

Biodiversity Conservation Corridors Initiative

Pilot Site Implementation
Status Report 2007



Greater Mekong Subregion
Core Environment Program



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BCI Pilot Site Implementation Status Report 2007

**Greater Mekong Subregion
Core Environment Program**



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ABBREVIATIONS

ADB	-	Asian Development Bank
ADMCF	-	Asia Debt Capital Management Foundation
AFD	-	Agence Française de Développement
AIT	-	Asian Institute of Technology
ANR	-	agriculture and natural resource sector (ADB)
BCI	-	Biodiversity Conservation Corridors Initiative
BCL	-	biodiversity conservation landscape
BI	-	Birdlife International
CBNRM	-	community-based natural resource management
CBET	-	community-based ecotourism
CCPF	-	Central Cardamoms Protected Forest
CDP	-	commune development plan
CDF	-	commune development fund
CDM	-	clean development mechanism
CDRI	-	Cambodia Development Research Institute
CEDAC	-	Centre Development Agricole Cambodge
CEP	-	Core Environment Program
CER	-	certified emission reductions
CFM	-	community forest management
CI	-	Conservation International
CIP	-	commune investment plan
CITES	-	Convention on International Trade in Endangered Species
CNTC	-	carbon neutral transport corridors
CPA	-	community protected areas
DNP	-	National Parks, Wildlife and Plant Conservation Department
EAP	-	East Asia and Pacific region
EC	-	economic corridor
EIA	-	environmental impact assessment
EIU	-	Economist Intelligence Unit
EMM	-	Environment Ministers' Meeting
EOC	-	Environment Operations Center
EPA	-	environmental performance assessment
EPB	-	Environment Protection Bureau
EVI	-	environment vulnerability index
EWEC	-	east-west economic corridor
FA	-	Forestry Administration

FAO	-	Food and Agriculture Organization
FDI	-	foreign direct investment
FFI	-	Fauna and Flora International
GAPE	-	Global Alliance for Poverty and Environment
GEPB	-	Guangxi EPB
GDI	-	gender development index
GDP	-	gross domestic product
GEM	-	gender empowerment measurement
GEPB	-	Guangxi Environment Protection Bureau
GIS	-	geographic information system
GMS	-	Greater Mekong Subregion
GPS	-	global positioning system
ha	-	hectare
HDI	-	human development index
HEC	-	human elephant conflict
IA	-	implementing agency
IT	-	information technology
IUCN	-	World Conservation Union
LoA	-	letter of agreement
LPMO	-	local project management office
m	-	meters
MoA	-	memorandum of agreement
MDG	-	millennium development goal
MFU	-	Mae Fah Luang University
MIKE	-	monitoring of illegal killing of elephants
MoE	-	Ministry of Environment
MOLISA	-	Ministry of Labor, Invalids and Social Affairs
MNRE	-	Ministry of Natural Resources and Environment, Thailand
MONRE	-	Ministry of Natural Resources and Environment, Viet Nam
NESDB	-	National Economic and Social Development Board
NGO	-	nongovernment organization
NPA	-	national protected area
NR	-	nature reserve
NRM	-	natural resource management
NSEC	-	north-south economic corridor
NSU	-	national support unit
NTFP	-	non timber forest product
PA	-	protected area

PCU	-	provincial coordination unit
PDR	-	People's Democratic Republic (Lao)
PES	-	payment for ecosystem services
PLUP	-	participatory land use planning
PPP	-	purchasing power parity
PPTA	-	project preparation technical assistance
PRC	-	People's Republic of China
PRF	-	Poverty Reduction Cooperation Fund
PPIU	-	provincial project implementation unit
RETA	-	regional technical assistance
RMB	-	Renminbi (China Yuan)
SEPA	-	China State Environment Protection Bureau
SFM	-	sustainable forest management
STEA	-	Science, Technology and Environment Agency
SUFFORD	-	Sustainable Forestry and Rural Development project
TNC	-	The Nature Conservancy
UNDP	-	United Nations Development Program
UNEP	-	United Nations Environment Program
UNINET	-	university network of Mae Fah Luang University (GMS)
UTM	-	universal transverse mercator
WB	-	World Bank
WCS	-	Wildlife Conservation Society
WDI	-	world development indicators
WEFCOM	-	Western Forest Complex
WGE	-	Working Group on Environment (GMS)
WREA	-	Water Resources and Environment Agency
WS	-	wildlife sanctuary
WTO	-	World Trade Organization
WWF	-	World Wide Fund for Nature
XTBG	-	Xishuangbanna tropical Botanical Garden
YEPB	-	Yunnan Environment Protection Bureau

NOTE

In this report, \$ refers to US dollars, unless otherwise noted.



I. BACKGROUND

A. The GMS Core Environment Program

1. The Greater Mekong Subregion (GMS)¹ is one of the fastest growing regions in the world, with GDP growth in 2006 ranging between 3% in Myanmar to over 11% in the People's Republic of China (PRC), and average per capita income rising over \$875 in 2006.² This induces significant economic and social changes transforming economies, countries and natural landscapes in the subregion, which will inevitably affect the environment. Recognizing this development challenge, in 2004, the GMS Working Group on Environment (WGE)³, facilitated by the Asian Development Bank (ADB), initiated a review of the GMS economic program from an environmental sustainability and management point of view.
2. Both the Environment Ministers' Meeting in Shanghai (May 2005)⁴ and the 2nd GMS Summit of Leaders and Heads of State held in Kunming (July 2005)⁵ endorsed the Core Environment Program and its flagship component, the Biodiversity Conservation Corridors Initiative (BCI)⁶, for implementation.
3. The Asian Development Bank (ADB) is executing the GMS Core Environment Program (CEP) and the Biodiversity Conservation Corridors Initiative (BCI), known as the "CEP/BCI" for short, which is a regional technical assistance program for promoting establishment of sound environmental management systems and institutions. The program aims to mainstream environmental management and biodiversity conservation in the GMS Economic Cooperation Program and subregional development. The CEP/BCI (ADB RETA 6289) was approved by ADB in December 2005 and is cofinanced by ADB, the Governments of the Netherlands and Sweden and the Poverty Reduction Cooperation Fund (PRF). The CEP was officially launched in April 2006 with the establishment of the GMS Environmental Operations Center (EOC) in Bangkok.
4. The objectives of the CEP are to: (i) assess the environmental sustainability of priority development strategies and investment plans for the GMS economic sectors and corridors; (ii) implement biodiversity corridor activities in at least five pilot sites; (iii) institutionalize environmental performance assessment (EPA) and sustainable development procedures, systems and activities in the GMS countries; (iv) development and institutionalization of GMS capacity for environmental management; and (v) program development, delivery and sustainable financing.

¹ Consisting of Cambodia, PR China (Yunnan and Guangxi), Lao PDR, Myanmar, Thailand, and Viet Nam.

² For details see section II of this report below on: Growth, Poverty and Livelihoods in the GMS.

³ One of nine sector-based working groups, WGE was established in 1995 under the GMS economic cooperation program to serve as an advisory body on GMS issues in the environment and natural resources management sector. It consists of representatives from the six GMS countries and is co-chaired by ADB and UNEP with representatives from development partners, MRC and civil society organizations participating as observers. The WGE reports to the GMS Ministerial Conference and to the respective governments. To date, 13 meetings of the WGE have been held, the most recent one being in Guilin, June 2007..

⁴ Joint Ministerial Statement, Meeting of the GMS Environment Ministers, 25 May 2005, Shanghai PRC, para 9: "...we endorse the launching of the GMS Core Environment Program and the establishment of the Environment Operations Center for its implementation by early 2006." Key partners such as SIDA and WWF also expressed their support to the CEP and BCI at the meeting.

⁵ Kunming Declaration.

⁶ For BCI program details, see: BCI Strategic Framework (2005-2014) and Action Plan 2005-2008. ADB RETA 6213, May 2005.

B. Biodiversity Conservation Corridors Initiative (BCI)

5. The long term **vision** of BCI is that by 2015, GMS countries will have established priority biodiversity conservation landscapes and corridors for maintaining the quality of ecosystems, ensuring sustainable use of shared natural resources, and improving the livelihoods of people.

6. The **goal** is that by 2015, GMS countries will endeavor to maintain and improve the cover, condition, and biodiversity of forestlands and associated ecosystems in priority biodiversity conservation landscapes and corridors. In the **medium term** (2009-2011), it is expected that sustainable management regimes will be established for restoring ecological connectivity and integrity in a selected set of important biodiversity areas. This is to be combined with provision of natural resource goods and services that contribute to improving livelihoods of peoples living in and around the biodiversity conservation corridors.

7. The BCI has five sub-components:

- (i) Poverty alleviation through sustainable use of natural resources and development of livelihoods.
- (ii) Clear definition of optimal land uses and harmonized land management regimes.
- (iii) Restoration and maintenance of ecosystem connectivity.
- (iv) Capacity building in local communities and government staff.
- (v) Sustainable financing mechanisms and structures integrated with government planning and budgeting procedures.

8. BCI implementation is to be over **three phases**: in phase I (2006–2009), five GMS countries (Cambodia, PRC, Lao PDR, Thailand, and Viet Nam) will carry out pilot projects in a selected site in one of the nine GMS biodiversity corridor landscapes. In phase II (2009–2012), the methodology and framework of action developed in phase I will be scaled up in the pilot sites and applied to other corridors in the nine GMS biodiversity landscapes. In phase III (2012–2016), all nine GMS biodiversity landscapes and the priority corridors in them will be consolidated in terms of investments, and an evaluation of the approach and achievements will be carried out to determine whether the vision has been achieved.

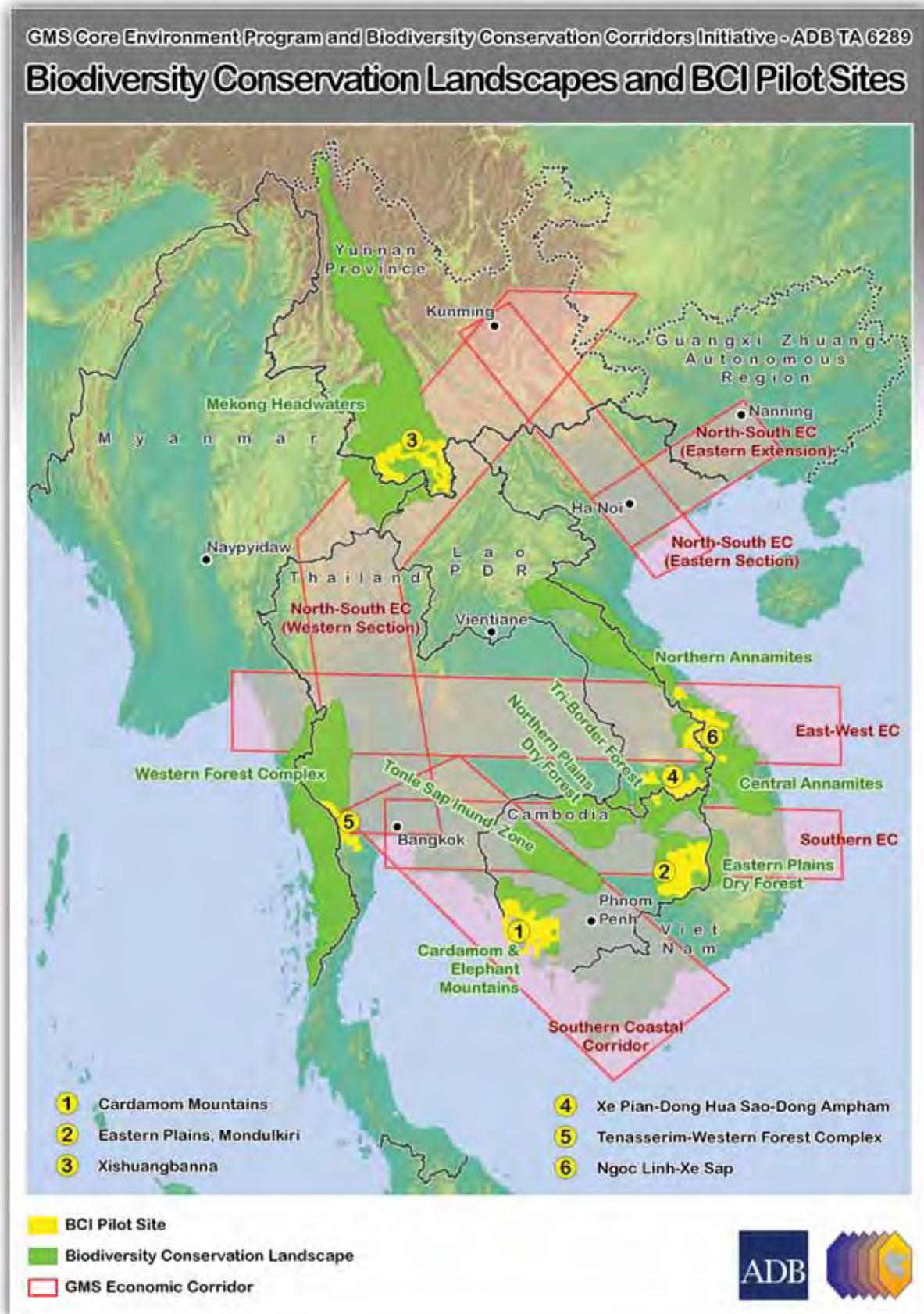
C. Biodiversity Conservation Landscapes and BCI Pilot Sites

9. The GMS biodiversity conservation landscapes (BCL) represent ecological networks, with natural and/or semi-natural landscape elements. These landscapes require management and maintenance of ecosystem functions with a view to conserving biodiversity and providing appropriate opportunities for the sustainable use of natural resources.

10. The pilot sites (Map 1) were selected by GMS governments with support from NGO partners based on the following six criteria:

- (i) Falling within GMS economic corridors or their zones of influence
- (ii) Reducing ecosystem fragmentation by linking two or more protected areas
- (iii) Areas of international biodiversity importance

Map 1. Pilot sites and biodiversity conservation landscapes in the GMS



- (iv) Areas of high poverty incidence and population growth
- (v) Being of a transboundary nature, and
- (vi) Having institutional (state and non-state) capacity on the ground that is active in implementing one or more projects.

Table 1. BCI pilot sites and biodiversity landscapes in the GMS

Country	BCI Site	Biodiversity Conservation Landscape (BCL)
Cambodia	Cardamom Mountains Eastern Plains, Mondulkiri	Cardamom and Elephant Mountains Eastern Plains Dry Forest
PR China	Xishuangbanna	Mekong Headwaters
Lao PDR	Xe Pian - Dong Hua Sao - Dong Ampham	Triborder Forest – Central Annamites
Thailand	Tenasserim - Western Forest Complex	Western Forest Complex
Viet Nam	Ngoc Linh-Xe Sap	Central Annamites

11. Detailed descriptions of all BCI pilot sites with maps are provided in Annexes 1.1 – 1.6 of this report.

1. Cardamom Mountains, Cambodia

12. In the Cardamom and Elephant Mountains BCL in Cambodia, the BCI pilot site targets one main corridor area that covers: (1) an already existing large block of protected areas making up a corridor of strict protection linking the Central Cardamoms Protected Forest (CCPF) with the Phnom Samkos Wildlife Sanctuary (PSWS) on the west and the Phnom Aural Wildlife Sanctuary (PAWS) in the east; (2) the geographic area linking the CCPF, the PSWS, and the PAWS with the southern Cardamoms Protected Forest, with further links along Route 48 to Peam Krasop Wildlife Sanctuary. This large area can be described as the *Areng catchment corridor* after the main river and watershed running through its center (details are in Annex 1-1).

2. Eastern Plains, Mondulkiri, Cambodia

13. The BCI pilot site in Mondulkiri aims to develop a sustainable use corridor linking seven protected areas in the Eastern Plains Dry Forest landscape. Five are in Cambodia: Lomphat Wildlife Sanctuary (WS); Mondulkiri Protected Forest; Phnom Prich WS; Phnom Nam Lyr WS; and Snoul WS, and two are in Viet Nam: Yok Don National Park (NP) and Bu Gia Map NP. The corridor in the Seima area, which is currently under production forest status, forms a key corridor connecting four of the other sites (details are in Annex 1-2).

