to extract some products in compensation of their conservation services;
- Remunerate local people for fire fighting; and
- Provide assistance to local people to enable them to sedentarise on smaller, permanent areas of land.

Source: BAP, p. 104, 105

The BAP also recognises that "encouraging the participation of local people through the provision of incentives may be equally if not more effective that enforcing the law" (BAP, p. 101) and includes in its text some suggestions for economic measures aiming to influence local people's behaviour and induce their involvement in conservation, for instance:

- alternative source of income, such as productive employment should be provided to rural populations, to remove the pressure of hunting, clearing of new lands, and timber exploitation on biodiversity resources (BAP, p. 4, p. 141);
- regreening and restoration of bare hills will contribute to the economic welfare of local people and will alleviate the pressure on remaining natural forests (BAP, p. 5).
- benefit-sharing will constitute an important economic incentives for the protection of indigenous knowledge on native species and their use (BAP, p. 5);
- alternative energy technologies to wood, charcoal and fuel should be promoted, as well as more efficient ways to use them (BAP, p. 6);
- buffer zone to protected areas will be developed, where intensive farming on sloping land and practice of shifting cultivation will be discouraged (Sum. of the BAP, p. 7);
- encouragement and technical support should be given to local users so that they can protect low-yield traditional plants and animals and adopt gradually sustainable exploitation methods (Sum. of the BAP, p. 8);
- new economic developments close to protected areas or areas with sensitive eco-systems will be requested to pay a special environmental protection fee (Sum. of the BAP, p. 10); and
- payment of subsidies to minority and local farmers to continue growing and propagating traditional varieties of crops, fruits and livestock, even if they are less productive than high-yield varieties (BAP, p. 104).

Most of the proposals for action could have been further developed into concrete measures and tools. In the case of alternative livelihood, temporary economic incentives, such as tax redemption, could help people adopting new activities. The consumption of cleaner energy could be promoted with taxes on polluting energy and subsidies for environmental friendly energy.

In the five-year plan (1996 to 2000) included in the BAP, Project concept P6, on the study of traditional natural resource use, intends to gather information on practices of ethnic minority groups impacting on biodiversity and encourages positive ones. Economic factors that favor the survival of species will also be examined. Project concept P7, on the protection of traditional medicine resources, proposes to extend the knowledge on the traditional use of medicinal plants and their conservation through sustainable use. It suggests, among other activities, to determine the existing market forces that govern the harvest of wild plants, as well as the linkages between species richness and economic viability (cf. Appendix 1). These two projects were partially implemented over the past years, however, the analysis of economic factors and market forces impacting on NTFPs and medicine resources were not systematic and did not induce the adoption of economic incentives for sustainable harvest.

Economic policies

MoSTE is the main organisation implementing the BAP. An annual report on the progress of the BAP implementation is included into the state of the environment report and submitted to the Prime Minister. In addition, the Ministry of Planning and Investment (MPI) is responsible for preparing, in collaboration with MoSTE, the annual implementation plans for each of the BAP objectives. Availability of funds from domestic and foreign sources constitutes the baseline for planning, while a comprehensive financial policy or plan relying on diverse source of funding, such as revenues from economic tools, would have ensure a progressive and regular implementation of the BAP.

The MARD, MoFI and National Centre of Natural Science and Technology are major implementing organisations of the BAP and work closely with MoSTE and MPI to set up the annual implementation plans. The Ministry of Education and Training, the Ministry of Labour, War Invalids and Social Affairs, the Ministry of Health and the State Committee for Ethnic Affairs and Mountainous Regions should take the provisions of the BAP into account in their socio-economic programmes. At the local level, People's Committees of the provinces and cities, directly under the Central Government, are responsible for the implementation of the BAP within their area and have to prepare their own local action plan. Furthermore, line ministries or branches, such as the Ministry of Finance are also invited to follow the BAP recommendations, but the role of these potential partners is not specified. The recent boom of trade in biodiversity-based and biodiversity-impacting products justifies the involvement of the Ministry of Trade into the national conservation efforts. Similarly, the development of financial and economic incentives for biodiversity conservation necessitates a deeper commitment of the Ministry of Finance.

National experts, aware of the interactions between biodiversity and the socio-economic development of the country and the necessity to integrate both policies, decided to include in the BAP a description of its relationships with sectoral development plans, country master plans and national priority programmes. Special emphasis was given to cross-sectoral programmes such as hunger eradication, poverty alleviation, sedentarization, and reforestation. This description provides, however, general directions rather than detailed policies and guidelines for implementation. BAP objectives are already included into the forest sector planning, but could be further taken into account. In addition, agriculture, fisheries, industrial and other biodiversity-impacting economic policies are not integrated.

The BAP focus on the creation and management of protected area and zones adjacent to protected areas. Therefore, natural resources in these areas have to be exploited on a sustainable manner and their socio-economic programmes should be inter-sectoral and conform with the BAP itself (Sum. of the

BAP, p. 10). So far, no investment policy for buffer zone, addressing issues such as ecotourism organisation or agricultural valorization (BAP, p. 5) was clearly defined.

The BAP recommends pursuing further economic policy research and development in the following topics:

- property rights and ownership of biodiversity resources;
- redistribution of biodiversity conservation benefits giving access to rural households and communities implementing the BAP *per se*;
- economic values of biodiversity for local people;
- system of natural resource cost accounting;
- economic incentives for environmental stewardship; and
- EIA procedures and guidelines, as an important economic tool for biodiversity conservation (BAP, p. iv and 102).

