APPENDIX 11.
GMS BIODIVERSITY CONSERVATION CORRIDORS (ADB R-PPTA 7459)
Cambodia - Mondulkiri and Koh Kong

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

7 September 2010

Abbreviations

ADB	Asian Development Bank
BCI	Biodiversity Conservation Corridors Initiative
CDF	Commune Development Fund
CEP	Core Environment Program
EARF	Environmental Assessment and Review Framework
EARP	Environmental Assessment and Review Procedures
EIA	Environmental Impact Assessment
EX COM	Executive Committee
FA	Forestry Administration
GIS	Geographic Information System
GMS	Greater Mekong Subregion
GMS WGE	Greater Mekong Subregion Working Group on Environment
GPS	Global Positioning System
Ha	Hectare
IEE	Initial Environmental Examination
IT	Information Technology
LCD	Liquid Crystal Display
m	Metre
mm	Millimetre
MOE	Ministry of Environment
NESS	National Environmental Safeguarding Specialist
NTFP	Non-timber forest product
OP	Operational Procedures
PA	Protected Area
PAM	Project Administration Manual
PC	Personal Computer
PES	Payment for Ecosystem Services
PDOE	Provincial Department of Environment
PPMU	Provincial Project Management Unit
PPTA	Project Preparation Technical Assistance
REA	Rapid Environmental Assessment
REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
RGC	Royal Government of Cambodia
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UXO	Unexploded ordnance

A. Introduction

This is the Summary Initial Environmental Examination report for the Greater Mekong Subregion Biodiversity Conservation Corridors Phase II project. The project will enhance arrangements for securing critical ecosystems and environmental quality in GMS economic corridors. Project implementation is expected to start in 2011 and is to be completed in 2018. The Project will include investments in Cambodia, Lao PDR and Viet Nam.

Although the Project has biodiversity conservation as its objective and will generate substantial environmental benefits, there are potential adverse impacts associated with its livelihood improvement and small-scale infrastructure support due to their location, design, construction and operation. The project is categorised as an environmental category B project in accordance with the Operational Procedures (OP)[1] for safeguard review. An Initial Environmental Examination (IEE) report has been prepared to comply with the requirements of the ADB Safeguard Policy Statement[2] and is based on the 2003 ADB Environmental Assessment Guidelines[3].

The IEE has been prepared based on (i) a review of project-related documents[4] and literature related to the project area; (ii) site visits to view conditions in the project areas and the locations of the project; (iii) consultation with national and local authorities and stakeholders; (iv) analysis of typical environmental impacts of project activities and identification of suitable mitigation measures; (v) the present description of the project activities, and in particular the livelihood improvement and small-scale infrastructure support activities; and (vi) a review of national institutional and regulatory frameworks for environmental safeguarding.

B. Description of the Project

The impact of the proposed Project will be climate-resilient transboundary biodiversity conservation corridors sustaining livelihoods and investments in Cambodia, Lao PDR, and Viet Nam. The outcome of the proposed Project will be that by 2018, GMS Biodiversity Conservation Corridors are established with supportive policy and regulatory framework in Cambodia, Lao PDR and Viet Nam, maintaining ecosystem connectivity and services. The proposed Project will be designed as a regional investment project and will include two provinces in Cambodia (Koh Kong and Mondulkiri), three provinces in Lao PDR (Champasak, Xekong and Attapeu), and three provinces in Viet Nam (Quang Tri, Thua Thien Hue and Quang Nam).

The outputs of the Project are (1) institutions and communities for biodiversity conservation are strengthened; (2) biodiversity corridors are restored, ecosystem services are protected and sustainably managed by local resource managers; (3) livelihoods are improved and small-scale infrastructure is supported in target villages and communes/clusters; and (4) project management and support services. The Biodiversity Conservation Corridors Project Phase II takes a sector-like approach to many of its activities. Within the overall Project context, a number of the specific activities and locations will be determined during project implementation; these activities are referred to as subprojects.

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[1] ADB. 2010. *Operations Manual Section F1/OP*. Manila.
[2] ADB. 2009. *Safeguard Policy Statement*. Manila.
[3] ADB. 2003. *Environmental Assessment Guidelines*. Manila.
[4] including BCI Phase I pilot site implementation reports (ADB TA 6289)

C. Description of the Environment

The Project area is located in two provinces of Cambodia, Koh Kong in the southwest and Mondulkiri in the east. The landscape is diverse, with forested mountains, lowland plains along the main rivers and in the coastal areas, and wetlands. Both provinces have been among the most isolated parts of the country, difficult to access. Recent completion of several new and upgraded roads and bridges have made access much easier, both from the centre of the country as from neighbouring Thailand and Viet Nam.

(i) Physical Resources

The landscape in Koh Kong is characterised by a coastline on the Gulf of Thailand with numerous islands, beaches, mangroves, estuaries, and dominated inland by the mountains of the Cardamom mountain range. The Cardamoms extend along a southeast-northwest axis across Koh Kong province into Pursat province. Mondulkiri lies within the Mekong river basin, along the border with Viet Nam. It is characterised by forested hills and mountains intersected by numerous rivers and streams including the Sre Pok river. Most of the soils found in the mountainous part of Koh Kong are acid lithosols. The Cardamom mountains are made up of metamorphosed sandstone, slate, schist and quartzite. The Mondulkiri soils include different kinds of acrisols and alluvials along the rivers. The south-western monsoon winds bring a pronounced rainy season from May to October, a cool and dry season from November to February, and two hot and dry months in March and April.