3. Xishuangbanna, Yunnan, People's Republic of China

14. In the People's Republic of China (PRC), the biodiversity conservation corridor pilot site is located in the Xishuangbanna tropical rainforest landscape in the south of Yunnan, stretching down to the border

of the Lao People's Democratic Republic (Lao PDR). While identification of the initial BCI focal area took a long term approach in the establishment of linkages for the fragmented ecosystem identifying, eight potential corridors, BCI implementation in phase I aims at establishing connectivity between: (i) Nabanhe to Mangao; and (ii) Mengla to Shangyong (wild elephant sanctuary). This is also a transboundary Nature Reserve bordering Lao PDR (details are in Annex 1-3).

4. Xe Pian – Dong Hua Sao – Dong Ampham, Lao PDR

15. The pilot site is located in the southern Lao People's Democratic Republic (PDR) and aims to develop a sustainable use corridor linking Dong Hua Sao National Protected Area (NPA) in Champasak province to the Xe Pian NPA. This covers both Champasak and Attapeu provinces in the Triborder Forests landscape. This landscape straddles the southern border of Lao PDR, the northeastern border of Cambodia, and the centralwestern border of Viet Nam. The long term operational target is to maintain linear forest links between all three countries revitalizing an important transboundary ecosystem connectivity (details are in Annex 1-4).

5. Tenasserim – Western Forest Complex, Thailand

16. The Thailand BCI pilot site is located in the Tenasserim Range in western Thailand, between the Western Forest Complex (WEFCOM) and the Kaeng Krachan Complex. To the west, both complexes border forested areas in Myanmar. The biodiversity corridor area starts in the north at the southern tip of Sai Yok NP, adjoining a proposed extension area of Sai Yok, connecting with areas under the administration of the Royal Thai Army, the Royal Princess Project and touching on the northern borders of the Maenam Phachi WS and the Chaloe Phrakiat Thai Prachan NP. The total length of the corridor is over 70 km but phase I (2006 – 2009) activities are concentrated in selected clusters in the corridor along a 5 km width strip from the border, while in subsequent phases, a 10 km strip from the border will be covered (details are in Annex 1-5).

6. Ngoc Linh – Xe Sap, Viet Nam

17. In Viet Nam, the focal area of BCI interventions covers selected communes in Quang Nam and Quang Tri provinces, which are bordering areas of Thua Thien Hue and Kon Tum as well as Xe Kong and Attapeu provinces in the Lao PDR. Quang Nam and Quang Tri are part of the Central Annamite Mountains. This area is ranked as a "critically important" landscape because of its unique assemblages of species representing one of the world's most important biodiversity sites. It has the highest levels of endemism in a continental setting. The landscape is facing high levels of habitat fragmentation, primarily due to the construction of roads, with the landscape bisected by two sections of the east-west economic corridor and the Ho Chi Minh Highway in Viet Nam cutting through the landscape in a north-south direction (details are in Annex 1-6).

D. Partnerships and implementation arrangements

18. The BCI has encouraged collaboration and partnership between government organizations and NGOs in the delivery of program interventions. It builds on the premise and experience that civil societies and NGOs around the world have an impressive service delivery record at the micro level whereas government has the greatest impact at the policy and regulatory levels. In the field of conservation, partnerships between government and civil societies have led to synergies and efficiencies wherever government has welcomed collaboration toward achieving mutual goals and objectives. In the context of the BCI, implementation of pilot site as well as subregional activities are based on partnership and synergies between government and nongovernment bodies.

19. As a general principle, ADB has under the CEP/BCI program entered into partnership with nongovernment organizations (NGOs) in the pilot sites that already have a recognized track record for participatory consultations at the grass-root level and have been involved in land allocation processes and harmonized land management regimes. While most of these organizations are conservation NGOs, they have been collaborating in some instances with development NGOs or recruited specialists with development background and experience to address community issues of livelihood, development and increasing education and awareness.

20. The Working Group on Environment (WGE) of the GMS countries⁷ endorses project and activity proposals submitted by Implementing Agencies (IAs), which are state and non-state bodies in the GMS countries. Under the CEP/BCI, program/project activities are implemented by IAs through partnership agreements called "Letter of Agreement" (LoA). The ADB is the executing agency of the regional technical assistance (RETA 6289).

1. Partnership Agreements

21. At the GMS country level, ADB has entered into Letters of Agreement (LoAs) with the Ministry of Environment (MoE) in Cambodia, the China State Environment Protection Administration (SEPA) in the PRC, the Science, Technology and Environment Agency (STEA) of Lao PDR, currently implemented by the Water Resources and Environment Administration (WREA), the National Parks, Wildlife and Plant Conservation Department (DNP) in Thailand, and the Ministry of Natural Resources and Environment (MONRE) in Viet Nam.

22. ADB has also signed LoAs with the following non-state organizations: (1) Cardamom Mountains - Wildlife Alliance (formerly WildAid) in Cambodia, which represents a consortium with Conservation International (CI) and Fauna and Flora International (FFI); (2) Eastern Plains: World Wide Fund for Nature (WWF), which is working in collaboration with Wildlife Conservation Society (WCS) in Cambodia; (3) Xe Pian - Dong Hua Sao - WWF in Lao PDR working in collaboration with the World Conservation Union (IUCN); (4) Tenasserim - Wildlife Conservation Society (WCS) of Thailand; (5) Ngoc - Linh - Xe Sap - World Wide Fund for Nature (WWF).

⁷ Cambodia (MoE), People's Republic of China (SEPA), Lao Democratic People's Republic (WREA), Myanmar (NCEA), Thailand (MNRE), and Viet Nam (MONRE).

23. SEPA (PRC) has entered into agreements (contracts) with Yunnan Environment Protection Bureau (YEPB) and Guangxi Environment Protection Bureau (GEPB) to implement BCI activities in the respective provinces. The YEPB has entered into an implementation contract with the local Environment Protection Bureaus (EPB) in Jinghong and Deqin county and the Xishuangbanna Tropical Botanical Garden (XTBG). Close collaboration with the Nature Conservancy (TNC) is contemplated in Deqin county.

24. In addition, ADB is promoting subregional activities in support of BCI and has entered into LoAs with the Food and Agriculture Organization (FAO), IUCN, BirdLife International (BI), and universities such as the Asian Institute of Technology (AIT), Thailand, the Mae Fah Luang University (MFU), Thailand and its GMS university network (UNINET), and Murdoch University, Australia.

2. Implementation arrangements

25. BCI Pilot site activities are promoted, coordinated and monitored at national level by the national support units (NSU) within state agencies responsible in the GMS countries. Site activities are implemented by state agencies in partnership with and support of non-state organizations. Where appropriate, provincial level project implementation units (PPIU) in Viet Nam or provincial coordination unit (PCU) in Yunnan have been established. In Yunnan, there are also local project management offices (LPMO) in Jinghong, Xishuangbanna and Deqin.

26. While ADB is the executing agency, it has delegated its functions to the GMS Environment Operations Center (EOC) based in Bangkok, which is also the Secretariat to the WGE. The EOC is responsible for overall planning, coordination, program development, subregional oversight and monitoring, and receives for review six monthly progress and financial reports, and requests for liquidation. It provides endorsements (no objections) to selected local IA staff implementing BCI, and provides financial replenishments on satisfactory progress. Within the ambit of delegated executing agency functions, the EOC also has an active say in implementation and course corrections.

27. The WGE meets once a year with a semi-annual technical review meeting. EOC and the BCI implementing partners present progress reports at these meetings and also seek endorsements as appropriate for additional or new projects and activities. Hence, a monitoring and evaluation site visit is conducted by the EOC at least two months prior to the annual and semi-annual WGE meetings.

E. BCI Approach

1. Government ownership of BCI implementation in GMS Countries

28. GMS countries have fully endorsed the BCI concept and implementation of pilot site activities in phase I. As clients of the ADB, Government agencies are seen by ADB to be in the driving seat and provide direction in line with government strategies and priorities. Partner organizations of BCI other than state bodies are assisting and supporting BCI implementation within the framework of a government owned and sponsored subregional program. In particular, it is important that any follow up phase or investment subsequent to the current one will most likely be mainstreamed within the country partnership strategies

for development and investments. Hence, results achieved in the pilot sites in phase I need to be of a nature that are replicable and scaleable in phase II and III.

29. Decentralization is a major force in governance reform in the GMS countries. It entails delegating greater responsibility and authority for development decisions to local government. It involves transferring to local levels certain powers over budget management and creates potential for local taxation and revenue raising. Combined with expanding legal frameworks for establishing tenure, ownership, and rights of access to land and natural resources, these reforms shift the weight of development planning and decision making closer to where resources are used. This trend in governance has far-reaching implications for biodiversity corridor institutional arrangements, planning, and management and the potential for innovative financing mechanisms and revenue raising associated with specific protected areas. It also has the effect of more clearly distinguishing between government and private sector responsibilities and obligations at the local level. BCI encourages implementation through provincial and local level project implementation units, providing them with greater decision-making autonomy.

2. Embedding BCI into national policy and regulatory framework

30. Biodiversity corridor interventions and transboundary activities in the GMS will require appropriate policy and regulatory frameworks within the GMS countries. The BCI fosters a process that generates a degree of standardization in the regulatory framework establishing corridors, landscapes, and transboundary projects. Following examples of similar standardization of procedures and regulations in transboundary traffic and movement of goods and persons, the BCI envisages in the medium-to-long term a similar development in conservation and environmental protection across the GMS countries. The BCI will seek to lay the groundwork for such future developments that may emerge in the shape of GMS transboundary protocols or regional agreements.

31. All LoAs with state partners contain a set of key deliverables including the development of a policy and regulatory framework, which recognizes the concept, operational modalities, and fiscal incentives of a biodiversity corridor in the GMS countries. This is also to move towards a GMS wide protocol on establishment and functioning of transboundary biodiversity corridors and biodiversity conservation landscapes (BCLs). A key challenge has been enforcement of new legal regimes, particularly in controlling the use of protected areas and the regions surrounding them. This remains a critical issue and is being addressed through decentralized control, tenure security, user rights and local level decision-making.

3. Biodiversity – Poverty Focus: Improving livelihoods, health and education

32. While maintenance of ecosystem services and biodiversity conservation forms the basis of BCI operations, conservation is a means to an end – and for the ADB, the highest goal is poverty reduction and people centered development. In this context, wage generating activities, in particular, underly the assumption that BCI activities, such as biodiversity assessments, local level ecosystem protection, and forest restoration must be carried out in collaboration with local communities, thus providing income opportunities to local people.

33. Local people are to receive cash benefits for labor provided for carrying out detailed survey and demarcation of selected priority biodiversity corridors; participation in restoration, management, and maintenance work; and from sustainable harvesting of fruits, timber, or collection of fuelwood and nonwood products.



NTFP collection and processing in BCI sites

34. It is envisaged that state agencies will continue making wage payments for participatory assessments and monitoring of the resources, thus institutionalizing flow of cash benefits for conservation.

35. The BCI is also promoting land access and land tenure security through the issue of land use certificates or use of existing regulatory framework to allow for secure access to land. Without stable and long term access to land, most ethnic minorities dwelling in and around mountainous forest lands in BCI pilot sites will have difficulties in improving livelihoods.

36. In this context, the BCI also promotes pro-poor (forest based) wage earning/income generating activities (alternative livelihoods). This includes not only establishment of naturally stocked community forests, using sustainable forest management principles, but also promoting livelihood plantations in and around homesteads that provide cash benefits

37. Widely accepted definitions of poverty focus on three major elements addressing human well being and quality of life: the term poor usually refers to real incomes, health status —especially that of mothers and children, and access to basic education. Under BCI, phase I has largely focused on natural resource- based livelihoods improvement, as most of the target beneficiaries in the BCI pilot sites derive a large portion of their livelihoods from natural



Homestead-based livelihood plantation, Quang Tri

resources, particularly forest based products. But it is all the more important to increasingly link improvements in livelihoods with inputs towards improved health and providing exposure and access of children to web based technology. Wherever possible and appropriate, BCI implementers will leverage additional resources to link income with health and technology-based education and skills transfers to reduce poverty.



Health services in the CCPF, Cardamoms

4. Multistakeholder participatory consultation

38. BCI encourages participatory multistakeholder diagnostic and land use planning to demarcate agreed zones of use and protection, and to establish an enabling institutional and policy framework that provides incentives and monitors compliance with guiding principles and regulations pertaining to conservation and sustainable use. BCI also encourages documentation of these local level participatory consultations. As agreements are reached and demarcation and delineation can begin on the ground, the local authorities (in particular land registry offices, district, and provincial officials, as well as protected area/reserve management) must record agreements in a form that has legal status for and recognition by all parties concerned. Where relevant, village officials and relevant households are to be mentioned as party to these agreements and copies of these agreements and maps are to be provided to the parties and also made publicly accessible in villages, subdistricts, and districts. Higher level approvals, where necessary, are to be sought, secured, and made public.



Lahu village meeting near Nabanhe NR, Yunnan



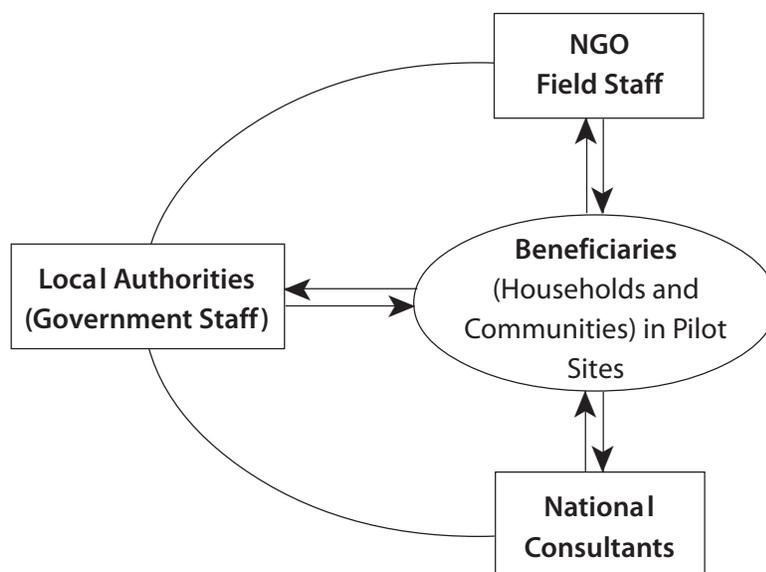
Dai village meeting near Mangao Subreserve, Yunnan

39. Community participation, co-management, and equity in the use of natural resources are urgent and rapidly evolving themes confronting biodiversity and natural resource managers and BCI subscribes to and supports to these themes.

5. Service Delivery to beneficiaries by state and non-state partners

40. Under BCI, the use of LoAs with state and non-state partners is a tripartite arrangement (Figure 1) between ADB, the state, and the non-state implementing agencies to deliver project services efficiently and effectively to the beneficiaries.

Figure 1. Service delivery mechanisms



41. While it is expected that collaborating partners will synchronize activities in the field and use an integrative program approach, it may be necessary at times to allow on-demand provision of specialist services to beneficiaries by certain partners. Participatory consultations with beneficiaries may lead to the need for provision of services by various local partners (government and nongovernment) that may not be the primary implementers. In such cases, BCI encourages, adaptation and flexible adjustments, including corrective action by partners based on results of monitoring and evaluation visits as well as establishment of networking and linkages with a variety of service providers.

6. Recipient responsibility: Community based revolving funds

42. The BCI approach aims at fostering local approaches and decision-making that lead to local benefits and responsibilities. Without active involvement of local communities, any conservation approach is bound to fail in the medium-to-long term because local communities and households are the ultimate custodians of the natural resources they share and use. In the same way, providing proprietary or user "rights" over means of production (e.g., land) has acted as an incentive and a driving force in market and transition economies. The granting of access and user rights to natural resources will galvanize communities (villages and groups of households) into higher levels of incentive to protect what is theirs against outsiders. With benefits come responsibilities. The BCI supports communities with capacity building to manage these resources sustainably.

43. ADB perceives the instrument of revolving funds such as commune development funds (CDFs) or village development funds as the instrument of choice for decentralization and government policy implementation. The BCI encourages its partners to use this modality to decentralize implementation and use the CDF modality as an instrument of empowerment and institutionalization sustainable financing.



Capacity building for tracking and monitoring wildlife in the Tenasserim

7. Knowledge and skills transfer, capacity building

44. The BCI approach puts special emphasis on knowledge sharing and skills transfer. Local indigenous knowledge of traditional medicinal plants, herbs, and essences need to be documented and preserved for posterity. In this context, special exchange visits of implementers in the GMS countries receive resources with the objective of supporting learning and sharing of information and experiences among various pilot sites and corridors. In particular, subregional knowledge and skill transfers is encouraged. The EOC provides a platform for carrying out such exchanges at a subregional level, which are particularly important in transboundary situations, where joint seminars and experiential learning can result in better understanding and enforcement, and eventually lead to conducting joint patrols in the true sense of a transboundary undertaking.