A coherent national policy on property rights is necessary and should provide management guidelines on common property resources such as fisheries and forest products, which policy is currently incomplete. The BAP states that "It becomes the responsibility of government to tax those sectors of the economy that are flourishing under new development to pay for the costs of safeguarding environment quality and long-term national interests, however unpopular such taxes may be" (BAP, p. 141). Similarly, the BAP promotes the application of the Polluter Pays Principle (PPP) to biodiversity: "Those who use natural resources as components of production or who damage the environment must pay compensation and fees for restoration". Such economic measures and principles were not yet experimented in the field of biodiversity in Viet Nam and could prove to constitute encouraging incentives given their successful implementation. The need to regulate bioprospecting and establish economic mechanisms insuring a return of benefit to conservation and owners of traditional knowledge and genetic resources became evident after the adoption of the BAP. Viet Nam is currently investigating the opportunity to set up a *sui generis* system to protect its genetic resources and traditional knowledge.

Finally, more efforts should be undertaken to ensure the integrated management of important ecosystems. In the case of coastal areas, the exploitation of mangrove forests, the practice of aquaculture, the land reclamation for farming, human settlement and coastal industry development, the development of tourism zones, the management of protected forests, etc. need to be harmonized through the integration of cross-sectoral policies.

4. Economic Measures Implemented Following the Adoption of the BAP

The recommendations of the BAP and some of the projects contained in the five year plan (1996 to 2000) promote the use of economic measures to help achieving their conservation objectives. After several years of implementation of the BAP, it is possible to evaluate to which extend and success, such measures were implemented. However, assessing their concrete contribution to ecosystems, species and genes conservation could prove to be difficult and necessitate a longer period of application.
In addition to policies and projects designed specifically to implement the prescriptions of the BAP, environmental, economic and development activities might also comprise economic tools assisting the protection of natural resources. In order to gather related information, a questionnaire was prepared and distributed to national and international agencies active in these fields (cf. Appendix 2 and 3). Responses were compiled and also benefited to the recommendations and follow-up suggestions. Later on, a National Round Table was convened to discuss about challenges and opportunities (cf. Appendix 4).

4.1. Economic valuation

In Viet Nam, government officials and scholars broadly recognize the importance of economic valuation for biodiversity, as a tool that provides a basis upon which incentive measures, policies, planning and funding mechanisms can be developed. However, the BAP doesn't provide concrete steps for implementation. Thus, out of any national policy or guidelines, it was not systematically implemented before decision-making and planning occur. Some valuation studies conducted so far could serve as forerunners to draw preliminary lesson.

At the provincial level, several Departments of Science, Technology and Environment (DoSTE) attempted to value their natural endowment. For instance, DoSTE Hai Phong researched the value of rare fruit and vegetable varieties and endemic salinity tolerant rice varieties for an improvement of their protection. DoSTE Khanh Hoa studied the use and value of coral reefs for tourism to decide on a more protective management plan and the establishment of a coral utilization fee. DoSTE Thai Binh, with the Hanoi National University, compared the economic benefits gained from mangrove-covered areas and mangrove-cut areas. Results were used to recommend a ban on mangrove deforestation in the context of shrimp aquaculture activities. Similarly, a comparative study of the economic productivity of brackish water and freshwater ecosystems allowed to conclude that using brackish water areas for aquaculture provides more benefits than transforming them into cropping field.

Research institutes and universities also implemented various valuation methods. In the Northern Highland and mountainous areas, the Institute of Agricultural Economics (MARD), used a descriptive analysis to determine the value of hill and upland for agriculture cropping and assessed the WTP of visitors to value enhanced landscapes for recreation. Under the National Integrated Pest Management (IPM) programme, assisted by UN/FAO, CIDSE, the Danish International Development Agency (DANIDA), and the government of Norway, the Plant Protection Department (MARD), estimated - by using partial budget analysis - farmers' benefits of implementing IPM and decreasing their use of pesticides. Additional valuation of health and environmental improvement, such as soil tilth enrichment, is envisaged to better capture the full benefits of the National IPM programme. In Hoa Binh and Son La Provinces, the National Centre for Social and Humanity Study assessed the economic impacts for local communities - including the impacts on natural resources - of raising the water level for hydropower plants and drew guidelines on assessing and mitigating negative impacts of reservoirs for local people and the environment. The Hanoi National University attempted to standardize the economic valuation methods, calculating the use and non-use value of various ecosystems and species. In Cat Ba and Tam Dao National Parks, for instance, the study estimates the monetary benefits provided by forest biodiversity, mainly wood, medicinal plants and tourism. But the estimation of the total components of these ecosystems, including gene value, etc., revealed to be inappropriate for policy

making. In Nam Dinh Province, a cost-benefit analysis of the mangrove ecosystem rehabilitation was realized in three coastal districts. The calculation of the Net Present Value (NPV), by adding the direct use benefits of local communities and the indirect benefits resulting from the avoided sea dyke system maintenance cost, demonstrated that such rehabilitation will not only improve the livelihood of local resource users, but also enhance coastal protection against storms. Within the framework of the Netherlands funded project 'Toward a National Wetland Programme', the Management Department of Can Gio Natural Reserve, together with IUCN – The World Conservation Union, carried out an evaluation of the economic value of the park. Its purpose was to provide data for developing a management plan for the conservation and development of Can Gio and the surrounding areas. The study applied the Total Economic Value (TEV) approach, that includes estimating use and non-use values through the Travel Cost Method (TCM) and the Contingent Value Method (CVM). Before this study, a cost-benefit analysis of Can Gio mangrove innovative management scheme, involving communities and providing financial incentives for conservation, was realized in the frame of the training courses offered by the International Development Research Centre (IDRC) 'Economy and Environment Programme for Southeast Asia' (EEPSEA). It demonstrated the success of the innovative management scheme in enhancing livelihood and conservation.

Box 4: Economic valuation of the Cuc Phuong National Park

In response to the need for a comprehensive analysis of the economic value of the Cuc Phuong National Park (Ninh Binh Province), a study was carried out by a group of experts from October 1996 to January 1997 in order to:

1. Identify the tourism benefits of the park;
2. Estimate the consumer surplus; and
3. Derive the Willingness To Pay (WTP) value for improved facilities in the park.

The study used the Travel Cost Method (TCM) to derive a demand curve for recreation in the park and the Contingent Valuation Method (CVM) to assess visitor's WTP for improved facilities in the park.

253 questionnaires were used for TCM and CVM analyses. Results showed that the total benefit arising from domestic visitors to the park is VND1,502 million (USD101,487) per annum with a consumer surplus of VND 105 million (USD7,095) per year. Visitors are willing to pay a surplus of VND288.47 million (US$19,491 for domestic visitors) and VND215.57 million (US$14,566 for foreign visitors) for the improvements in the road network in the area and in the establishment of a confinement space for wildlife. However, some difficulties appeared during the realization of the study, as follow:

The difficulty to divide the area into representative zones to estimate visitation rates. Since the park is located in a mountainous rural area, most visitors are urban residents. Local people are not interested in the park as a recreation area;
The difficulty to calculate the transport cost as it varies greatly depending on the type and class of car hired and the number of persons/group travelling. An adjusted cost of transport was used to estimate the average travel cost for the area;
The difficulty to calculate the time factor. In comparison with transport and other direct expenses, time cost can be insignificant as wage rate is low. In this analysis the value of travel time used both full wage rate and 1/3 wage rate;
The reliability of reported salaries declared by visitor-respondents; and
Foreign visitors were not directly questioned because of language constraint.

Note: USD1 = VND14,800

Source: HAI, N. T. and THANH, T. D., *Using the travel cost to evaluate the tourism benefits of Cuc Phuong National Park*, in GLOVER D. and FRANCISCO H. Eds. *Economic and Environment. Case Studies in Vietnam*, Singapore, 1999

The Centre for Researches and Environmental Studies (CRES) valued the bamboo species in Thanh Hoa Province and found out that it represents 30% of the income of the local users, i.e. their second source of income after rice. Descriptive valuation of various NTFPs, such as medicinal plants, were conducted at the local level by the Centre for Research and Development of Ethnomedicinal Plants (CREDEP), to prioritize plants to be protected and protection measures. The 'Sustainable Utilization of NTFPs' project of the Non-Timber Forest Products Research Centre (MARD) and IUCN supervised a marketing analysis in Ba Be National Park and Ke Go Nature Reserve. This analysis intends to provide

solutions for the improvement of the NTFPs-based livelihood of households, without exhausting these natural resources.

On few occasions, the results of the economic valuation were not conclusive, but nevertheless constituted useful experiences. The cost-benefit analysis of the Cuc Phuong National Park (WWF, The World Bank), for instance, demonstrated that annual investments on infrastructure and maintenance of the park are higher than the annual benefits drawn from the park itself, eliminating the economic justification of maintaining the park versus using the area to support local livelihood. In this case, the valuation was exclusively based on the use value of the natural resources, and did not incorporate the non-use value offered by the site.

New researches are already in the pipeline, such as the National Institute for Science and Technology Policy and Strategy Studies (NISTPASS) project Vietpro – 2020, funded by the Canadian International Development Agency (CIDA), which is planning to conduct a valuation of wood resources in Quang Ninh Province, as well as a valuation of non-wood products in Hao Binh Province. Replacement freedom assessment, labour cost-opportunity, cost-benefits analysis, WTP and Willingness to Accept (WTA) methods will be used. The Forest Inventory and Planning Institute (FIPI) and BirdLife International implemented and European Union funded, 'Expanding the Protected Areas Network in Viet Nam for the 21st Century' project prepared, among others, some 'Guidelines for Feasibility Studies and Investments Plans for the Designation of Special Use Forests'. These guidelines include recommendations on the methodology to be used for economic valuation, such as cost-benefit analysis and opportunity costs analysis. The Ministry of Finance (MoF), based on its own valuation experience, is currently developing a method to assess and evaluate the economic benefits of environmental policies for the period 2001 to 2010.

These examples of achievements in the field of valuation are remarkable for the diversity of methodologies used and questions addressed. Nowadays, valuation methods are numerous and should be carefully selected to adequately correspond to the local situation and the objective targeted.

One of the main constrain in Viet Nam is the lack of knowledge regarding the availability and appropriateness of valuation methodologies, since they have not been introduced or largely adapted to the context of the country. Too often, conservationists are not sufficiently aware about the role economic tools can play for improving the management of natural resources. Biodiversity users are in the same situation. Furthermore, Viet Nam does not have enough trained environment economists and/or conservationists to undertake the task. Human resources, capacity and funds are also missing at all levels. Finally, results of valuations conducted are not widely distributed, while they could be beneficial for similar situations or ecosystems.

4.2. Economic incentives and disincentives

Economic incentive measures for biodiversity conservation have not been systematically used nation-wide. Although the BAP and national experts encourage their implementation, few examples of achievements – taken from successful experiences of other countries for instance – and no guidelines on how to apply them are provided. Since the first priorities of the BAP were to establish protected areas and develop economic activities in buffer zones, the incentives suggested target mainly local people living in such areas and address forest land use.

Concretely, most of the economic incentives implemented in Viet Nam so far are incorporated into land allocation, poverty alleviation, and forestry development programmes/projects. They are usually generating income, investing in health and social protection while simultaneously protecting natural resources and reversing environmental degradation, such as the Finish development agency FINNIDA's revolving funds for sanitation, the World Bank's *phuong* level environmental pilots project in urban Hai Phong, the German development organisation GTZ's Social Forestry Development

Project in Song Da or the Viet Nam-Sweden Mountain Rural Development Project. Numerous poverty alleviation projects incorporating natural resources conservation measures are promoted by the United Nations Development Programme, the Asian Development Bank, DANIDA, etc.