45. BCI fosters improvement of institutional and human capacity for managing biodiversity corridors. Local people and officials need skills for undertaking biodiversity conservation planning, management, and monitoring. Weak capacity has been identified as an overarching threat. It has been demonstrated worldwide that education, knowledge, and skills can provide a sound basis for people to be proactive in biodiversity conservation and sustainable management.

8. Performance based allocation

46. The principle of performance based allocation, to which ADB adheres to, stipulates that funds can be moved from one component to another, one site to another, and even if need be, one country to another because of weak performance. This principle is being applied in the performance evaluation of BCI implementation on an annual basis.

II. GROWTH, POVERTY AND LIVELIHOODS IN THE GMS

A. Demographic Context

47. The population of the GMS is estimated at around 320 million people, the majority of which (60%) lives in rural areas. Population in the subregion is not evenly distributed and tends to be concentrated in areas with access to natural resources such as fertile land, water and fish and the natural systems which maintain and enrich them. For example, in Cambodia 80% of the people live on 20% of the land area largely concentrated in the southern portion of the Mekong basin. The subregion also experiences large and increasing migratory flows, both seasonally and permanently. In addition to urban migration, rural to rural movements are also common, and often involves population shifts from the high-density coastal regions to the interior.

48. In terms of population composition, the GMS has a number of large ethnic groups such as the Khmer of Cambodia, Han of the PRC, Lao of the Lao PDR, Burman of Myanmar, Thai of Thailand, and Kinh of Viet Nam. There are more than 200 ethnic minorities comprising about 75 million people. They typically inhabit remote mountain areas along the Mekong River and its tributaries living on a combination of subsistence agriculture, hunting and limited trade in forest products. Because of their geographic isolation, they have little or no access to basic health and education services and often have high levels of poverty, both income and non-income.

B. Economic Growth

49. The Greater Mekong Subregion (GMS) is one of the fastest growing economic areas in the world (Table 2). Since the early 1990s, the political and economic isolation that characterized most GMS countries has gradually given way to increasing globalization with greater liberalization of trade regimes and regional integration, allowing for a wider circulation of goods and capital across regional borders and beyond. The combined liberalization and integration efforts have fostered transnational trade and investment, in turn contributing to regional progress and poverty reduction.

50. People's Republic of China, Thailand and Viet Nam are the major trading countries in the GMS, but other countries are becoming more actively involved in the subregional market. In 2004, Lao PDR, Cambodia and Myanmar conducted more than 40% of trade among themselves, and their exports to Thailand grew by an annual compound growth rate of almost 10% (an average maintained since 2000).⁸

51. According to ADB's recent Mid-Term Review⁹ and Asian Development Outlook¹⁰ the ratio of investment to GDP has increased steadily, reaching 43% in 2005 in PRC, 35.4% in Viet Nam, 31.6% in

⁸ Menon, J. 2005. *Building Blocks or Stumbling Blocks? Regional Cooperation Arrangements in Southeast Asia*. Manila: ADB Institute Discussion Paper No. 41, 3

⁹ ADB. 2007. *Mid-term Review of the Greater Mekong Sub-region Strategic Framework 2002-2012*. Manila.

¹⁰ ADB. 2007. *Asian Development Outlook*. Manila, 2-3.

Table 2. Greater Mekong Subregion Economic Indicators

	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam	PRC (Yunnan)	PRC (Guangxi)
GDP (US\$ billions)	7.27	3.52	9.08	206.2	60.4	35.8	40.1
Population (millions)	14.1	5.9	51.1	64.2	83.0	44.2	48.9
Per capita income (US\$)	383	482	178	2,749	632	810	820
Per capita income PPP Current \$	2,595	2,182	721	8,551	3,062	4,386	4,912
Trade-to-GDP ratio (percent)	114.6	67.1	76.1	123.2	140.2	-	-
GDP Growth rate (percent)	10.5	7.5	3.0	5.0	8.2	11.5	11.8

Notes: 2005 data, except GDP Growth for 2006.

Sources: WDI; EAP Regional Update; EIU, China Statistical Yearbook 2005 and 2006 and Bank Staff Estimate.

Thailand and 20% in Cambodia. In Lao PDR, gross foreign direct investment (FDI) grew by 30% in 2006 due to large investments in hydropower projects and mining. FDI in Myanmar has also supposedly grown from an estimated 11% of GDP in 2003 as a result of global interest in the gas and oil sectors.

52. The mutually reinforcing trade and investment trends contribute to the subregion's consistent growth (see table 1), with gross regional product expected to double by 2015. After a decade-long annual growth rate of 6% on average, in 2005 and 2006 the GMS experienced a robust 8% growth increase per year,¹¹ the strongest pace since the Asian financial crisis of 1997.

53. PRC and Viet Nam have performed particularly well in recent times. PRC, with four consecutive years of double-digit growth, is the most populous, fastest-growing major economy in the world. In spite of tightening measures introduced to avert overheating of the economy, growth reached 10.7 % in 2006, due to rapidly expanding production and trade. In the same year, Viet Nam rose above its last five year's rate, achieving 8.2% growth in 2006 as a result of driving exports, consumer spending and investment boosted by accession to the WTO and a surge in stock market capitalization.¹²

¹¹ ADB. 2007. *Mid-term Review of the Greater Mekong Sub-region Strategic Framework 2002-2012*. Manila. For China, only figures for two provinces in the GMS were used in calculating the average GDP growth.

¹² WB. 2007. *10 Years after the Crisis; Special Focus: Sustainable Development in East Asia's Urban Fringe. East Asia and the Pacific Update April 2007*. Washington D.C., 45-56. ADB. 2007. *Asian Development Outlook*. Manila, 236-240.

54. The relatively smaller economies of Cambodia and Lao PDR also experienced unprecedented growth. In 2005, Cambodia's growth peaked to 13.4% from 10% in the preceding year, before consolidating at an estimated 10.4% in 2006. These three consecutive years of double-digit growth were supported by manufacturing, tourism, construction and agricultural expansion.¹³ Lao PDR grew by 7% in 2005 and by an estimated 7.5% in 2006, with growth expected to reach 9% in 2008 due to growing investments in natural resources and mineral exports.

55. These outstanding economic performances at the subregional level are in contrast to the more modest growth recorded in Thailand and Myanmar. Thailand's GDP grew slightly by 5% in 2006, negatively affected by political changes, high energy prices, and depressed investor and consumer confidence. Albeit an increase from the preceding year rate of 4.5%, growth was still below the annual average of 6% in the 2002-2004 period.¹⁴ With regard to Myanmar, it is likely that the country may have experienced moderate growth¹⁵ derived from high prices for natural gas exports, a rich harvest and expanding construction.

56. Overall, strong regional growth is expected to continue, albeit at a somewhat slower pace because of the threat of global payment imbalances and geopolitical instability. For the next two years, annual average growth rate for the GMS is projected at sizeable 7% – 7.5%.

C. Poverty

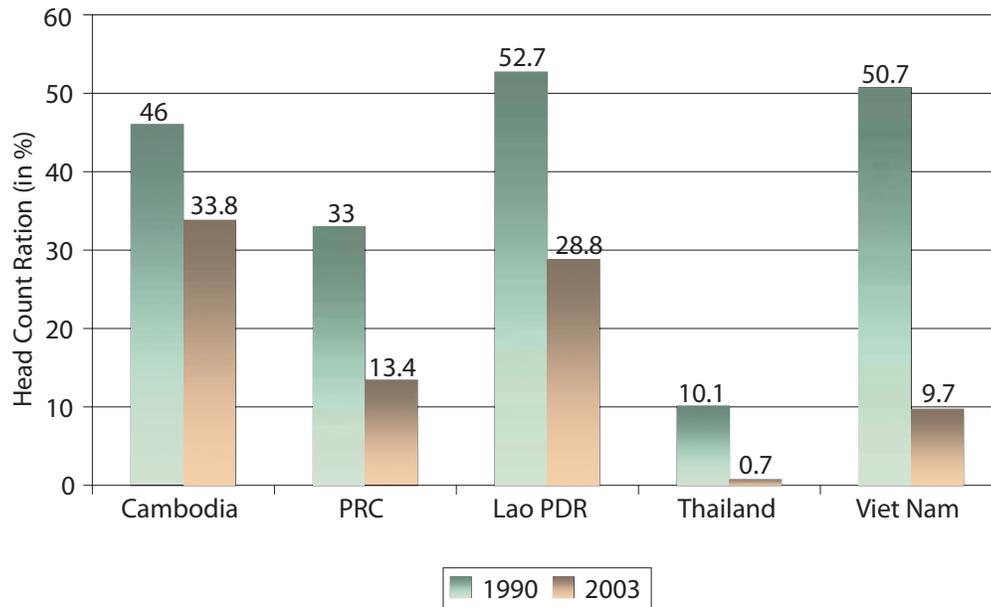
57. The expansion of the subregional economy has been correlated with a significant reduction of poverty in the GMS as a whole. Poverty incidence started declining in the early 1990s when the region begun growing. During the Asian economic crisis, poverty reduction slowed down briefly when the economy in Thailand and other Southeast Asian economies faltered, but started to accelerate again as soon as those economies recovered, gradually receding below the pre-crisis level.

58. While GMS has been making considerable progress in economic growth and poverty reduction, living standards have not risen at the same rate everywhere. Poverty remains widespread with a substantial portion of the combined 320 million GMS population living below the poverty line and many more surviving at subsistence level. Socioeconomic disparities are further widening, as benefits and costs of development have not been shared evenly across countries and groups.

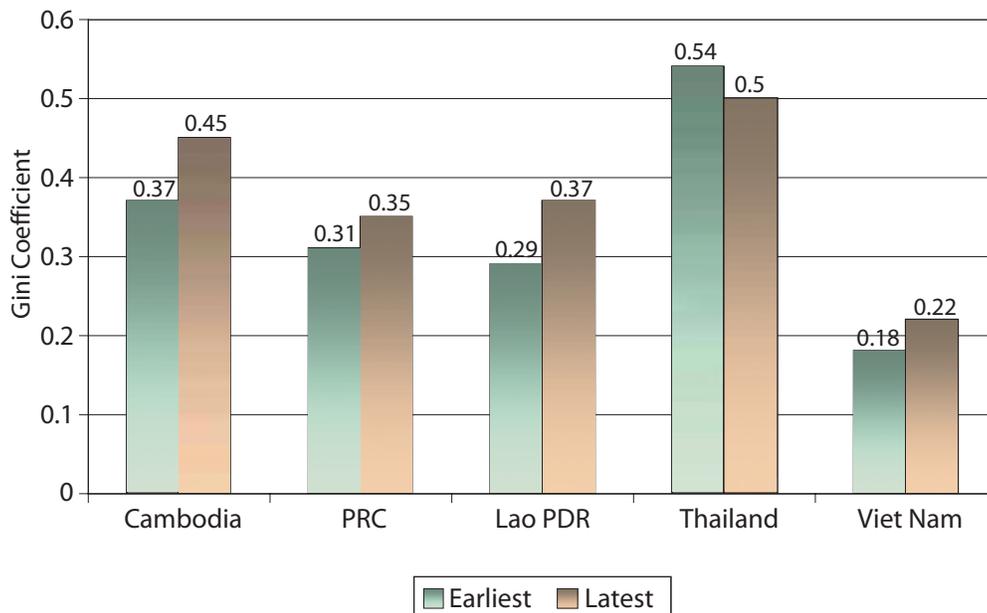
¹³ WB. 2007. *10 Years after the Crisis; Special Focus: Sustainable Development in East Asia's Urban Fringe*. East Asia and the Pacific Update April 2007. Washington D.C., 46.

¹⁴ WB. 2007. *Thailand Economic Monitor*. Bangkok, 1.

¹⁵ Turnell, S. 2007. Myanmar's Economy in 2006. In *Myanmar - The State, Community and the Environment*. Edited by M.Skydmore & T. Wilson. Sydney: ANU Asia Pacific Press, 108-124.

Figure 2. Poverty Incidence (\$1-a-day)¹⁶

59. Within countries, socioeconomic gaps not only persist, but are actually widening as expressed by the rising national Gini coefficients of income distribution, an indication of disparities among national socioeconomic groups (Figure 3).

Figure 3. Poverty Incidence (Gini Coefficient¹⁷)¹⁸

¹⁶ ADB. 2007. *Mid-term Review of the Greater Mekong Sub-region Strategic Framework 2002-2012*. Manila, 6.

¹⁷ Gini coefficient is a measure of income inequality. If income distribution were exactly equal, this value would be zero. If one person had all income, it would be equal to one.

¹⁸ ADB. 2007. *Mid-term Review of the Greater Mekong Sub-region Strategic Framework 2002-2012*. Manila, 6. Earliest: Cambodia, 1994; PRC and Thailand, 1992; and Lao PDR and Viet Nam, 1993. Latest: Cambodia and Viet Nam, 1999; PRC, 2000; Lao PDR, 1997-1998; and Thailand, 2001.

60. Uneven wealth distribution in GMS countries has definite topographic dimensions, with geographical conditions, level of infrastructural development, and characteristics of economic sectors and labor markets shaping poverty patterns. Irrespective of the national income levels, poverty is consistently higher in rural areas than in urban areas in all GMS countries, with the highest incidence in remote, upland areas where ethnic communities live. Thailand is the least poor, but its mountainous areas are much poorer than its lowlands, just like in Lao PDR and Viet Nam.

61. In Thailand, twenty per cent of the populations earns almost eight times more than the poorest twenty percent. Rural poverty is concentrated in the north and northeast regions of Thailand, particularly in areas where ethnic minority groups live.¹⁹ Relative to the national figures, income inequality in Yunnan is even greater, with the poorest twenty per cent earning less than one-tenth of the wealthiest twenty per cent. In Viet Nam, both trends can be attributed to the impact of market reforms in a formerly socialist economy. Although the incidence of poverty has been declining across the region, it remains high in Cambodia, Lao PDR, Myanmar and Viet Nam. Within these countries, the incidence of poverty among ethnic minorities tends to be higher than among the majority population.²⁰ Poverty incidences of up to one hundred per cent have been recorded among the Khome, Dao, Tay and Thai minorities in Viet Nam.

62. Poverty reduction has been uneven. Albeit at a somewhat slower rate than other GMS countries, ethnic minorities living in remote and mountainous areas are most at disadvantage among the rural poor. Poverty incidence among ethnic minorities is the highest in the country and pace of poverty reduction slowest. The regions where most ethnic people live, namely the Northern Uplands (East and West), North Central and the Central Highlands are also Viet Nam's poorest regions, having both the highest incidences of poverty and the deepest poverty, albeit not necessarily the largest number of poor.²¹

63. Income disparities have become more differentiated across GMS countries, with Thailand, China and Viet Nam having higher per capita incomes when compared to Cambodia, Lao PDR and Myanmar, to this day among the eight least developed countries in Asia. Among the wealthier group, Thailand stands out with a per capita GDP in 2005 of more than double the average regional income of \$875, and about fifteen times that of Myanmar, seven times that of Cambodia, five times that of Lao PDR, four times that of Viet Nam and three times that of the China's Yunnan and Guangxi (see Table 1 above). Overall, poverty incidence and magnitude in GMS countries has decreased substantially since the start of the regional cooperation program, as can be seen in Table 1. Significant progress has also been made in enhancing education participation, expanding sanitation coverage, and improving health outcomes.²²

¹⁹ ADB. 2002. *Regional Issues and Emerging Trends: Environmental, Socio-economic and Institutional*. Vol. II. Manila.

²⁰ Ibid.

²¹ Socialist Republic of Viet Nam. 2005. *Achieving the Millennium Development Goals*. Hanoi, 19.

²² ADB. 2007. *Mid-Term Review of the Greater Mekong Subregion Strategic Framework 2002-2012*. Manila.