Since 1994, under Government Decree 02/CP, forestlands, which belong to the government, are allocated to households and other entities for management purposes under long term lease agreements (50 years renewable). This encourages local people to become actively involved in forest protection, restoration and rehabilitation, since their long-term benefits are secured and they can establish their own investment pattern. Even in the frame of Special Use Forest, administrated exclusively by the governmental Management Board, local people can be approached to undertake various activities, such as reforestation. In the case of watershed forests, Special Use Forests and natural or planted forest covered lands, a fee for management and protection is paid to the contractor for a period not exceeding 5 years. The concrete application of this property rights incentives are slowed down by the lack of land use planning at the local and provincial level. The severe restrictions regulating practices on lands constitute another disincentives.

Two major forestry development programmes, the 327 Programme for re-greening of bare lands and its successor, the 5 Million Hectares Programme are providing supports for and encouraging local people, especially those living in highland and mountainous areas, in re-greening bare land, better protecting forest, while concurrently improving their livelihood. The 327 Programme was established under Decision 327/CP of the Council of Ministers issued in 1992 and focuses on replanting of forests, enhancement of land utilization, sedentarisation and improvement of living standards. To help reduce poverty and promote local people involvement in the protection and restoration of forest, the programme initially provided households living in the projects areas with land plots and funds to implement productive activities. This financial assistance had to be repaid, without interest, when the project activities started yielding revenues.

The successor of the 327 Programme, the 5 Million Hectares Reforestation Programme, was born in 1998 with the Prime Minister Decision No 661/QD-TTg. It is a major management initiative to meet forest product needs in a sustainable manner, protect the environment and increase social and economic benefits. The long-term objective of this programme is to establish 5 million ha of forest between 1998 and 2010. This programme also recognized the vital role of local people and will involve them at the implementation stage. Arrangements for funding are similar to those applied in the 327 Programme, plus norms have been set to compensate protection and reforestation activities.

In buffer zone, great amount of investments is spent for the development of infrastructures (roads, schools, clinics, well, etc.) and alternatives for income generation to alleviate pressures on natural resources of protected areas. Within related projects, emphasis is given to the development and dissemination of new techniques and modification of local people cultivation and resource utilization practices so that their dependency on forest could be lighten. Various models for slope cultivation and agro-forestry have been applied in the buffer zones socio-economic programmes, with financial supports from preferential credit schemes. These programmes, which benefited from the experience of various international organisations, are very dissimilar, depending on the specific requirements of each zone and lack a thorough assessment for developing a comprehensive national policy on buffer zones economic development.

Favorable property rights and livelihood support are not the only economic incentives/disincentives to be addressed in Viet Nam. At the national level, the MARD, with UN/FAO assistance, is progressively eliminating governmental subsidies having perverse impacts on the competitiveness of Viet Namese agricultural products and biodiversity. In the fishery sector, preferential taxation was offered by MoFI for offshore exploitation of marine products in order to reduce pressure on marine resources in near-shore areas. The impact of such incentives should be regularly assessed to monitor unsustainable

pressure on offshore marine resources. The MoFI is currently developing a national Fisheries Law with the assistance of the Danish and Norwegian government. Draft IV (23 October 2000) of this law stipulates that the State will allocated and lease land, land with water surface and marine areas to local households on a long-term basis (art. 6 § 1). In the case of aquaculture activities, long term use will be 20 years (art. 26 § 2). A rehabilitation fund for aquatic living resources is planned, to ensure the sustainable development of aquatic living resources by investing on aquatic living resources development, fish fry production, fisheries rehabilitation and establishment of fisheries protected areas. Sources of the fund will be investment capital of the State, taxes on fisheries resources, fines and penalties and others (art. 22). The State might also provides subsidies to encourage the domestication of native-introduced species which benefit to the development of aquaculture and fish fry to aquaculturists located in remote and isolated areas to meet the demand for food security (art.38).

A the provincial level, DoSTE Hai Phong, together with the Viet Namese Gardening Association (VACVINA), launched a project on conserving rare genetic resources of Hai Phong, which provides subsidies to households owning rare animals or plants. Similarly, DoSTE Thai Binh and the Institute of Agriculture Economics are giving financial incentives to farm households aiming at improving their income and encouraging them to diversify their crops production and husbandry. The European Union, in the context of its 'Social Forestry and Nature Conservation in Nghe An Province' project, provides direct financial payments to farmers managing watershed protection forests. The European Union is also promoting the production of agarwood as an income generation measure and to release pressure of unsustainable harvesting of *Aquilaria crassna* trees. DoSTE Thai Binh allocated its land and forest to farmer households, but authorizes only 25% of this land to be switched to aquaculture. Furthermore, the DoSTE is studying possibilities of tax exemptions for the owners of eco-shrimp pounds. But the main obstacle remains the stable - but still low - productivity of the eco-shrimp-pound, which doesn't convince local communities. The DoSTE Khanh Hoa, in addition to financially support, with the assistance of the Department of Fisheries and the Oceanographic Institute of Nha Trang, the switch of fishermen from the use of destructive fishing methods, such as explosive, to aquaculture, is studying the creation of an environmental fund and the establishment of a fee for coral reef use. DoSTE Hue, Quang Binh and Quang Chi are working with the Netherlands development organisation SNV to promote - through financial incentives - the use by households of the environmental friendly biogas.

BOX 5: The ecological village of Hai Thuy

Located in Central Vietnam, in a vast area of white sandy land along the seacoast seasonally arid or waterlogged, Hai Thuy is the poorest among the three communes of Le Thuy District (Quang Binh Province). Due to its location, arid natural condition, fragile ecology and the aftermath of the war, the life and work of local people was adversely impacted. For these reasons, the Institute for Ecological Economy (Eco-Eco), the governmental Committee on Frontier Issues (CFI), IUCN and the Swedish International Development Agency (Sida) selected Hai Thuy for the development of an eco-landscape commune. Its was hoped that this arid and sandy area could be transformed into a productive and healthy ecosystem in which agriculture, forestry, fisheries, and aquaculture could occur.

From 1997 to 2000, the project provided local communities with financial and technical supports as incentives to the development of a sustain ecosystem on this fragile area. Activities included training courses and technical support for the establishment of shelterbelts, farm pond system, home 'eco-garden', communal 'eco-garden', tree farms, renewable energy, and household husbandry. A participative approach, making farmers responsible for expenditures and investment was established.

After several years of implementation, the local environment has changed dramatically. Tree planting has played a positive role in moderating air and soil temperature, limiting the process of sand erosion and simultaneously enhancing moisture and nutrient retention in the sandy soils. New species of fauna and flora have appeared, such as storks, cranes and warblers. Economic, cultural and social conditions also improved. Maize yield increased from 1.5 tonnes/ha to 3 tonnes/ha, and cassava yield from 4.5 tonnes/ha to 10 tonnes/ha. Livestock husbandry has performed well with stocks doubling in size.

Source: TRUONG, N.V. and KHA, P.T., Hai Thuy, a model eco-village in the sandy land, IUCN Viet Nam, 2000

These positive experiences encouraged additional experimentation. The Agro-forestry University of HCMC, for instance, is studying the best ways to provide financial encouragement for farmers to adopt organic agriculture methods, and levy a tax on companies exploiting genetic resources. The National Institute for Science and Technology Policy and Strategy Studies (NISTPASS) is currently studying recommendations for the development of resource taxes aiming at protecting and developing mountainous resources, including biological resources. It is also assessing the possibility to create environmental fund and security deposit for biodiversity. The National IPM programme is planning to participate in the creation of a certification and ecolabelling scheme in order to improve the marketing of IPM and organic agriculture products. It also recommends the future implementation of a tax on chemical pesticides to act as a disincentive to over-use. Income from this tax would support IPM training for farmers. The Forest Protection Department (MARD) and UNOPS 'Creating Protected Areas for Resource Conservation' (PARC) project, funded under the UNEP Global Environmental Fund constitutes an important contribution to *in situ* conservation in Viet Nam, since it aims at assisting MARD in his decision to increase the area under Special Use Forest from the current 1.3 million to 2 million hectares. This project will identify suitable financial mechanisms to increase the return of benefits from the protected areas to communities and conservation.

In the field of industrial pollution, the Law and the Decree 175/CP on Environmental Protection allow the use of economic instruments. Given the shift of Viet Nam's production from agriculture to industry, an effective framework and enforcement of pollution control regulation and economic instruments, such as pollution charges, is becoming urgent. The conversion to cleaner production will also constitute a cost-effective way to improve the competitiveness and compliance of enterprises to environmental standards. Several pilot related-projects were launched in various part of the country, such as the surcharge on water supply to cover costs of operation and maintenance in Da Nang, Hai Phong, and soon Ho Chi Minh City. The MoF is carefully watching these experiences to set up a national environment fund. Lesson learned from these initiatives on "brown issues" could be very beneficial for the implementation of similar economic tools to "green and blue issues".

The experience of Viet Nam, in terms of economic incentives, is not extended but quite diversified, proving that these tools can be adapted to any types of ecosystems, levels of management and conservation issues. Economic disincentives to biodiversity conservation, contained in national and sectoral policy, strategy and planning have to be further studied and removed, particularly in the agriculture sector. More economic incentives are needed, such as natural resources use taxes and charges, environmental funds, subsidies on good practices, etc. Socio-economic projects promoting rationalization of land use, sustainable management natural resources, and diversification of livelihood are essential, but not sufficient. Biodiversity is offering services that could be reward through fees based on prior local site valuation. The government supported ecotourism activities could constitute a good field of study at this regard. Mechanisms for sharing benefits from genetic resources and traditional knowledge will constitute good incentives to boost conservation at the micro-level. Most of the incentives experienced so far focused on forestland and protected areas; therefore, economic tools should be further used in the context of other ecosystems, such as wetlands. Effective implementation of such instruments would necessitate more awareness from the authorities and local communities and information about the adequate methodology. Exchange of information and experience at the regional level would be extremely relevant. Capacity building for the establishment and management of these tools is also needed, as well as fund for initial investment. Relevant pilot projects appear to be difficult to extend in time and geographical area and whenever possible, those obstacles should be assessed and removed. Finally, instructions for thorough monitoring and evaluation of pilot projects and other experimentation will have to be formulated.

4.3. Economic policies

The 1998 three years of BAP implementation review workshop estimated that the BAP doesn't address sufficiently economic-related issues such as identification of alternative sources of investment for

biodiversity conservation, biodiversity prospecting and the issues related to property rights on genetic resources and traditional knowledge, sustainable tourism, and the necessity to link biodiversity conservation with economic development models.

The BAP contributed greatly to biodiversity conservation being closely integrated into environmental protection by sectors and localities. However, for long, biodiversity conservation has not been given due consideration into socio-economic development programmes, such as poverty elimination and alleviation, fixed cultivation and sedentarization, migration, upland socio-economic development, regional development planning and economic sectors development. Nowadays, government and donor agencies are working hand-in-hand to promote the sustainable development of local communities and the conservation of biodiversity. Nevertheless, in some cases, achievements were limited due to the diversity in natural resources involved, differences in habits of various ethnic minorities in using components of biodiversity, limited access to advanced technologies and population pressure.

Since several years, various ministries made efforts to integrate economic and environment policies. The Ministry of Planning and Investment is integrating environmental concerns at the earlier stage of decision-making and planning.