64. These different degrees of socioeconomic welfare are recognized by the Human Development Index (HDI), a composite measurement of 175 countries' performance in three basic dimensions of human development: a long and healthy life, knowledge, and a decent standard of living. In 2005, all GMS countries belonged to the intermediate group with medium-level human development outcomes, but Thailand's topped the subregional rank at 78, followed by China at 81, Viet Nam at 105, Lao PDR at 130, Cambodia at 131, and 132 for Myanmar.²³



Village priorities in the BCI pilot sites: Access to education, health care, and clean water

Table 3. Social Indicators of GMS Countries²⁴

Goal/Target/Indicator	Cambodia	PRC	Lao PDR	Myanmar	Thailand	Viet Nam
Net enrolment ratio in primary education (%)	91.9 (2005)	98.7 (2003)	81.8 (2003)	84.5 (2005)	80.4 (1998)	97.5 (2005)
Infant mortality rate (per 1,000 live births)	66.0 (2005)	31.0 (2002)	70.0 (2005)	49.7 (2003)	22.0 (2002)	18.0 (2004)
Maternal mortality ration (per 100,000 live births)		51.3 (2003)	405.0 (2005)	100.0 (2001 urban)	24.0 (2002)	85.0 (2004)
Percentage of population with sustainable access to safe drinking water-Rural	41.6 (2005)	58.0 (2003)		65.8 (2000)	91.0 (2000)	

65. Thailand, China and Viet Nam also perform better than their neighbor in terms of human development. Citizens of these three countries enjoy higher levels of education, health, and social welfare, and have greater access to safe drinking water and sanitation. Life expectancy at birth is more than 10 years higher than in other GMS countries, and maternal and infant mortality is strikingly low when compared to Myanmar, Lao PDR and Cambodia (see Table 2). This, notwithstanding the significant progress Lao PDR and Cambodia have made in reducing under-five and infant mortality rates, and in increasing coverage of measles vaccination as part of their efforts to achieve the MDGs.

²³ UNDP. 2006. HDI Ranking. 2007/2008 Report. Available: <http://hdrstats.undp.org/indicators/1.html>.

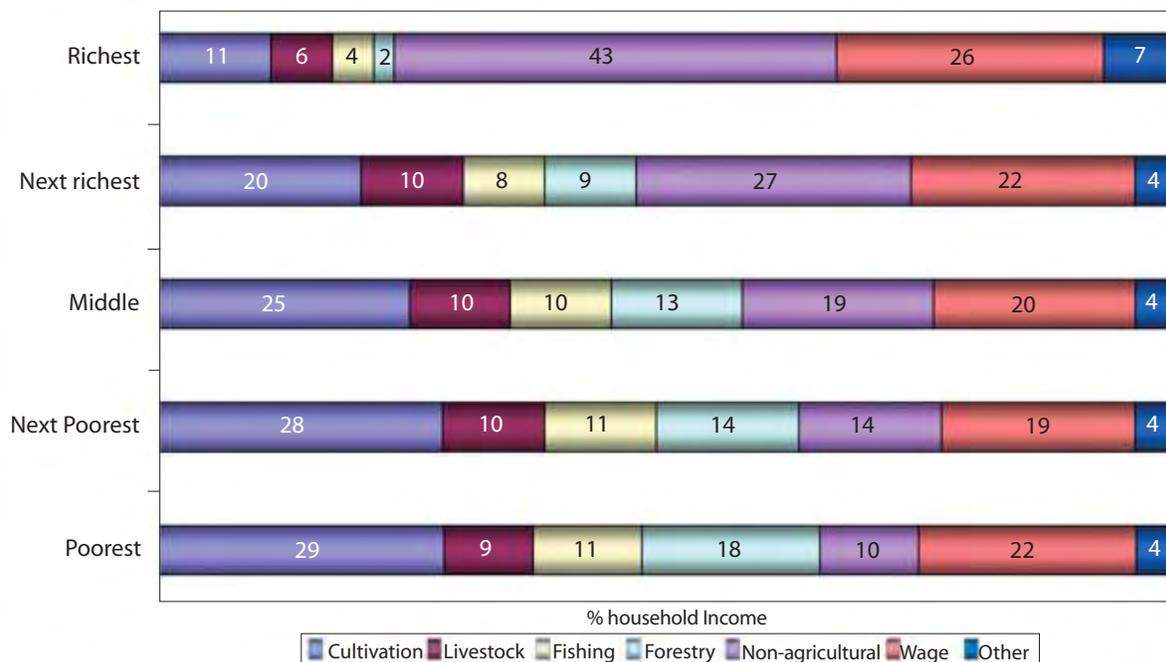
²⁴ ADB. 2007. Mid-term Review of the Greater Mekong Sub-region Strategic Framework 2002-2012. Draft.

66. In summary, the largest reductions in poverty have been for those countries – Thailand, Viet Nam and PRC – that show the biggest proportionate gains with regard to trade, investment and economic growth. Due to sustained growth, these countries have already accomplished the first Millennium Development Goal (MDG) to ‘eradicate extreme poverty and hunger’, by meeting the internationally set target of halving, between 1990 and 2015, the proportion of people living below the poverty line.

1. Cambodia

67. Cambodia has experienced significant reduction in poverty, generally attributed to peace consolidation and a transformation from a closed subsistence economy to a more open market-oriented economy. Between 1993 and 2004, it is estimated that poverty fell by 15%, while per capita consumption rose by 32% in the same period.²⁵ Notwithstanding significant progress in expanding access to services, the country remains one of the poorest countries in the GMS, with about 35% of the population living below the national poverty line in 2004.²⁶ The large majority of the poor is engaged in agriculture, if not in the domestic sector. Agriculture remains the primary occupation for 72% of households, yet contributes only 31% of GDP.²⁷ Poor households are also highly dependent on common natural resources for food and energy –with forest and fishing products being a more significant source of income for poorer households than for wealthier ones (Figure–4).

Figure 4: Income Source per Quintiles²⁸



²⁵ CDRI. 2007. *Moving Out of Poverty? Trends in Community Well-Being and Household Mobility in Nine Cambodian Villages*. Phnom Penh, 35.

²⁶ WB. 2006. *Cambodia Halving Poverty by 2015? Poverty Assessment 2006*. Report No. 35213-KH. Phnom Penh, 21.

²⁷ Ibid, 78.

²⁸ Ibid, x.

68. Poverty is especially high in isolated rural areas with no or scarce access to market, infrastructures and services. Poverty incidence rates are greater in the provinces of the Tonle Sap and Mountain/Plateau zones, relative to provinces in other agro-ecological zones. In 2004, the poverty headcount ratio in the rural areas of these two zones reached 45% and 55% respectively and the degree of severity was almost twice the national average.²⁹

2. People's Republic of China (Yunnan and Guangxi)

69. Following economic reforms and growth, PRC has drastically reduced poverty, with the numbers of absolute poor in rural areas decreasing from 250 to 26.1 million in the 1978-2003 period and the incidence of poverty dropping from 31% to just 2.8%.³⁰ Disparities, however, are widening between urban and rural areas, and between socioeconomic groups, with an estimated increase in the national Gini coefficient for income distribution from 0.30 in 1982 to 0.45 in 2002.³¹ Developmental imbalances also persist amongst regions and provinces, with poverty concentrated in the southwestern, northwestern and central mountainous areas.

70. In **Yunnan province**, poverty is widespread with 21.48 million people living in absolute poverty in rural areas in 2006, and 73 officially designated poor counties. Overall, urban per capita incomes (Yuan 8,203) were on average three times greater than rural per capita incomes (RMB 2,554) –the widest urban-rural disparities witnessed in PRC at the time.

71. The per capita net income (PCNI) of rural residents in **Guangxi autonomous region** is RMB 2,771 (2006), ranging from a low of RMB 1,557 in Luo Cheng county to a high of RMB 3,818 in Xing'an county. As shown in Maps 2 and 3, Jingxi county — proposed BCI pilot site, has the lowest income level in the southwestern part of Guangxi.

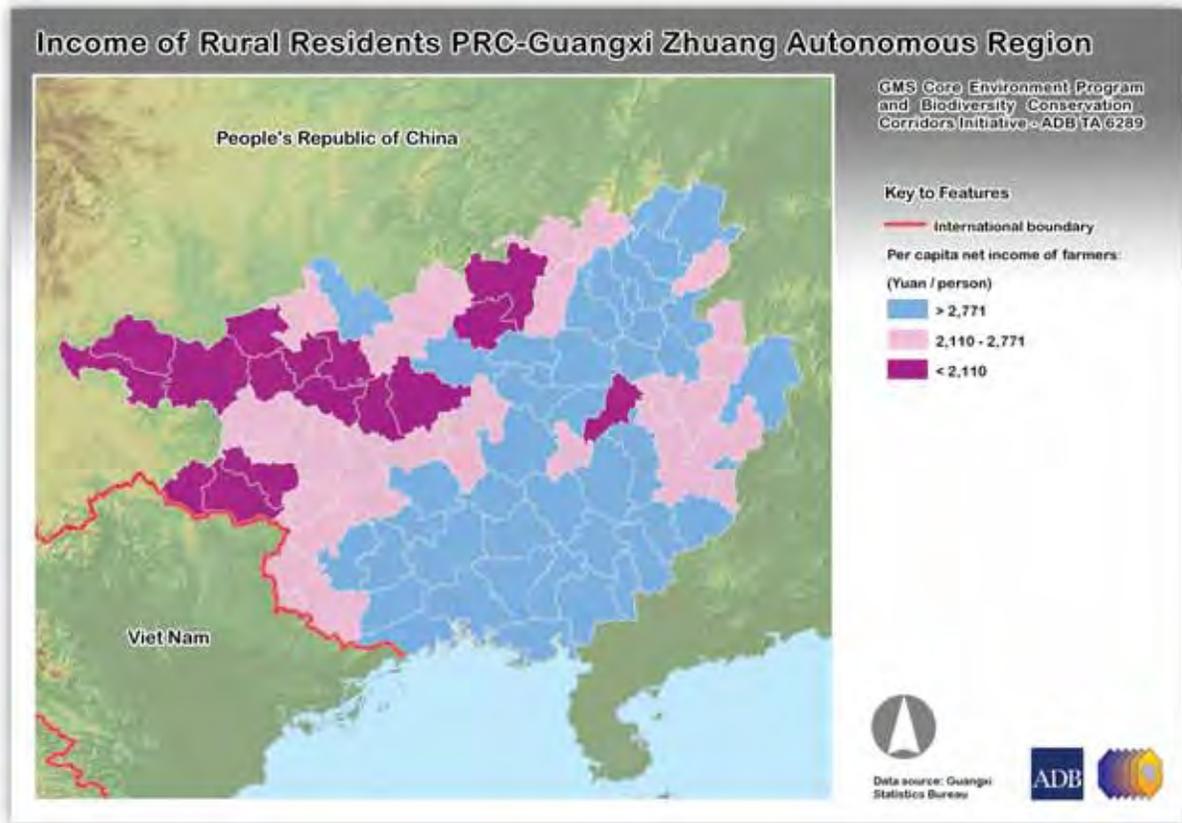
72. Jingxi county has been designated as one of 28 priority counties for poverty-reduction efforts in this autonomous region. Rural residents make up most of the population of the county and are mostly vulnerable due to poverty. PCNI of rural residents in Jingxi county is RMB 1,889, lower than either that of Bei Se City (RMB 2,110) or Guangxi as a whole, ranked 78th among all counties and districts in Guangxi and 8th among the 12 counties and district of Bei Se, though higher than the national relative poverty line (NRPL) of RMB 924/person/year.

²⁹ WB. 2006. *Cambodia Halving Poverty by 2015? Poverty Assessment 2006*. Report No. 35213-KH. Phnom Penh, 35.

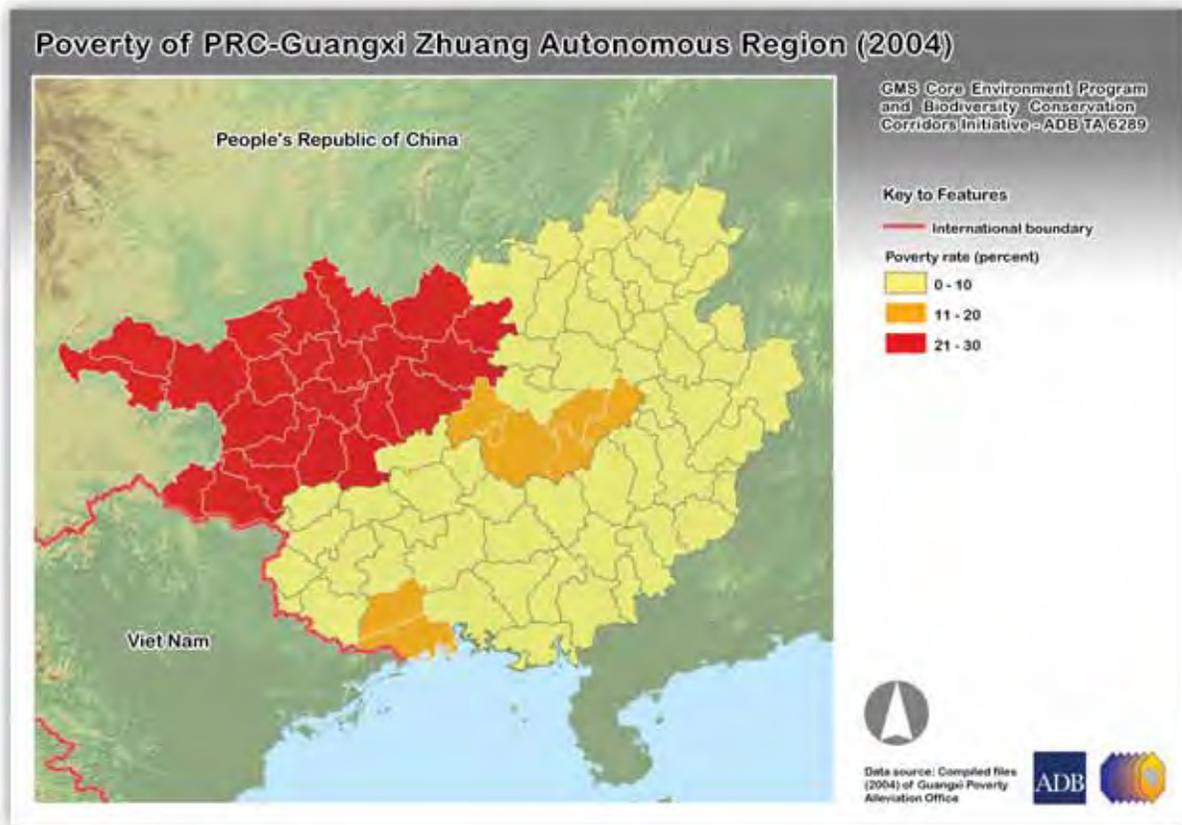
³⁰ Sangui, W. et al. 2004. *The 8-7 National Poverty Reduction Program in China: The National Strategy and Its Impacts*. Powerpoint presentation for Shanghai Poverty Conference, Shanghai.

³¹ UNDP. 2006. *China Human Development Report 2005*. Beijing.

Map 2. Income of Rural Residents of Guangxi Zhuang Autonomous Region (2006)



Map 3. Poverty of Guangxi Zhuang Autonomous Region (2004)

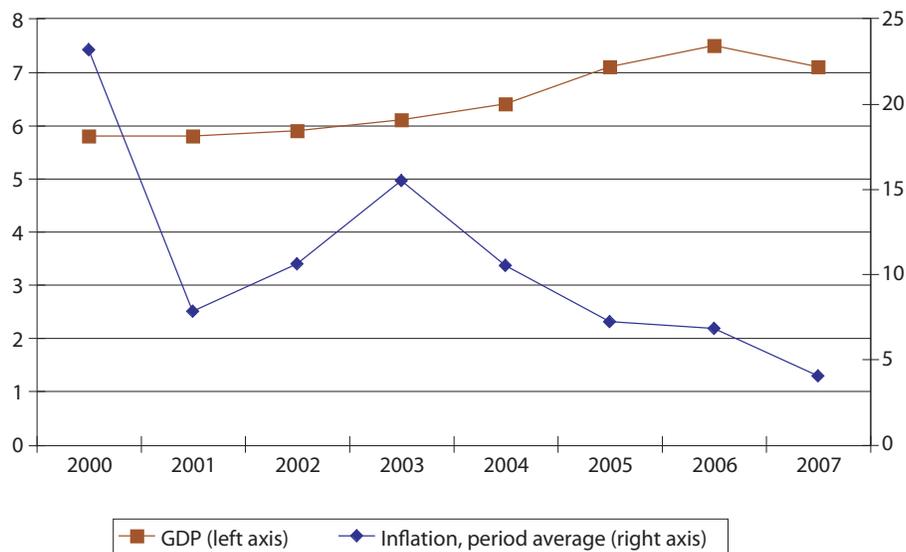


3. Lao PDR

73. The Lao PDR economy has performed well in recent years, growing at an average of 6% since 2000 (Figure 5). Poverty headcount has fallen consistently from almost half the population in 1997/98 to one third in 2002/03. Using the national poverty line of approximately \$1.5 a day, poverty incidence has fallen from 46% in 1992/93 to around 33.5% in 2002/03, and was expected to have dropped to 31% in 2005.³² Over the same period, the head count ratio of poor declined from 52.7% to 28.8%, notwithstanding the increase in population by one million people.³³

74. In 2005, Lao PDR had an estimated per capita income of \$460, below the average of \$510 in developing East Asia. In 2004, 71 percent of its population lived on less than \$2 a day, and 23 percent on less than \$1 a day.³⁴

Figure 5. GDP Growth 2000-2007³⁵



Source: Lao authorities and staff estimates, projection for 2007.

75. In-country regional disparities have narrowed, but poverty remains defined by geographical, occupational and sociocultural features. Poverty is concentrated in the countryside, with agriculture still employing 77% of the labor force mainly for subsistence purposes. Disparities also continue between areas with and without access to roads and between the wealthier south and the poorer center and the north.³⁶ Minority groups form one third of the population, but they account for half of the poor. Provinces do not show too large a difference in human development. In Champasak and Attapeu (where BCI pilot site is located), and other provinces on the East-West Economic Corridor, the Human Development Index (HDI) ranges from 0.458 to 0.575 relative to the highest level of 0.652 in Vientiane (Table 4).

³² WB. 2007. *Lao PDR Economic Monitor*. Vientiane.

³³ WB. 2006. *Lao PDR Poverty Assessment Report*. Vientiane, 2.

³⁴ WB. 2007. *Lao PDR Economic Monitor*. Vientiane.

³⁵ Ibid, 7.

³⁶ Committee for Planning and Investment, National Statistics Centre & UNDP. 2006. *International Trade and Human Development Lao PDR 2006. National Human Development Report*. Vientiane, 6, 70.

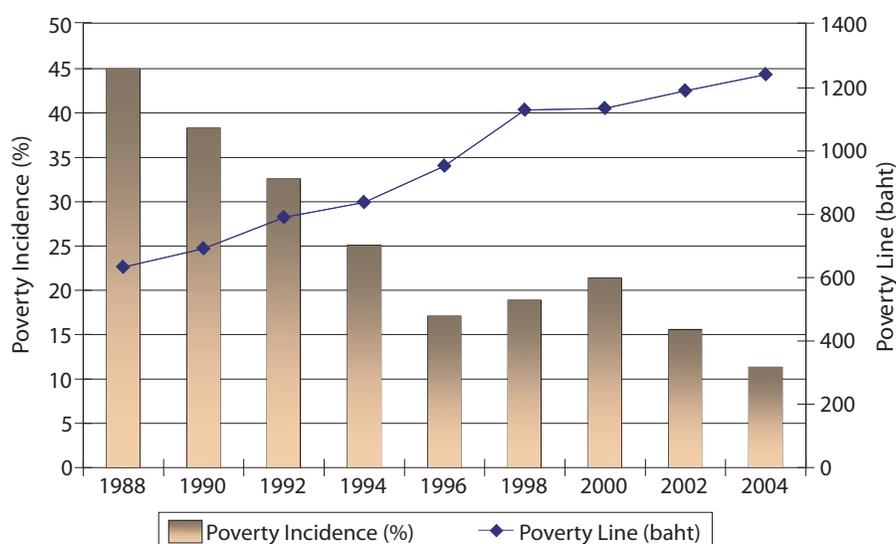
Table 4. Provincial HDI Calculations 2002³⁷

Indicator/ provinces	Life Expectancy at Birth (Years)	Adult Literacy Rate, Age 15+ Years (%)	Combined Gross Enrolment Ratio for Primary and Secondary Education (%)	Private Consumption, Investment and Government Expenditure per Capita (PPP \$)	Human Development Index (HDI)
Vientiane Capital	63	90.2	55.3	2,516	0.652
Champasak	59	83.0	47.1	1,469	0.575
Attapeu	57	73.2	40.8	1,290	0.528
Savannakhet	59	64.1	43.8	1,148	0.516
Sekong	57	66.6	41.9	1,143	0.508
Saravanh	59	47.1	38.9	889	0.458

Note: The HDI calculations and ranking are first estimates.

4. Thailand

76. Thailand has achieved impressive results in poverty reduction. In the 2000-2004 recovery period after the Asian crisis, with real GDP growth averaging 5% per annum, the national poverty headcount ratio almost halved from 21.3% to 11.25% (Figure 6), and the number of people living in absolute poverty dropped from about 13 million in 2000 to 7 million people in 2004. If the relatively lower threshold of the international poverty line of US \$1 a day (at 1993 PPP) is applied, a drop of 67% in poverty headcount can be observed, from 5.2 million people living in poverty in 2000 to 1.7 million in 2005.

Figure 6. Poverty Incidence and Official Poverty Line in Thailand 1988-2004³⁸

³⁷ Committee for Planning and Investment, National Statistics Centre & UNDP. 2006. *International Trade and Human Development Lao PDR 2006. National Human Development Report*. Vientiane, 12.

³⁸ NESDB. 2006. *Poverty Alleviation Initiatives: Thailand Experience*. Presentation at the Seminar and Study Visit Program on Rural Poverty Alleviation, 3-14 July 2006, 23.

77. In Thailand, like in the rest of the GMS, poverty has been a rural phenomenon, with a majority of the poor (87% in 2004) concentrated in the countryside and working in agriculture. As the economy grew, reduction of poverty has been greater in Bangkok and its vicinities, followed by the central region, south, north and the northeast.³⁹

5. Viet Nam

78. The pace of poverty reduction in the 1990s in Viet Nam has been one of the most rapid in the entire East Asia and the Pacific region. Poverty incidence declined by more than 20% from 58% in 1993 to 27.8% in 1996, and reached an estimated 24.1% in 2004 –equal to more than halving the number of poor households in the country.⁴⁰ According to Viet Nam's Ministry of Labor, Invalid and Social Affairs (MOLISA), poverty incidence will be further reduced to 15% by the end of 2007.⁴¹

79. Progress has also been made in enhancing human development. Viet Nam is on track to achieve most of its MDGs: enrolment in primary schools and access to clean water has increased, infant and maternal mortality rates have fallen dramatically, and malnutrition among children reduced.⁴² Nonetheless Viet Nam's living standards remain low. In 2004, 1.42 million households were considered poor and many more –estimated at 5-10% of the total population– have average per capita income just above the poverty line leaving them vulnerable to external shocks such as diseases, bad harvests, and investment losses.⁴³

D. Gender

80. In the GMS, disparities between men and women in terms of their economic opportunities and access to health and education still prevail. As Table 5 illustrates, these gaps have narrowed significantly over the last years. In all countries, UNDP's Gender Development Index (GDI) is almost the same as the broader Human Development Index (HDI). In regard to individual index components, all countries show a higher life expectancy for women, whereas literacy and school enrolment rates lag behind for women, particularly in Lao PDR and Cambodia.



Lahu women concerned about family and health

³⁹ NESDB & WB. 2006. *Thailand Country Development Partnership on Poverty Analysis and Monitoring. Phase II November 2003-December 2005*. Monitoring Report. Bangkok, 5.

⁴⁰ ADB. 2007. *Asia Development Bank & Viet Nam. A Fact Sheet*. Manila.

⁴¹ WB. 2006. *Vietnam: Aiming High. Vietnam Development Report 2007*. Hanoi, 20.

⁴² Socialist Republic of Viet Nam. 2005. *Achieving the Millennium Development Goals*. Hanoi.

⁴³ Data from MOLISA as in footnote 42.

81. These findings are directly related to the economic structures of the GMS countries. In predominantly rural economies, women's opportunities are considerably lower, as they tend to dominate the agricultural work force and the informal economy, whereas men are able to seek better opportunities in the urban manufacturing and service sectors. It has been argued that women in the GMS have been left behind in sharing the benefits of regional economic integration and globalization, or even worse, have been negatively impacted by it. This includes the exploitation of women's cheap labor, the intensified commoditization of women resulting in trafficking in women and children for labor and sexual purposes, and the worsening poverty which affects women most, considering their already vulnerable situation.

Table 5. Gender Development Index in GMS: A Measure of Gender Disparity

Country	GDI as % of HDI	Life expectancy at birth (years) 2005 (Female as % male)	Adult literacy rate (% ages 15 and older) 2005 (Female as % male)	Combined gross enrolment ratio 2005 (Female as % male)
Cambodia	99.3	109.8	75.6	86.6
PR China	99.8	104.7	91.0	98.6
Lao PDR	98.7	104.2	79.1	83.7
Thailand	99.8	114.5	95.4	101.0
Viet Nam	99.8	105.3	92.5	93.5

Source: UNDP Human Development Statistics.⁴⁴

82. While there is ample evidence that these phenomena have contributed to increased vulnerabilities among the women and an increasing feminization of poverty, they have to be juxtaposed with the various spillovers of economic growth and its enhanced employment opportunities. The economic development in some countries such as Thailand, China and Vietnam has probably improved the situation of women although a large number of them, especially those in the rural areas, remain poor. It also gives many women an opportunity to earn a better income. However, greater economic participation has not clearly led to an improvement in women's livelihoods. In general, women still receive lower pay than men and continue to bear most of the domestic responsibilities, such as household chores and child rearing.

83. This is also reflected in another index, the Gender Empowerment Measure (GEM). It tracks the share of seats in parliament held by women; of female legislators, senior officials and managers. The GEM also measures gender disparity in earned income, reflecting economic independence. It thus indicates whether women take an active part in economic and political life and exposes inequality in opportunities in selected areas. The figures for the GMS differ slightly from the GDI, with Viet Nam having the highest GEM in the region (0.561) followed by China (0.534), Thailand (0.472), and Cambodia (0.377).⁴⁵ This

⁴⁴ UNDP. 2006. Available: <http://hdr.undp.org/en/statistics>.

⁴⁵ No data is available for Lao PDR.

suggests that there is a rough correlation between human development and gender empowerment in the region, with the qualification that women in Viet Nam are sharing more equitably the economic and political gains.

84. Despite the economic progress made and the development of legal frameworks on gender equality established in these countries overall, women in the Mekong Region remain more disadvantaged than men in terms of their access to education and social benefits. Women in rural areas, in particular, remain marginalized, due to poverty and disparities in economic and social development, but also because of the increasing degradation of their natural surroundings.

E. Environment, Livelihoods and Vulnerability

85. Human wellbeing is inextricably linked to natural ecosystems through the goods and services they provide. Environmental degradation such as air and water pollution, deforestation, soil erosion, and biodiversity loss have negatively affected people's health, livelihood, and security, and compromise the potential for sustained growth and its benefits for future generations. Recent trends such as increasing regional integration and globalization have introduced new challenges with wide ranging implications – not least for the environment.

86. Natural resource dependence is especially strong in the GMS, with its predominantly agrarian populations and economies. Only a fine line exists between using environmental resources to meet people's needs, and damaging or overexploiting those resources to the point where people's lives, health or wellbeing are put at risk. Examples include the impacts of declining water quantity and quality, as well as the loss of riparian habitat and diversity. Persistent cases of food insecurity and chronic malnutrition are often aggravated by environmentally determined health hazards such as dengue, malaria and parasites.

Table 6. Environmental Vulnerability in GMS

Country	EVI	Data (%)	Status
Cambodia	270	88	Vulnerable
PR China	360	94	Highly Vulnerable
Lao PDR	243	80	At Risk
Myanmar	270	92	Vulnerable
Thailand	308	100	Vulnerable
Viet Nam	357	88	Highly Vulnerable

Source: UNEP Environmental Vulnerability Index.⁴⁶

⁴⁶ UNEP. 2007. *Environmental Vulnerability Index Country Profiles*. Available: http://www.vulnerabilityindex.net/EVI_Country_Profiles.htm.

87. One measure that captures this fine line is the Environment Vulnerability Index (EVI), developed by UNEP. This index, which combines some 50 indicators has been designed to reflect the extent to which the natural environment of a country is prone to damage and degradation. Table 6 shows the results for the GMS countries, a higher figure indicating greater vulnerability. The table also shows the data availability underlying the indices. All the GMS countries except Lao PDR are at least vulnerable.

88. Whereas the EVI only captures environmental vulnerability, other indicators target particular interfaces between natural resources and human welfare. This is the case for various food security measures. While significant progress has been made in the GMS countries to reduce undernourishment and other manifestations of food insecurity, large number of people still lack access to adequate food resources. This includes even middle-income economies such as Thailand and Vietnam.

Table 7. Food Insecurity in the GMS

Country	Proportion of Undernourished in Total Population (% , 1990-92)	Proportion of Undernourished in Total Population (% , 2001-03)
Cambodia	43	33
PR China	16	12
Lao PDR	29	21
Myanmar	10	5
Thailand	30	21
Viet Nam	31	17

Source: The State of Food Insecurity in the World, FAO 2006.⁴⁷

89. Often, the poorer the people, the more closely their welfare is linked to the condition of the natural resources they rely on. Typically, poorer communities, especially, those in rural upland and marginalized areas, who traditionally depend on the use of natural resource for their basic livelihood, carry the heaviest burden from this unprecedented over-exploitation and rapid destruction of natural resources. Moreover, in recent years, some of these areas have witnessed an increase in migration into fragile ecosystems from outsiders in search of better opportunities. The ensuing competition for scarce water resources, land degradation, over-grazing, rapid industrialization, uncontrolled large-scale logging has led in the gradual erosion of traditional system of trust, authority and legitimacy in the management of natural resource – a trend which has in turn lead to their further marginalization. In China, for example, a very high level of overlap has been found between the vulnerability of land to degradation and the location of the rural poor. Similar connections have been found in Cambodia, Lao PDR and Viet Nam.

90. The BCI pilot sites are located in fragile ecosystem across the mountainous border areas, that have remained underdeveloped in the midst of overall regional growth due to a confluence of geographical, cultural (social and gender exclusion), environmental and economic factors. In all sites, studies invariably

⁴⁷ FAO. 2006. *The State of Food Insecurity in the World 2006*. Rome, 32. Available: http://www.fao.org/sof/sofi/index_en.htm.

point to the extreme vulnerability of population — often ethnic minorities and their high degree of dependency on agriculture and forest resources for their basic livelihoods. This high dependence on natural resources is attributed to the fact that the ethnic minorities, characteristically live in remote upland areas with limited access to education and health services, and economic opportunities. They lack adequate security over their property rights or access to land and face increasing pressures resulting from internal migration and competition for scarce resources.

91. In the context of the GMS environment and livelihood strategies, the program is striving to ensure that the sustainable environment and livelihood linkage is recognized and it is implementing activities that aim at assisting Governments and the private sector to improve people's lives and maintain environmental quality. In this regard, the program has been undertaking consultations in an effort to build ownership of the process and working with the targeted BCI communities, relevant authorities and executing agencies and promote economic growth that at the same time takes into account the critical links between environmental conservation and sustainable livelihood if one is to reduce poverty in the BCI corridors.



Forest-based livelihoods, markets and access in Lao PDR and Viet Nam

III. BCI ACTION PLAN 2005 AND IMPLEMENTATION STATUS DECEMBER 2007

92. At the First Environment Ministers' Meeting (EMM) in Shanghai in May 2005, the ADB submitted a BCI Action Plan (2005 – 2008)⁴⁸ for endorsement. This Action Plan was endorsed and ADB RETA 6289 was officially launched in January 2006.

93. Signing of Letters of Agreement (LoA) pertaining to BCI implementation by ADB and the partners (state and non-state) took place between June and December 2006. Field activity implementation effectively began towards end of 2006 and has continued into 2007. Due to the delay in entering into LoAs and subsequent start of field activities, phase I implementation period, initially targeted for January 2006 – December 2008, has received a budget neutral extension by ADB up to December 2009, so as to provide the full three year framework of implementation initially envisaged.

94. This section reflects implementation status as of December 2007 in the BCI pilot sites against the GMS BCI Action Plan of 2005.

A. Poverty Reduction

95. The BCI Action Plan of 2005 focuses on poverty reduction efforts to assess the socioeconomic situation in the pilot sites and offer interventions with the aim of contributing to poverty reduction and sustainable development planning of the pilot corridors.