Box 6: The 'Capacity 21' project or how to integrate environmental protection into planning and investment

The Ministry of Planning and Investment (MPI), with financial support provided by UNDP and the Swiss Agency for Development and Cooperation (SDC), is implementing since 1997 a project entitled: 'Environment Issues in Investment Planning'. This project aims at assisting the government in adequately integrating the recent economic and development planning reforms, and ensuring that the nature of the reforms and this transition will lead to environmentally-sustainable national economic and development planning in Viet Nam. By working with authorities in three localities on real problems, this project developed environmentally-sound economic and development capacities and processes which are appropriate to the situation and can be pragmatically implemented.

The three objectives of the project are as follow:

1. The bases for information exchange and collaboration between key actors in achieving environmental sustainability of investments have been consolidated;
2. Professional capacity in Vietnam to facilitate the incorporation of environment protection in investment decisions has developed; and
3. Consensus and concrete proposals have been developed on the problems and opportunities of adjusting policies and institutional frameworks to encourage environmentally-sound investment decision making.

One of the numerous output of this project is the publication of handbooks providing guidelines for improving the integration of environmental and biodiversity concerns into policies and plans. Two handbooks on environmental valuation and economic instruments will be published soon.

Source: UNDP Website

By selecting and prioritizing investment on projects with a positive impact on biodiversity - in response to its strategy - the Department of Planning of the MARD, which is in charge of the preparation of the agriculture and forestry projects, can advance concretely conservation in Viet Nam. Nevertheless, this agency estimates that a systematic incorporation of biodiversity conservation goals into each development projects is necessary. Following this step, the Institute of Agricultural Economics (MARD) calculates the socio-economic effectiveness of agricultural development projects at the provincial and commune levels.

After the decrease of the fisheries productivity, the MoFI realized the necessity to integrate conservation issues into its strategy and planning. It has conducted an environmental and socio-economic assessment of the Mekong delta coastal and inland waters and is working on the establishment of a system of marine protected areas, which will implement a community-based resources management. The Danish and Norwegian development agencies are currently working with

the MoFI to develop a national Fisheries Law. Within Draft IV (23 October 2000), article 16 §2 introduce the fisheries environmental impact assessment, which examines the potential impacts of fisheries and aquaculture activities on ecosystem and habitat of aquatic living resources, particularly on fishing ground, free movement of species, mangroves, coral reefs, submarine flora systems, marine parks and protected inland areas.

The integration of biodiversity conservation into macroeconomic policies, strategies and action plans within the context of multilateral trade policy development is being studied by MoT. The MoF is starting to analyze and assess the environmental impacts of financial decision and policies, taxation policies and funds for biodiversity conservation.

A better understanding of the impacts of economic policies, such as import/export activities, on biodiversity is necessary, as well as a clear and coherent policy on new issues such as intellectual property rights for traditional knowledge and folklore, ecotourism, etc. Development projects need to focus more on supporting local people in ecosystems that did not attract attention so far, such as in tidal and mangrove zones. Integrated ecosystem management, i.e. the integration of the management plans of various economic activities depending on the same ecosystem, should be promoted, based on the primary experience of the recently launched 'Integrated Coastal Zone Management' project of the National Environment Agency (MoSTE) with Dutch government support.

Officials from ministries, especially decision-makers and planners need to be trained on environmental issues and methodologies for integrating biodiversity conservation into strategies, planning and projects. Local communities should also be aware of the impacts governmental measures will have on environment and their own situation, in order to participate optimally in the management of the natural resource they are relying on. In some cases, training on advanced technologies might be necessary.

EIA is a tool that should be conducted on each development projects before approval. Biodiversity conservation criteria could be introduce in the EIA procedure. Combination of economic and legal measures is optimal for achieving conservation goals. Therefore, it might be useful to back up economic measures with an adequate and sufficiently flexible legal binding document.

The National Environmental Protection Strategy for 2001-2010 (NSEP) and National Environmental Action Plan 2001-2005 (NEAP) of Viet Nam, under finalization, will soon be the foundation for developing environment protection strategies in each sector, region and locality. The goals of the NSEP should be integrated into economic sectoral strategies and plans. Regional NEAPs will be developed and coordinated with regional BAPs for each Viet Namese biodiversity region. This process has been already initiated in the Central Highlands, region of high biodiversity priority.

The NEAP has recommended that each Ministry should establish/strengthen ministry-level environment management units responsible for ensuring that the priorities of the strategy are incorporated in sector-specific plans, work programs and budgets. Industrial development, transport, mining, hydropower and agricultural production have emerged as priority sectors. Provincial sector development plans should also integrate the main environmental concerns of the strategy. These new strategy and plan are very ambitious and promising, given appropriate funding, capacity and coordination are allocated to their implement, and might constitute the adequate channel to boost biodiversity conservation in Viet Nam.

5. Recommendations and follow-up suggestions

Through the distribution of the questionnaire and the organisation of the National Round Table (cf. Appendices 2 – 4), a wide range of biodiversity planners, decision-makers, researchers and international organisations had the opportunities to expressed their needs and recommendations regarding the use of economic measures for biodiversity conservation in Viet Nam in general and the implementation of the instructions contained in the BAP in particular. In addition, the revision of the main projects and policies implementing and/or promoting the use of economic instruments in Viet Nam led to identify successful achievements, needs and bottlenecks, which contribute to the recommendations and suggestions for follow-up.

The contribution of environmental economic measures to biodiversity conservation is widely acknowledged in Viet Nam and was demonstrated through some pilot activities at the national and local level. The economic tools available are numerous and request a good understanding of their methodologies, functioning and final outputs, in order to be able to choose the most appropriate and feasible one and adapt it to the particular situation and biodiversity issue to be addressed.