96. It was planned to promote livelihood improvement interventions (for example, access to secure land tenure, community forestry, plantations, local primary processing of wood and nonwood products, ecological farming and ecotourism). In particular, BCI aims at providing incentives, funding, and technical assistance enabling local people to grow trees of their choice in their homestead plantations and community forests for subsistence needs as well as for fuelwood consumption and construction. Local people are to receive cash benefits for labor provided for carrying out detailed survey and demarcation of selected priority biodiversity corridors; participation in restoration, management, and maintenance work; and from sustainable harvesting of fruits, timber, or collection of fuelwood and nonwood products. Small loan schemes for micro and small enterprises are to be encouraged for local (wood and nonwood) primary processing to emerge or existing ones to become vibrant. The establishment of management regimes in the corridors is intended to create jobs for local people, such as carrying out biodiversity inventories and surveys and monitoring and protection of forests. Moreover, employment opportunities are expected to emerge in ecotourism and educational and cultural tourism networks as these services gain ground. In particular, the following activities are mentioned in the BCI Action Plan for phase I:

⁴⁸ ADB. 2005. *GMS Biodiversity Conservation Corridors Initiative. Strategic Framework and Technical Assessment. Annex 2. Action Plan 2005-2008.*

BCI component	Key activities
1. Poverty reduction	1.1 Market analysis and linkages 1.2 Socioeconomic and alternative livelihood studies in corridors 1.3 Community-based forest and protected area management 1.4 Sustainable agricultural practices and appropriate technology 1.5 Village development funds and small grant facilities 1.6 Exchange and learning between communities 1.7 Incentive and compensation systems for conservation 1.8 Support for small-scale infrastructure

97. **Implementation status:** By December 2007, updating of socioeconomic data and establishment of baseline income levels and main livelihood sources have been completed in all six BCI pilot sites. In phase I of its implementation, BCI is aiming to reach approximately an estimated 230,000 beneficiaries across the pilot sites in the GMS. It is anticipated that the number of targeted people will subsequently increase substantially in phases II and III of implementation.

98. In the **Cardamom Mountains** in Cambodia, ecotourism has been identified as one potential area of bringing private investments and creating livelihood opportunities. By December 2007, Chi Phat commune, Koh Kong province, Cambodia has been designated as the focal point for community-based ecotourism (CBET) development in the southern coastal Cardamoms. Wildlife Alliance (formerly operating as WildAid) has been working with the district, commune and village councils to establish community ecotourism groups for CBET development involving the community in the development of ecotourism and assessing the impact of ecotourism. The CBET process has included an assessment of the potential market for alternative livelihood. Conservation agreements that promote poverty reduction as a means of securing the protection of local biodiversity values in the five communes of the *Thma Bang* district have been



Community-based ecotourism planning, Chi Phat

signed with Tatai Leu, Russei Chrum (Stueng Tatai valley) and Thma Doun Pov, Chumnoab and Prolay (Areng valley) communes. In *Phnom Samkos Wildlife Sanctuary* and *Phnom Aural Wildlife Sanctuary*, the Centre Development Agricole Cambodge (CEDAC) has commenced agricultural assessments in pilot communities for the diversification of livelihood strategies and improvement of farming techniques.

99. In the **Eastern Plains, Mondulkiri** livelihood assessments have been conducted in four communes (Sok San, Chong Plah, Pu Chrey, and Nang Khi Loek) and projects promoting production and branding of honey, ecotourism and agricultural products have been identified and under underway. Small-scale infrastructure activities (such as construction of wells and community meeting houses) are being linked



Scenic waterfall, Mondulkiri

100. In **Xishuangbanna**, six pilot villages have been identified for detailed focus: two on the eastern side of the corridor near Nabanhe Nature Reserve, two on the western side near Mangao Subreserve, and two in the Mengla-Shangyong corridor. Specific activities are for: testing livelihood interventions, establishment of revolving funds, and creating conservation collaboration with villages that are to undertake ecosystem restoration work. Many ethnic minority villagers have shown an interest in receiving support for growing traditional tea trees, local fast growing trees indigenous to the area, such as *Alnus nepalensis*, as well as walnut, chestnut, camphor, southwest birch, sweet scented ormanthus and other commercial tree species. The villagers in Mengla to Shangyong wish to plant *Cassia siamea Lam* (Siamese Senna) as fencing for their land to keep elephants away. In the Lahu villages in Nabanhe, people would like to see access roads improved so that vendors can come and collect the produce sold by the village. One of the mechanisms to be used for livelihood improvements is village “revolving fund”, which is a welcome idea as they can use it for medical emergencies, repair of their houses and pay back at a slow and convenient pace. In some villages, they wish to use the revolving fund to promote small-scale livestock holding (e.g. pigs and chicken). Market linkages and access will be explored in the process of promoting livelihood interventions. Biogas and solar panels are well known in Yunnan and the project will explore possibilities of further promotion.

to livelihood projects (ecotourism), as well as providing support to people’s priorities. Two community protected areas (CPA) have been established in Khneng village (Chong Plah commune) and in Sre Thom village (Sok San commune) to give communities a say in how they manage the forest within the overall confines of established sustainable management practices. BCI is providing assistance for inclusion of community natural resource management (NRM) issues into the 5-year Commune Development Plan (CDP) and annual Commune Investment Plan (CIP).



Revolving fund discussion in Jingpo village, Xishuangbanna

101. In Xe Pian – Dong Hua Sao, BCI investments, which were identified on the basis of village level priorities, were closely coordinated with SUFORD (Sustainable Forestry and Rural Development) project and GAPE (Global Alliance for Poverty and Environment) to avoid duplication. The BCI is supporting chicken raising, tree nurseries, provision of fruit tree (such as rambutan, tamarind, lemon, mango and longan) and agarwood saplings, and carrying out enrichment planting using *Pterocarpus macrocapus*, *Afxylia xylocapa*, *Xylia xylocapa*, *Anisoptera robusta*, *Dalbergia citrata* and *Largerstomia robusta* etc. An ongoing market



Construction of NTFP drying oven in Ban Nam Oum, Xe Pian

analysis is expected to provide appropriate intervention suggestions for improving processing and increasing current income levels by value addition. An oven for drying NTFPs has been constructed in Ban Nom Oum and training has been provided on cardamom drying and will be followed up with information on marketing opportunities, linkages and products.

102. Selected villages have set up village revolving funds with their own village accounts and have received seed capital. They can also use these accounts for depositing savings as well as deposit revenue earned from income generating activities. The villagers are willing to make contributions towards a common village fund, and suggested a 70:30 ratio (i.e. 70% of gross income generated from investment to be retained by the family and 30% to be paid towards village income deposited back in the village revolving fund account) as acceptable. Furthermore, support is being provided for small scale infrastructure, such as improvement of a clinic center, primary school, school library, installation of water wells, and spot improvement of village access roads.



Nursery at Ban Huoyko

103. A nursery has been established at Ban Houyko with a capacity of 50,000 seedlings. Villagers are paid wages to produce saplings; rattan seedlings produced by them in the nursery can be used by the villagers or sold for cash. The village also receives in the common fund some amounts from nursery revenue. The project has provided training on how to pretreat and produce rattan seedlings. A consultant has been engaged for habitat/wildlife survey and this work will be supported by participatory engagement of villagers on a wage basis. The project is cooperating with SUFORD to produce additional seedlings for supplying during planting season.

104. In the **Tenasserim**, four income generating village nurseries have been established for growing



Check dam construction in the Tenasserim

saplings for forest restoration and fruit tree seedlings for sale. The saplings for forest restoration are sold back to the project. Studies on forestry benefits from non timber forest products (NTFP) contributing to the livelihood improvement of the community and establishment of village funds for development and poverty reduction will be carried out. In 2007, some 8,500 days have been generated as paid labor at Baht 300/person day for land preparation, planting for ecosystem restoration, and construction of check dams.

105. In **Quang Nam and Quang Tri**, NTFP surveys have been carried out to identify market constraints and recommend new activities. Community forest management (CFM) also known as community based sustainable forest management (SFM) is being considered as a tool for poverty alleviation. In Quang Tri, approximately 161 ha are being planted for supporting livelihood improvements in and around homesteads in the communes, while in Quang Nam 60 ha will be restored using native species. Two commune development funds (CDF) are being established: one in Ta Bhing commune which has already received \$16,000 as start up capital of the CDF.

B. Harmonized Land Management and Governance Regimes

106. Under BCI, spatial landuse planning process is being encouraged using participatory approaches. This requires socioeconomic surveys, including the delineation of environmentally sensitive areas and appropriate safeguards, biological surveys, clarification of current demarcations of protected areas, and an overview spatial map of current land-use patterns. Possible connecting corridors and zones are to be identified and agreements made with all stakeholders (institutions, communities, and households) on appropriate landuse arrangements and delineation of sustainable use areas. Such agreements recognized by government are critical for identifying and mitigating land and resource use conflicts prior to making investment decisions. It is important to create enabling conditions for integrating local livelihoods with local and market-oriented development needs. The BCI Action Plan identified the following activities to be supported in phase I:

BCI component	Key activities
2. Harmonized land management and governance regimes	2.1 Forest protection management and planning.
	2.2 Landscape-level analysis of existing and proposed developments
	2.3 Preparing detailed landuse and zoning plans at the landscape level
	2.4 Participatory demarcation of protected areas and corridor zones
	2.5 Updating and maintenance of land cover data and classification
	2.6 Feasibility studies into ecotourism and agricultural tourism
	2.7 Legal framework for corridors
	2.8 Participatory village level planning and secure land allocation

107. **Implementation status:** In all the BCI sites, corridor segments have been identified and preliminary surveys are underway. Detailed maps of corridor design in the BCI pilot sites have been provided in the annexes 1-1 to 1-6 of this report.

108. **In the Cardamom Mountains,** a forest management plan for the Southern Cardamoms has been developed by the Forestry Administration and is in the final stage of consultation. Reports on local land use and attitudes to conservation have been completed and monitoring protocols for globally important species in the Thma Bang and Areng valley areas developed. Community-based rangers and wardens have been recruited and are conducting extensive patrols within their communes throughout wetland and forested areas. The participatory land use planning process in Thma Dan Poev and Prolay communes has been completed and draft maps produced. In Phnom Samkos and Phnom Aural Wildlife Sanctuaries, participatory zoning of Community Protected Areas (CPAs) has been completed and a total of 27 new CPAs have been established.

109. **In the Eastern Plains, Mondulkiri,** participatory land use planning (PLUP) is being implemented in several villages of Pu Chrey commune, and the O Rona village has submitted a draft PLUP agreement (land use zones, regulations, internal rules, membership) to the Provincial Department of Environment



Participatory land use planning using 3D model in Pu Chrey commune

for review. The project assisted in developing a draft community protected forest agreement for Andoung Kraloeng in consultation with the Forestry Administration and the draft is now under legal review. Community Protected Areas (CPAs) in Phnom Prich Wildlife Sanctuary are being set aside for the community to manage sustainably. Following detailed consultations with the community and government at commune and district level, boundaries have been marked and regulations and agreements drafted for the two

CPAs. Regulations pertaining to CPA operations were signed by the Provincial Department of Environment and are awaiting approval by the Department of Nature Conservation and Protection in MoE and the Provincial Governor. The BCI project is also assisting the indigenous land registration group by sharing experience, providing training, supporting study tours to the target areas, and assisting in titling of land.

110. BCI implementers are well integrated in the provincial institutional system and assist the Governor's Office on various planning matters, such as setting clear zoning of economic investment areas, protected forest and protected areas and dissemination of zoning maps to all stakeholders and offices to guide decision-making and help avoid conflict. In June 2007, a tripartite Memorandum of Agreement (MoA) between the Executive Committee of the Provincial Rural Development Committee (PRDC), WWF, and WCS was signed to mainstream biodiversity conservation and environmental management into the Mondulkiri province's development planning institutions, mechanisms, and processes. This has led to *integration and mainstreaming* of natural resource management and biodiversity conservation activities into the 5-year CDP (vision, strategies and activities) and 2008 CIP process (investment programs/projects) of the 11 communes in four target districts of Mondulkiri province.

111. In **Xishuangbanna**, land use and land cover mapping in the corridor was done based on satellite images, ground truthing, and village interviews. A land use planning report has been submitted to the Prefecture Government. Markers for corridor boundaries (plates and posts) have been designed to show the corridor boundary. Furthermore, information boards will be put up in demonstration and extension villages.

112. In **Xepian-Dong Hua Sao**, land use maps are available and a tentative zoning, showing current land use patterns is available. But some of the village boundaries are disputed and these require rectification, which will be undertaken in 2008.

113. In the **Tenasserim**, review of land use, land evaluation and land changes using GIS has been accomplished in four clusters, and a study on ecological and agricultural tourism development possibilities will be undertaken in 2008. The possibility of providing access to land in certain villages close to the border will be explored in collaboration with other government agencies.

114. In **Quang Nam and Quang Tri**, land use planning and forest land allocation to households/communities are ongoing, and land use certificates will be issued to households in the BCI pilot site by DONRE of the respective province.

C. Restoring Ecosystem Connectivity

115. Under the BCI, ecosystem restoration to establish connectivity and sustainable use areas is to be undertaken and evaluated. This process requires preparation of rehabilitation strategies. Planting of native species may be required to create linear corridors between some core areas. Areas for sustainable use



Maintaining forest connectivity, Xishuangbanna, Yunnan

and protection will need to be delineated within the buffer or transition zones around protected areas. In BCI sites, where natural forest cover is intact, measures are to be undertaken to provide ecosystem protection (forest rangers, community based patrols).

116. Some transnational roads in the GMS Economic Corridors bisect key PA complexes and biodiversity corridors. Design adjustments may be considered (as seen in the photo from Xishuangbanna) if the road improvements are still at a planning stage so that realignments to avoid core areas and installing under- or overpasses can be considered or feasibility of detours planned. Where the road has already been built, threat mitigation measures need to be considered. Specific activities in the BCI Action Plan for phase I were:

BCI component	Key activities
3. Restored ecosystem connectivity	3.1 Forest restoration and protection in corridors 3.2 Enforcement and incentive systems 3.3 Limitation and mitigation of infrastructure impacts 3.4 Identification of critical corridor areas 3.5 Evaluation of the status of genetic resources. 3.6 Monitoring impact of interventions and evaluation of corridor 3.7 Preparation of an action plan to scale-up corridor implementation 3.8 Surveys of globally threatened plant and animal species

117. **Implementation status:** In the **Cardamom Mountains**, the status distribution and conservation needs of Asian Elephants is being defined and efforts are underway to restore the program on Monitoring of Illegal Killing of Elephants (MIKE) under the Convention on International Trade in Endangered Species (CITES).

118. A large-scale fecal-DNA based elephant survey is being conducted to establish a precise geo-spatial database on sex and family structure of elephant groups and other information on an elephant's



Elephant dung sampling for DNA analysis

whereabouts at the time of dung sample collection. This information can then be used as a platform for future monitoring work and provide an accurate population dataset and quantified identification of elephant migration routes for the whole of southwest Cambodia.

119. In the southern Cardamoms, on-the-ground activities of rangers is supported by constant interactions with local, provincial and national government in order to elicit active government participation in identifying and resolving problems

that obstruct good protected area management. The result of this combined effort is two-fold: 1) a measurable decline in illegal activities, destroying wildlife and the forest; and 2) a continuous strengthening of law enforcement capacity. The presence of technical assistance has drastically reduced the number of land encroachment and illegal logging by staying vigilant and assuring good governance (fines diverted, transport evidence returned to violators).



Elephants in the Cardamom Mountains

120. A system of effective response to human elephant conflict (HEC) has also been established throughout the Cardamoms Biodiversity Corridor and adjoining areas. The data has been updated with



Ranger on patrol in the Cardamoms

all incidents of HEC up until March 2007. Community rangers and wardens are actively patrolling the forest to ensure protection of the endangered Asian Arowana, the Asian elephant, and the Siamese crocodile. The ecosystem connectivity of the Cardamom Mountains is monitored and enforced through on-the-ground ranger patrols, aerial flights and remote sensing to support ranger patrolling. Through aerial flights, forest cover is monitored and exact UTM locations of forest fires and illegal logging are listed and provided to the ground patrols for rapid follow-up action. Wildlife is monitored on an

on-going basis through camera traps and direct observation of wildlife signs by rangers and through biodiversity surveys.

121. In the **Eastern Plains, Mondulkiri**, primary and secondary biological and ecological data has been collected, compiled, and drafting is underway with maps identifying key biodiversity areas in the Eastern Plains landscape and listing of key species. Overall management system has been enhanced, ranger team activity increased, local partner NGOs engaged, and threat reduction is evident from analysis of landuse change trends, detection of illegal activities and documented increases in key species.