The absence of guidelines for selection and implementation in the BAP and the lack of awareness of biodiversity stakeholders prevented a larger diffusion of these instruments. Therefore, it was suggested that a comprehensive adaptive nation-wide policy on socio-economic measures for biodiversity conservation could replace the missing directions. Another alternative would be to revise existing legal documents of key sectors, including the BAP itself, or introduce new Decrees to ensure the integration of economic tools into main decision making and management process. In any case, the combination of economic and legal measures is optimal for achieving conservation goals. Therefore, it might be useful to back up economic measures with an adequate and sufficiently flexible legal binding document.

Beforehand, a comprehensive policy study assessing the economic and environmental impacts of the use of economic measures would be beneficial. A non-exclusive selection of the most appropriate and feasible tools for Viet Nam, including indications about proper methodologies and procedures to follow might lead to a more consensual acceptation of the implementation results.

Another preliminary step toward a strengthened utilization of these instruments at all levels would be to set up a national inter-agency expert team including economists, conservationists, financial and legal experts They could collaborate on the identification and promotion of the best-available economic tools and methods.

This working group could be established under the banner of NEA and NCD. However, these two agencies are facing budget allocation shortage and would need adequate economic training. Capacity will also need to be strengthened at local levels to support more decentralized and local efforts at improving the environment. Also the implementation of economic tools for biodiversity conservation needs to be based on strong public structure and relevant Ministries should improve their communications line.

The interdependence of the three economic measures covered by this study, i.e. valuation, incentive and policy, has to be emphasized, as well as the necessity to advance them simultaneously. This approach can be illustrated by the formulation of a national *sui generis* policy on benefit sharing, that will request information regarding the value of genetic resources, traditional knowledge and folklore, to constitute the base of the benefit calculation and a redistribution mechanism acting as an incentive for genetic and knowledge conservation.

So far, tested valuation methodologies and their use are not widely known in Viet Nam and therefore, the sharing of experiences and lesson learnt with other countries in the region and in the South would be informative.

A series of pilot case studies, preferably simple so that biodiversity users also benefit from their results, could be conducted at the local level, starting with a listing of all the contributions of biodiversity. It was also suggested that systematic valuation of biodiversity resources, based on natural resource distribution map, in each of the biodiversity-rich regions would be necessary. The large distribution of the results of valuation conducted in Viet Nam would boost the awareness of authorities and biodiversity users. It would also increase the understanding of the general public regarding the necessity to protect biodiversity.

Further training of conservationists and economists on methodologies of environmental economic valuation and interview techniques are essential. The national curriculum has also to be further developed, so that national economists could undertake this technical task. Universities could also conduct research on valuation to adapt the methodologies to the special case of Viet Nam. Valuation is a useful preliminary exercise to decision-making when biodiversity and economic interests are in balance and a necessary step before the establishment of economic incentive schemes. The economic benefits/costs of degradation of each component of the ecosystems, species and genes have not been calculated yet in Viet Nam. The direct values of some ecosystems were estimated, but their indirect values were neglected. More comprehensive valuation analysis are needed.

Ecosystem valuation should be incorporated into sectoral estimation, to complete national statistics, such as the contribution of forest to the GDP. The valuation of species identified as endangered should be a priority, this include the assessment of their use and trade. Valuation of genes, comprising an evaluation of the traditional knowledge related to them, will constitute the main base for benefit sharing calculation. The valuation of services presents some difficulties, but is necessary if the benefits of the establishment of protected areas have to be compared to the investment of the government, among others.

A broader range of economic incentives could be implemented in Viet Nam to address a wider set of issues. For instance, few market-based mechanisms intending to influence consumption pattern were experimented, such as certification, ecolabels and charges, although they proved to be very effective. Few services offered by biodiversity are rewarded so far and not all the ecosystems are applying incentives. The priority is still given to protected areas and buffer zones, however, a diversification of ecosystem targeted would be positive. The need for fund allocated to biodiversity conservation and the implementation of the BAP is growing, while competition for State budget is fierce. Therefore, alternative sources of financial resources are essential and some economic incentives, such as user fees, are generating funding that could be reinvested into biodiversity conservation.

Successfully implemented and effective incentives should be communicated to other areas facing the same conservation issues and could be replicated after adjustment. In addition to experiences conducted in Viet Nam and the region – on innovative incentives, among others - useful lesson could be learnt from the application of economic instruments in the field of industrial pollution. However, this is also a new topic for Viet Nam.

Such sharing of information will increase the awareness of the authorities and local communities and encourage them to adopt their own measures. Again, capacity building for the establishment and adequate management of these tools is needed, as well as fund for initial investment. Training course and curriculum on the three economic instruments are therefore necessary. The government is currently encouraging public participation, in this context, more attention should be paid to local incentives and capacity building for environmental management, in order to ensure greater public

participation and involvement. The government could establish an objective procedure for monitoring and evaluating economic incentive projects.

Environmental funds can finance economically viable biodiversity activities. Eligibility criteria should be clearly established as well as management procedure and lending conditions. The Ministry of Finance should collaborate in order to avoid policy distortion. Management plan of nature reserves should include a financial plan, either through the contribution of foreign donors or through financial mechanism such as entrance fees, etc.

Economic disincentives contributing to biodiversity degradation and disappearance should be systematically identify, analyzed and removed from national and sectoral policy, strategy and planning, perverse subsidies in particular. In Viet Nam, more efforts are needed from the government in this matter.

It was recall that a systematic incorporation of biodiversity conservation goals into each development projects and sectoral strategy and planning is necessary. The same is certainly true for environmental economic measures. EIA is a tool that should be conducted on each development projects before approval. Biodiversity conservation criteria could be introduce in the EIA procedure. The integration of management plans of various economic activities depending on the same ecosystem should also be promoted.

Furthermore, a better understanding of the impacts of economic policies, such as import/export activities, on biodiversity is necessary, as well as a clear and coherent policy on new issues such as intellectual property rights for traditional knowledge and folklore, ecotourism, etc. Decision-makers and planners need therefore to be trained on environmental issue analysis and methodologies for integrating biodiversity conservation into strategies, planning and projects.