122. In **Xishuangbanna**, weak nodes of forest patches have been identified for forest restoration in the corridor. Nurseries for seedling production will be established with participation of local villagers; seedlings of indigenous tree species will be procured and transplanted in several land patches totalling about 200 ha. Additionally, 60 ha of land with indigenous agro-biodiversity species will be established at each demonstration village and a total of 500 ha for community conservation and restoration. Co-management agreements will be formulated with local villages on community biodiversity conservation.



Identifying patches requiring forest restoration in Xishuangbanna

In the adjacent Mensong and Bulangshan areas in Menghai county, a study shows primary forest dominated with *Alcimandra cathcartii*, *Parakmeria yunnanensis* and *Mastixia euonymoides*, which is absent in Xishuangbanna National Nature Reserve complex. However, a new road, which goes through the margin of the primary forest in Mensong district, has just been constructed. On the east side of the road, all forests were replaced by new rubber plantations, and on the west side of the road, the primary forests still remain. The Xishuangbanna Government has indicated strong support to protect the typical vegetation type and original

tropical forest of the Mensong area. BCI will submit an official request to the Xishuangbanna government to establish a new prefectural level nature reserve in this area.

123. In **Xe Pian – Dong Hua Sao**, distinction has now been made between “core” corridor that needs protection and sustainable use area; a green belt connecting Dong Hua Sao side with Xepian has



Signage at biodiversity corridor entry in Xe Pian – Dong Hua Sao

been proposed as a “pilot” and restoration areas are to be clearly identified; currently, a potential area of 1,147 ha has been identified for restoration. Villagers have already started seed collection for restoration and more than 100 kilograms of seeds have been collected representing at least 13 diverse indigenous species.

124. At the entrance to the main biodiversity corridor area along the road number 14A, and at the border of Champasak and Attapeu, signboards have been posted with the text: “You are entering the

biodiversity corridor...” and “You are now leaving the biodiversity corridor”. Forest volunteers have been identified to work as village-based patrolling units in collaboration with Xe Pian and Dong Hua Sao Protected Area staff and their terms of reference have been worked out. The BCI Project will provide uniforms and it is planned that village based patrols will be active.

125. The construction of check dams was undertaken in the BCI pilot site to increase water retention in the head watershed areas and provide or increase water supply to the downstream watershed as well as minimize risks of forest fire. Communities have participated in the construction of 510 check dams in the area of Tanaosri, Suan Phueng, and Sai Yok National Park Clusters.

126. The target for forest restoration with indigenous species in the identified degraded areas (gaps) is set at approximately 200 ha. In the Sai Yok Cluster, villagers have planted 40 ha for restoration using local species raised at the village nurseries.



Village Chairperson explaining restoration strategy



Forest Restoration in the Sai Yok Cluster

127. In **Quang Nam**, potential corridor sites have been identified and a forest landscape restoration plan finalized with GIS-based fragmentation analysis, nursery assessment, site selection and site-species mapping.

D. Capacity Building

128. Institutional and human capacity for managing biodiversity corridors is an essential requirement. Local people and officials need capacity building for biodiversity conservation planning, management, and monitoring. Weak capacity has been identified as an overarching threat. It has been demonstrated worldwide that education, knowledge, and skills can provide a sound basis for people to be proactive in biodiversity conservation and sustainable management. The key BCI Action Plan activities (2005) were:

BCI component	Key activities
4. Capacity building	<p>4.1 Community training in market linkages, sustainable use, protection, and collaborative management</p> <p>4.2 Training and exchanges for government staff in corridor and protected area management</p> <p>4.3 Education and public awareness</p>

129. The BCI approach puts special emphasis on knowledge sharing and skills transfer. It fosters special exchange visits of implementers in the GMS countries to learn and share information and experience from various pilot sites and corridors. In particular, regional knowledge and skill transfers are to be promoted between villages and communities, sites and landscapes, and countries. This will be particularly important in transboundary situations, where joint seminars and experiential learning can lead to better understanding and enforcement, and eventually to conducting joint patrols in the true sense of a transboundary undertaking.

130. **Implementation status:** In the **southern Cardamoms**, 60 rangers receive daily on-the-ground training through Wildlife Alliance. Strengthening ranger patrolling capacity is the foremost important measure in monitoring, responding and preventing illegal and destructive use of natural resources. Moreover, training has been provided on introduction of new crops and livelihood strategies to 94 key farmers in 20 villages.

131. In the **Eastern Plains, Mondulkiri**, capacity building assistance has been provided on use of mapping aids and relevant laws to 20 CPA committee members and 86 community representatives. In addition, CPA Committee members and government officials (21 men and three women) were trained on preparation of CPA agreement, financial management and environmental issues, and 25 villagers and 10 village chiefs/subvillage chiefs in decision making and resource use planning. Capacity of villagers to undertake participatory land use planning was improved (six men and three women in Pu Chrey commune) and CPA committees (21 men and three women in Chong Plah and Sok San communes) to develop regulations for natural resource management. Awareness raising on indigenous land management rights has been conducted in Sre Khtum commune (200 family representatives covering a population of approximately 1,000 people) and in Sen Monorom commune (100 family representatives covering a population of about 500 people). A participatory training needs assessment for environmental governance and other subjects has been completed covering 41 officials (31 men and 10 women) and 97 community or NGO members (71, 26) from various levels (Provincial, district, commune levels). Reports in Khmer and English have been prepared.

132. In **Xishuangbanna**, a PRA training workshop was conducted for 20 staff members from participating agencies and 29 local forest guards (patrolling of corridors) were trained in November 2007. Several workshops have been organized for members of the steering committee, leaders from various government bureaus and circulated 10 issues (40 copies per issue) of newsletters (in Chinese) to the corresponding agencies and officials.



Forest guard training in Xishuangbanna

133. In **Xe Pian – Dong Hua Sao**, 29 persons from provincial and district offices have been trained in NTFP marketing analysis, rattan seedling production, participatory assessment of NTFPs, program monitoring and evaluation, facilitation techniques, and biodiversity conservation. Furthermore, 184

villagers (67 females) have been trained in enrichment planting, agroforestry, fruit garden techniques, pre-treatment of rattan seeds, participatory NTFP surveys, seed collection, and native tree seedling production (nursery). Two study tours were undertaken: (i) 5 government officials from district and Xepian National PA went to three provinces to study National Protected Area participatory management; (ii) 21 villagers (seven females) went to Savannakhet to study rattan management and marketing and fisheries co-management in Champasak.

134. In the **Tenasserim**, capacity building has been undertaken for nursery establishment and seedlings treatment at village level. Improving capability of officers from central and regional units through training



Environmental education, Tenasserim

and field studies as well as capacity of the village community with regard to the management of the natural resources in the corridors will be undertaken in 2008.

135. In **Quang Nam and Quang Tri**, CFM and ranger training needs analyses has been conducted and training has been provided to various target groups on: GIS/GPS, ranger support and management, law enforcement, protected area management and planning.

E. Sustainable Financing

136. Under the sustainable financing component of BCI, it was planned in 2005 that funding mechanisms will be identified, which provide resources for PAs and corridors to function in the long term. Apart from recurrent budget support from the GMS countries, areas to be explored included: transfer of payments for environmental services, Clean Development Mechanism (CDM), and the setting up of endowments and contributions from tourism and other natural resource use tax regimes.

BCI component	Key activities
5. Sustainable financing	5.1 Valuation of ecosystem services 5.2 Testing of payment mechanisms for ecosystem services 5.3 Pilot regional funds and funds for specific protected areas 5.4 Identification of mechanisms for sustainable funding of corridors and protected areas

137. **Implementation status:** By December 2007, the EOC has undertaken activities to secure bridging funding for enhancing ongoing interventions and prepared a draft investment framework to cover phases II and III. Preliminary identification of scaling up activities of BCI has been done and steps have been undertaken to link up with development planning pipeline and portfolio investments of ADB supported country partnership strategies of Cambodia, Lao PDR and Viet Nam.

138. In the **Cardamom Mountains**, Conservation International with support from Agence Française de Développement (AFD) are exploring ways and means of establishing a regional fund for the Central Cardamoms Protected Forest (CCPF) in support of its core management costs. Over the next two years this will entail the creation within the FA of a unit with adequate technical and financial resources to supervise the effective protection and management of the CCPF. The Cardamoms endowment project is highlighted on the Asia Debt Capital Management Foundation's (ADMCF) website.⁴⁹ In Phnom Samkos and Phnom Aural WS, an assessment of the ecological services and options for generating income to cover recurring costs has been completed.



Ecotourism potential in Quang Nam

139. In the Eastern Plains, Xishuangbanna, Xepian – Dong Hua Sao, and the Tenasserim, sustainable financing options and modalities, such as payment for ecosystem services (PES), will be explored in 2008 and 2009. In **Xe Pian**, ecotourism prospects would be another potential to explore as Ban Kiet Ngong already has seen a private investor set up a tourist lodge. Ban Nonghin (23 km from Ban Kiet Ngong) at the border of Champasak and Attapeu provinces and on the banks of River Xe Khampho, is another potential site. In **Quang Nam**, PES investigation studies are underway and these will be completed in 2008. In the Dong Nai river basin, BCI partners are pursuing natural resource tax options as one source of financing at the provincial level in Lam Dong.⁵⁰



Community-based ecotourism activities in Ban Kiet Ngong

⁴⁹ Available: www.admcf.org

⁵⁰ This a US Agency for International Development (USAID) funded program implemented by WINROCK International and partners.

F. National activities

140. The BCI national coordination is operating through the national support units (NSUs) within the GMS countries. NSUs coordinate, support, oversee or integrate results from activities such as biodiversity assessments, surveys and studies, ground-truthing, updating of existing inventories, elaboration of biodiversity indicators and impact assessments. In 2005, the following major activities were highlighted in the Action Plan.

BCI component	Key activities
6. National	6.1 Biodiversity surveys and corridor definitions 6.2 Environmental assessments of overall impact of the economic corridors

141. All LoAs with state implementers contain obligations to support putting in place national level policy and regulatory framework recognizing and maintaining biodiversity corridors with provision of fiscal incentives.

142. By December 2007, a draft biodiversity corridor decree has been submitted to MONRE, **Viet Nam** for review and submission to the National assembly together with the draft Biodiversity Law for approval.

143. In Mengla-Shangyong section of the **Xishuangbanna** pilot site in Yunnan, PRC, project management has submitted proposals to the Xishuangbanna Prefecture Government to give the biodiversity corridor special status (e.g. declaring it a Prefecture level nature reserve) so that its strict protection status is given legal recognition. In other GMS countries, results are awaited from corridor design to formulate appropriate national level instruments.

G. Subregional support activities by EOC

144. The following key activities were identified in the BCI Action Plan of 2005 for implementation at a subregional level:

BCI component	Key activities
7. Regional	7.1 Facilitation of transboundary cooperation, exchange, and training 7.2 Ecosystem services valuation and transfer payments 7.3 Monitoring and evaluation, including wildlife trade monitoring 7.4 Database management and accessibility 7.5 Project preparation and investment portfolios in additional sites

145. The GMS Environment Operations Center (EOC), became operational in April 2006 and facilitated securing approval of BCI partner workplans from ADB and preparation of Letters of Agreement for signing by ADB and partners. In its delegated capacity, it plans, facilitates, coordinates and oversees implementation and is responsible for reporting on a six monthly basis to the GMS Working Group on Environment (WGE). In this function, the EOC has tabled transboundary proposals and additional activity requests of BCI partners to the WGE for consideration and endorsement. Two proposals for additional transboundary sites (Cao Bang - Guangxi and Preah Vihear), and a supplementation of poverty - health activities in Viet Nam BCI site have been drafted in collaboration with potential partners. In this context, the EOC provided support in organizing, co-financing, and preparing presentations and draft report for the Biodiversity Forum in Kunming held in October 2007.

146. In November 2007, the EOC has facilitated transboundary meetings between representatives from Guangxi, PRC and Viet Nam to explore possibilities of a new BCI site in the border area. The EOC has also held regional symposia and workshops to facilitate understanding of BCI concept and strategy and identification of biodiversity and socioeconomic indicators for BCI performance assessment.

147. The EOC also supports BCI partners in conducting studies by providing technical assistance or contracting national consultants on their behalf as requested. The BCI Component Task Leader participates in program development activities with BCI partners to scale up BCI activities in phases II and III. The EOC has also procured and provided recent satellite imagery of BCI pilot sites to partners for use in land use and corridor planning. It has also provided GIS training to selected focal persons in each GMS country.

148. The EOC receives progress reports and financial liquidation requests from the partners; it checks, verifies, validates and then endorses for replenishment of financial resources to partners. The EOC is required to use standard operating procedures and adhere to program implementation and financial guidelines and regulations of the ADB. In this context, the EOC has provided its BCI partners with orientation and training on procedures and documentation of financial submissions for liquidation.

149. The EOC has also undertaken six monthly monitoring and evaluation visits to the BCI pilot sites and provided feedback in the form of aide memoire or debriefing notes to encourage adjustments in implementation, if these were found to be necessary. In 2008, the EOC is planning to undertake a review of implementation with partners to gauge and calibrate achievements targeted for 2008 and 2009.

150. Whenever required and requested, the EOC has assisted BCI implementers in facilitating implementation and winding up financial matters after closure of or phasing out of projects (e.g. regional BCI subproject on Safeguarding Biodiversity for Poverty Reduction in Cambodia, Lao PDR, and Viet Nam implemented by IUCN).⁵¹ The EOC has held ad hoc meetings with BCI partners, either in Bangkok or at national level to clarify matters and provide guidance.

⁵¹ Funding for this sub-project was from the Poverty Reduction and Cooperation Fund (PRF), which finished on 31 December 2007.

IV. CHALLENGES

151. While the BCI implementation is proceeding as planned and commitment of implementing agencies (state and non state) as well as beneficiaries in villages, communes, tambons, and townships are supportive of BCI activities, challenges to ecosystem integrity are emerging that will require attention and resolution. Most of these challenges are of developmental nature, the impact of which might negatively affect ecosystem integrity and health. Government authorities need to approach these issues in a holistic manner and consider the valuation of ecosystem services and biodiversity as an integral part of the equation in the planning process. Benefits from extractive industries and infrastructure development currently, ongoing or in the pipeline, need to be weighed against losses to ecosystem services, biodiversity, and loss of natural resource-based livelihoods.

152. In the **Cardamom Mountains**, Cambodia, one of the biggest challenges in maintaining the integrity of the Central Cardamom Mountains' high biodiversity value and wilderness character is the large number of hydropower dams planned or currently under exploration. There is concern about five hydropower dams being planned in the Central Cardamom Protected Forest (CCPF), of which the dam having the largest impact is sited in the Areng valley. Three communes of the currently five receiving inputs from the BCI project will be inundated, if the dam (180 m high dam wall) is built. It is expected to displace some 1,300 people and inundate over 21,000 ha of the best agricultural land. Many of these indigenous peoples only recently returned to their traditional lands after being displaced during the years of civil war. Meetings have been held with the company undertaking an environmental impact assessment (EIA). This report will be submitted to MoE for review.

153. Notwithstanding the final outcome and government decision to proceed with the construction of the hydropower dams, opportunities arise in the form of payment for ecosystem services (PES), whereby the hydropower operators could consider payment of a percentage of the revenue towards watershed management and channel these funds through the communities. This modality will facilitate the communities' use of these funds to improve livelihoods and maintain forest cover. The BCI project will, through its partners, pursue establishment of PES schemes in the Cardamom Mountains to secure long term financing of the biodiversity corridor.

154. In the **Eastern Plains, Mondulkiri**, Cambodia, one of the biggest challenges in maintaining the high biodiversity value and wilderness character of Mondulkiri is the large number of agricultural and mining concessions that are impacting in the high value biodiversity areas in the corridor as well as the protected forest. Issuance of large economic concessions for plantations or mining can have dramatic negative impacts. Biodiversity values need to be taken into account at the planning stages. Moreover, the progressive upgrading of the road network, notably the roads from Snoul to Sen Monorom, Sen Monorom to Ban Lung, Sen Monorom to Dak Dam and Keo Seima to the Vietnamese border (feeder roads for the major East-West development corridor through Ban Lung) will have negative impacts on biodiversity in the BCI pilot site. Major agricultural and mining concessions will directly impact Mondulkiri Protected Forest as well as the Seima area. Several hydropower dams are also proposed in the pilot site.