6. Conclusions

One of the objective of the national case study on the integration of environmental economics into the BAP for Viet Nam, i.e. to raise awareness of biodiversity planners, and authorities from relevant ministries about this topic, is already achieved. The wide distribution of a questionnaire and the organisation of a round table at the national level, gave a good opportunity for policy makers and stakeholders to recognize the potential use of economic measures to provide incentives and financing for biodiversity conservation, and discuss the way forward in promoting such tools.

The review of the economic situation of Viet Nam showed that the national production is still mainly based on natural resources, such as agricultural, forestry and fisheries production. The government is strongly tackling the past and current problems of over-exploitation. The importance of the industrial sector is rapidly growing, and new economic activities are emerging, such as tourism.

The analysis of this situation in the BAP is extensive. However, the BAP focus its objectives on the establishment of a network of protected areas and the development of their buffer zones, neglecting emerging issues like the biodiversity impacts of air, water and soil pollution.

Without further knowledge on methodologies available and advice from economists, it has been difficult for biodiversity experts to incorporate concrete proposals on the most effective way to implement environmental economic measures into the BAP. Nevertheless, the BAP is promoting the valuation of elements of biodiversity, the use of economic incentives and the integration of biodiversity concerns into the economic sectoral policy and planning.

The economic valuation tools has been applied to various ecosystems and conservation issues in Viet Nam and is considered as a priority. However, the contribution of valuation to decision-making was jeopardized by the lack of consensus on its result. Few economic incentives were implemented, mainly improving the land allocation and tenure system on the main economic sectors and providing alternative sources of income to alleviate pressure on scarce natural resources. Many other classical or innovative incentives would deserve to be implemented as tools to change behaviors and generate financial resource for conservation. The integration of biodiversity conservation goals into sectoral economic policies and planning is a slow and difficult process. Major progresses have been made to cut the pace of natural resources over-exploitation. Economic policies for biodiversity conservation are still needed, but due to their complicated nature and implementation, haven't granted a high priority in the way forward.

Awareness raising, training, capacity, funding, collaboration on pilot implementation projects, exchange of information and results, agreement on methodologies, procedures, evaluation and monitoring tools are among the needs expressed to further promote the use of environmental economics for biodiversity conservation in Viet Nam. It is hoped that these national case studies assisted the government of Viet Nam to identify concrete steps of action for an extended implementation of economic tools for biodiversity conservation.

7. References

ADB, Study on the Policy and Institutional Framework for Forest Resources Management,

CHUNG, D. K. and DUNG, K.T., Pest Management in Rice Production in Vietnam: A Socioeconomic Assessment, Hanoi Agricultural University, Hanoi, September 1996

Communist Party of Viet Nam, Central Committee (2000), Socio-Economic Development Strategy 2001-2010 (draft)

GSO (General Statistic Office), Statistical Yearbook 1999, Statistical Publishing House, Hanoi, 2000

GILMOUR, D. A. and SAN, Nguyen Van, Buffer Zone Management in Viet Nam, IUCN-FPD, Hanoi, March 1999

Goodnight, Viet Nam, The Economist, January 8th 2000, pp. 62-64

IUCN Viet Nam, A summary report. The Viet Namese Biodiversity Action Plan. Three Year Review Workshop (1996-1998), Hanoi, October 22-23, 1998

IUCN Viet Nam, Forest Rehabilitation Policy and Practice in Viet Nam. Proceedings of a National Workshop. Hoa Binh – Viet Nam, 4-5 November 1999, Hanoi, June 2000

Ministry of Planning and Investment and UNDP, A Study on aid to the environment sector in Viet Nam, Hanoi, November 1999

Ministry of Science, Technology and Environment, The Viet Nam BAP Three-Year Review (1996-1998), Workshop proceedings, Hanoi, October 1998

Ministry of Science, Technology and Environment, The National Conservation Strategy, 1985

Natural Reserve Management Department of Can Gio Mangrove Forest, Economic Valuation for Can Gio Mangrove Forest, Ho Chi Minh City, 2000

Bo Thuy san. Nguon loi Thuy san Viet Nam, 1996

Government of the Socialist Republic of Viet Nam. Biodiversity Action Plan for Viet Nam. 1994.

Bo Khoa hoc Cong nghe va Moi truong. Bao cao tom tat hien trang moi truong Viet Nam 1999. 1999

PINCUS, Jonathan, The Impact of Farmer Field Schools on Farmer's Cultivation Practices in Their Own Fields, Hanoi, August 2000

Richard B. Primack. Co so Sinh hoc Bao ton, 1999.

The World Bank, Asian Developmetn Bank and UNDP, Viet Nam 2010 Entering the 21st Century. Viet Nam Development Report, Consultative Group Meeting for Viet Nam, December 14-15, 2000

TRI, N.H.; ADGER, W.N.; KELLY P. M., Natural Resource Management in Mitigating Climate Impacts: the Example of Mangrove Restoration in Vietnam, Global Environmental Change, Vol. 8, No. 1, pp. 49 – 61, 1998

TRUONG, N.V. and KHA, P.T., Hai Thuy, a model eco-village in the sandy land, IUCN Viet Nam, 2000

TU, Nguyen Minh and Hong, Vu Xuan Nguyet, Environmental Impacts of the WTO's Agreements on Viet Nam's Selected Export Products, in Greening Trade in Vietnam, UNCTAD (draft)

WARNE, Sulma and PHONG, Tran Lien, Developing and Implementing National Biodiversity Strategies and Action Plans - Lessons from Viet Nam in Report of the South the Southeast Asian Regional Session of the Global Biodiversity Forum, 2000, Colombo: IUCN – Asia Regional Biodiversity Programme, Colombo, Sri Lanka