155. Other critical challenges to biodiversity and local livelihoods are illegal hunting for wildlife trade, forest clearance for agriculture, logging and unsustainable non timber forest products (NTFP) extraction. One of the key drivers for these problems is a lack of land and resource tenure or effective planning that has resulted in an uncontrolled influx of non-locals seeking to cut, clear and claim land, most notably along the roads running west and north from the provincial capital. There are also issues with governance, capacity of government staff and environmental awareness. The crisis in land encroachment depends on three factors that seriously threaten the biodiversity values of the entire landscape and livelihoods of local indigenous communities. These are: (i) new land claims for settlement and agriculture, leading to forest clearance and loss of forest resources, such as timber, non timber forest products, wildlife habitat, and clean surface water; (ii) new land claims often overlap on, and degrade, land and resources that are customarily needed by the indigenous people for their livelihoods, either for agriculture, NTFP collection, or spiritual/cultural values (holy forests, burial grounds); (iii) new land claims for settlement and agriculture increase the contact between wildlife and humans, thus increasing the potential for hunting, trapping, or human-animal conflict, including possible human deaths resulting from human-elephant conflict.

156. In **Xishuangbanna**, Yunnan, PR China, one of the most serious challenges to maintaining natural forest cover is land conversion and planting of rubber. Areas of upland farming, fruit, oil plants and traditional cash crop plantation has gradually decreased while rubber plantations have increased. However, the area under paddy has remained stable. While the demand and price of rubber will be the dominant economic incentive for farmers to grow rubber, the local government needs to take into consideration the priority of ensuring sustained water supply and a balanced land use pattern that promotes agro-biodiversity. The direct impact of excessive rubber plantation is on water resources in every village. As water sources, which were abundant previously, dry up gradually, availability of clean drinking water has become a major problem in some villages. There are two potential threats of excessive rubber plantation: one is destruction of biodiversity and negative impact on water supply and natural springs; the other is high dependence of villagers on income from rubber plantation and removing the previously diverse source of income. In the long run, the rubber price will directly influence villagers' income while there are no substitute income sources. The biodiversity corridor initiative is assisting villagers in the proposed corridors to secure alternative livelihoods, by planting traditional "old" tea trees to maintain or restore natural forest in watershed areas. There is an initial idea to promote bamboo plantations in some proposed biodiversity corridor areas in Xishuangbanna, which is now under consultation process.

157. Reducing fragmentation through infrastructure development and maintaining forest ecosystem linkages is important. In Xishuangbanna, current land and infrastructure development need to take into account biodiversity and ecosystem values in the sectoral transport and road development planning. In this context, the GMS Core Environment Program aims at linking more closely sectoral planning into environmental concerns so as to achieve sustainable development.

158. The BCI pilot site in **Xe Pian – Dong Hua Sao**, Lao PDR is facing some emerging challenges. For instance, there are significantly large areas that have been identified for mineral exploration in and around the BCI pilot site. Increasing number of private investors are securing leases to start rubber or palm oil plantations in the corridor area. There is a need for the project to discuss land use zoning with the

provincial authorities and clearly demarcate linear forest corridors and restoration areas. It is also important to have some kind of monitoring of water availability in the dry season and decline in fish stocks including riverine species. In the Xe Pian PA, primarily local human use (e.g. activities of illegal loggers, wildlife traders, extraction of NTFPs) need monitoring and counter-measures. The project seeks to establish regular community/village based patrols as a possible way to improving resource protection.

159. The BCI pilot site in the **Tenasserim**, Thailand, particularly the over 70 km corridor connection between the southern boundary of Sai Yok National Park and the northern boundary of Maenam Phachi Wildlife Sanctuary and Thai Prachan National Park is under increasing development pressure from commercial plantations, tourism resorts and recreational projects, and housing. Previously, the area also had mining activities and abandoned mining areas require restoration. Most of the villages in the border area have limited land area or access to land for agriculture. And many are dependent on the forest and its products to support their livelihoods.

160. Furthermore, the area is under pressure from refugees and in-migration. The forested area is also prone to forest fires. All these pressures, create challenges to the ecosystem integrity in the Tenasserim BCI pilot site. The forest cover in 2007 as compared to 2000 is degraded and needs restoration and human assisted natural regeneration. A clear, linear forest link along the border connecting Sai Yok National Park to Thai Prachan National Park needs to be established and maintained to improve habitat connectivity and improve ecosystem function and services.

161. There are some formidable challenges to maintaining connectivity in the **Ngoc Linh Xe Sap BCI pilot site (Quang Nam and Quang Tri), Viet Nam** as infrastructure developments, in the form of roads, impact negatively on the Central Annamites by further fragmenting the landscape. The two major arteries (Road 14D running East-West and the Ho Chi Minh Highway running north-south) are not the only ones as several new feeder and secondary roads are under construction, that will criss-cross the landscape. Another major challenge is the number of planned and under construction hydropower dams. The inundation zones of these dams require resettlement of villagers from the affected areas in places not always suitable for providing a sound basis for natural resource and forest based livelihoods. This uprooting of established communities creates social and economic hardships. On the other hand, hydropower dams provide opportunities for establishing payment for ecosystem services (PES) schemes that require financial resource transfers (payments) to communities by the hydropower operators to maintain watersheds.

162. Some other critical challenges include gold mining in river beds, wildlife trade, illegal logging and hunting. All these challenges require careful consideration, dialogue with government agencies and raising awareness among local people to move towards sustainable use.

V. FUTURE OUTLOOK

A. Expected Outputs by 2009

163. By December 2009, the following outputs are expected to be achieved under the BCI component of the GMS Core Environment Program:

(1) **Cardamom Mountains, Cambodia:**

- Participatory land use zoning completed and plans approved;
- Rapid response team on Human Elephant Conflict (HEC) established, which responds within four days to at least 75% of reported cases of human elephant conflict affecting farmers in the BCI pilot site; a centralized database is established to document all incidents, help pinpoint vulnerable sites and predict future response needs; a 'tool-kit' to help teach farmers how to prevent and respond to crop-raiding elephants is disseminated;
- At least three functioning community stewardship agreements (conservation incentive agreements) are in place in the Central Cardamoms (Areng valley);
- Eighteen community rangers and 15 community wardens are trained; at least eight government staff have skills to monitor trends in elephant distribution and poaching; at least three farmer associations are established at commune level; 100 farmers are trained in at least 10 innovations and improved techniques, of which 20 farmers participate in agricultural trials to test, refine and demonstrate new technologies; at least 20 Cambodian nationals learn, and understand, the theory and practice of protecting, monitoring and managing Asian elephants, and elephant survey and management manuals disseminated;
- Legal and operational design of a conservation endowment completed to support the core management costs of effective protection and management of the Central Cardamom Protected Forest, a site covering globally outstanding portions of the Cardamom Mountains;
- Report on lessons learned with updated socioeconomic and biodiversity data and indicators from the Cardamom Mountains containing conservation and livelihood impacts from BCI implementation and recommendations for phase II; and
- Regulatory framework for establishing and maintaining biodiversity corridors with fiscal incentive policy in place.

(2) **Eastern Plains, Mondulkiri, Cambodia:**

- Provincial biodiversity review report;
- Biodiversity financing options scoping paper;
- Development impacts (extractive industry, infrastructure) report;
- Provincial corridor strategy;
- Sustainable financing strategy for the proposed provincial biodiversity corridor; and
- A regulatory framework for establishing and maintaining biodiversity corridor with fiscal incentive policy in place.

(3) **Xishuangbanna, Yunnan, PR China:**

- A village level revolving fund system is established and is operating in at least 10 villages with grants and loans to households (for enterprise development, marketing of products);
- Agreed participatory land use plans and land use maps are ready for at least 10 villages;
- Restoration of key fragmentation points with human-assisted restoration of at least 200 ha with an additional 500 ha through natural regeneration;
- Demarcation, delineation, and mapping of approved corridors;
- Sustainable funding mechanisms for covering operational activities in the corridors identified and proposed for implementation; and
- A regulatory framework in place, which establishes and maintains biodiversity corridors with fiscal incentives.

(4) **Xe Pian – Dong Hua Sao, Lao PDR:**

- Investments in priority livelihood and infrastructure projects are identified in all villages (small scale enterprises, marketing of processed products, small scale infrastructure);
- Biodiversity surveys completed;
- Development and implementation of management activities for biodiversity corridor;
- Training of at least 40 government officials; 20 villagers and local government officials as trainers in NTFP processing, domestication, marketing and nurseries; and at least 100 villagers trained by trainers;
- Potential payment for ecosystem services (PES) schemes are identified and policy level publications produced and distributed;
- An impact report with updated socioeconomic and biodiversity data from the Xe Pian - Dong Hua Sao pilot site including lessons learned from implementation and recommendations for phase II; and
- A regulatory framework in place for establishing and maintaining biodiversity corridors with fiscal incentives.

(5) **Tenasserim, Thailand:**

- A study on alternative livelihoods, market analysis with identification of eco and agro-tourism potential (hands on training and linkage to eco-enterprises and markets);
- Establishment of nurseries and conducting of plantation activities at community forest and restoration sites in all 20 villages in the four clusters along the corridor;
- Communities enter into co-management agreements and participate in PA committees;
- Land use patterns identified, land allocation proposals and demarcation of proposed PA extension area agreed with Provincial Committee and appropriate authorities;
- Potential corridor areas and stepping stones identified in the biodiversity corridor with restoration activities to establish a north-south linear forest connectivity;
- Capacity building on community forest management and transfer of knowledge and skills to communities;
- Sustainable funding mechanisms for covering operational activities in the corridor identified and proposed for implementation to Government; and
- Regulatory framework for establishing and maintaining biodiversity corridors with fiscal incentive policy put in place.

(6) **Ngoc – Linh Xe Sap (Quang Nam/Quang) Tri, Viet Nam:**

- Investments identified and initiated in priority livelihood and small scale infrastructure projects in selected villages;
- NTFP processing and marketing opportunities identified and villagers receiving benefits from interventions;
- Participatory biodiversity survey reports;
- Land allocation and issue of land use certificates;
- Implementation of management activities for biodiversity corridor;
- Five District Forest Management Plans ready for use;
- Potential payment for ecosystem services (PES) schemes are identified and local level interventions agreed upon;
- Regulatory framework for establishing and maintaining biodiversity corridors with fiscal incentives in place and a Biodiversity Corridor Decree passed at national and provincial levels.

B. BCI scaling up beyond 2009

164. Impact of BCI interventions in the pilot sites and positive results achieved will become the basis for scaling up of activities in phases II and III. Some sites already show some positive potential. The GMS EOC efforts at exploring an investment framework and sustainable financing options for BCI implementation provide the following possible options.

165. In the **Cardamom Mountains**, Koh Kong province provides favourable conditions for a BCI upscaling beyond 2009. The main factors that make the province conducive are: (a) good performance of natural resource management institutions collaborating on enforcement and management - MoE and FA with CI, FFI and Wildlife Alliance; (b) community based natural resource management agreements – CI and FFI; (c) significant experience in restoring soil fertility and intensive agricultural production in the government approved resettled village of Sovanna Baitong (with technical assistance from Wildlife Alliance); (d) good infrastructure (road) connection between Thailand border and Phnom Penh via Road 48, which is currently in its final stages of commissioning; (e) tourism potential, particularly land and sea based coming on weekends and public holidays by road from across the border with possibilities of beach holidays, village stays, hiking, trekking, camping, nature based tourism, and boating in the channels and estuaries. This would also require high levels of commitment of national, provincial, district and commune officials, and communities as well as preparedness and capacity building sufficient enough to take BCI to the next step. Upscaling would require an investment package comprising loan, grant, and an endowment fund that could cover: (i) improved infrastructure for natural resource management; (ii) improved agricultural production, extension, and marketing; (iii) improved tourism infrastructure and information; (iv) functioning Commune Development Funds; (v) operational endowment and PES scheme for watershed and forest cover maintenance.

166. The potential for BCI scaling up in **Mondulkiri** largely depends on reaching an agreement among stakeholders on the establishment, management and maintenance of conservation core areas and biodiversity corridors without these being subjected to developmental pressures and concessions.

Currently, the emerging challenges may pose severe disruptions to the proposed biodiversity corridor strategy and it is necessary to observe how the provincial and central governments are going to agree on a land use zonation map of the province that remains stable and biodiversity investments can be based and consolidated on that stability. Notwithstanding current developments in Mondulkiri, the BCI pilot site has potential for scaling up in terms of investments for ecotourism, agro-biodiversity, and wood production.

167. In **Xishuangbanna**, building on results achieved under BCI phase I, scaling up efforts will concentrate mainly on expanding and intensifying implementation of the BCI approach covering the long term goals of restoring ecosystem services and watersheds. In this context, BCI phases II and III will cover geographical areas and sections beyond the two corridors, which are the current focus of implementation (see Annex 1-3) as well as providing assistance to a larger number of villages (wider coverage) inside and outside the biodiversity corridors.

168. The **Xe Pian – Dong Hua Sao** BCI pilot site has some positive features that can be considered for scaling up. There is, initially, a strong buy-in by the villagers into the BCI approach. Overall, there is strong support from government (central and provincial level); implementation is showing some early, concrete benefits and these need to be consolidated in phase II. Scaling up can consist of extension support to a larger number of villages in the current biodiversity corridor in Champasak province as well as expansion into Attapeu and beyond. The regulatory framework that emerges and is put in place in the biodiversity corridor, and adherence to it by all stakeholders, will also determine investments in phase II for scaling up beyond 2009.

169. Successful implementation in the clusters of **Tenasserim** will provide a basis for scaling up BCI activities beyond 2009. It is envisaged that by the end of 2009, a draft proposal will be drawn up for covering all villages in the corridor (expansion beyond the 20 villages in the four clusters), and a detailed restoration plan with investment estimates will be designed to establish a linear forest corridor connecting Sai Yok National Park to Thai Prachan National Park. Furthermore, it is envisaged that BCI scaling up will include establishment of a transboundary eco-cultural and tourism site on the border with Cambodia (Preah Vihear) and cooperation links will be established between Cambodia and Thailand connecting the Khao Yai – Taplan National Park Complex with the Protected Areas on the Cambodian border.

170. BCI scaling up in **Quang Nam and Quang Tri**, Viet Nam will entail increased investments at provincial level with a focus on the poverty-biodiversity nexus in the transboundary areas based on a mixed package of loan and grant. Scaling up will depend on progress achieved in phase I, performance in each province, and availability of trained and qualified personnel. Furthermore, an additional BCI pilot site will be considered in the transboundary area of Guangxi, People's Republic of China and Viet Nam (Cao Bang) called the Cao Bang – Jingxi Transboundary BCI site.

171. Findings from a study on the Carbon Neutral Transport Corridors (CNTC) in the North-South and East-West Economic Corridors (NSEC and EWEC) show a substantial potential for undertaking investments in greening of economic corridors with the aim of promoting watershed protection, carbon sequestration, and reduction in soil erosion. Rough estimates on availability of land that is bare as well as potential sites

has been done. Scaling up of BCI activities will link up with any future investments on CNTC (for example, in the EWEC investments could be considered in the northern part of the Ngoc Linh Xe Sap BCI site, starting with Dakrong Nature Reserve in Quang Tri, Viet Nam, located in the EWEC and stretching into the transboundary area with Lao PDR).

172. The GMS EOC has also undertaken preliminary exploration of formulating an investment framework for phases II and III. In this context, one of the key premises for continued financing of BCI beyond phase I is to mainstream and integrate current BCI activities into ADB's country partnership strategies in the GMS. For Cambodia, Lao PDR and Viet Nam, project preparation technical assistance (PPTA) has been indicated in the pipeline for project design and funding in the agriculture and natural resource sector (ANR). In China and Thailand, the EOC is proposing preparation of detailed designs for securing funding from national levels with cofinancing from development partners.

173. In the context of climate change and, in particular, adaptation measures, the EOC is planning to move towards identification and preparation of investment framework that will enhance food security, reduce vulnerability, and consolidate agro-biodiversity benefits improving livelihoods in the BCI sites. Deforestation avoidance is another area of focus for reducing emissions affecting global warming. The EOC is planning to explore measures under the Clean Development Mechanism (CDM) to establish a trilateral partnership among key parties: (i) communities that are willing and able to maintain forest cover and forests under their jurisdiction and protection; (ii) the EOC will assist the communities in getting the forest certified and eligible for carbon credits (Certified Emission Reduction - CERs) and registering these for purchase; and (iii) investors interested in buying carbon credits and trading in them.