(ii) Ecological Resources

The ecological resources of Koh Kong and Mondulkiri provinces share a number of characteristics but also have very distinct differences. Both are very rich in terms of biodiversity and are home to a number of globally endangered species and habitats. While the Koh Kong forests are described as evergreen rain forest, those of Mondulkiri are considered representative of the region's dry dipterocarp forests. The dry forests of Mondulkiri are characterized by a mosaic of habitats with areas of mixed deciduous forest and semi-evergreen forest. Scrub, grassland and patches of wetlands are also present. The natural ecosystems are the source of a vast amount and array of ecosystem services, locally and globally. Among the animals are Asian elephant, Indochinese tiger, clouded leopard, dhole, gaur, banteng, and pileated gibbon. The rivers of Koh Kong province are home to both Irrawaddy and humpback dolphins, as well as Siamese crocodile and the nearly extinct royal turtle. The Cardamom forests provide habitat for over 450 bird species, including restricted-range partridge species, great hornbill, white-winged duck, white-shouldered ibis, storks, adjutants and sarus crane. In addition, in Mondulkiri, Eld's deer, wild water buffalo, leopard, fishing cat, black-shanked douc and Germain's silver langur are also found. Mondulkiri has become very important in recent years for vultures conservation.

Table 1. Protected areas in Project area

Protected area	Province	Area (km^2)
Lomphat Wildlife Sanctuary	Mondulkiri, Ratanakiri	2,510
Mondulkiri Protected Forest	Mondulkiri	4,294
Phnom Prich Wildlife Sanctuary	Mondulkiri	2,225
Seima Protection Forest	Mondulkiri, Kratie	2,927
Snoul Wildlife Sanctuary	Mondulkiri, Kratie	750
Phnom Nam Lyr Wildlife Sanctuary	Mondulkiri	475
Dong Peng Multiple Use Area	Koh Kong	277
Southern Cardamoms Protected Forest	Koh Kong	1,443

Central Cardamoms Protected Forest	Koh Kong, Pursat, Kampong Speu	4,013
Botum Sakor National Park	Koh Kong	1,713
Peam Krasop Wildlife Sanctuary	Koh Kong	260
Kirirom National Park	Koh Kong, Kampong Speu	350
Koh Kapik Ramsar site	Koh Kong	120
Phnom Samkos Wildlife Sanctuary	Koh Kong, Pursat, Battambang	3,338

The Project region includes thousands of kilometres of rivers, ranging from minor seasonal mountain brooks to high order rivers, some of which are major tributaries of the Mekong river. The Project area in Mondulkiri is entirely located within the Mekong River basin, and shares its rich aquatic biodiversity. The Cardamom mountains contain many scattered Neolithic jar sites. Recent archaeological discoveries in Koh Kong province include 500 year old wooden coffins sites, similar to the coffins hewn from whole logs that are common throughout Southeast Asia. Wooden coffins are often found in caves, together with ceramics. The forests and their components are of great significance for the local communities, especially the ethnic minority groups who are mostly animist. They believe spirits inhabit elements of their natural landscape, such as trees, mountains, and rivers. Ten ethnic groups make up 80 percent of the population in Mondulkiri, while Khmer, Chinese and Cham make up the remainder. The majority of the population are the Chunchiet from the tribe of the Phnong. In other parts of the province there are small concentrations of settlements of Stieng and Kraol indigenous groups. Other ethnic and indigenous groups include Kampuchea Krom, Vietnamese, Lao, Kreung, J'arai, Kroal, Thmon, Kuoy and Tumpuon.

(iii) Human and Economic Development

The most common livelihood base for the rural population in the Project area is (rainfed) rice cultivation, fishing, collecting and trade of non-timber forest products (NTFPs), mostly at a subsistence level, and often as part of shifting cultivation. Many households are structurally food insecure. Cattle and smaller livestock such as pigs, goats, chickens and ducks are widely kept, partly also because their potential of readily generating cash. Buffaloes are used as draught animals. NTFPs play a significant role (contributing up to half of the income) in the livelihoods of the households of the Project area. Most have gardens, and river bank cropping after the rainy season is widespread and productive. These crops are usually for sale and include mung beans, cassava, cotton, tobacco, bananas, and sugar cane. NTFPs play a significant role (contributing up to half of the income) in the livelihoods of the households of the Project area. The NTFP and aquatic resources that are used are very diverse. Poverty in the Project areas is caused by many factors, including difficult environmental conditions (terrain, access to water), inadequate infrastructure, weak natural resource management, inadequate conservation policies, limited human resources, and, in certain areas, the long-term effects of war (unexploded ordnance). In general, households living close to the main roads are able of benefitting from the economic opportunities provided by improved accessibility. Several economic concessions have been granted in both Project provinces. These include mining and hydropower development.

D. Screening of Potential Environmental Impacts and Mitigation Measures

The screening of potential environmental impacts and possible mitigation measures is based on field visits to the project area in the two provinces, as well as visits to project activity sites from BCI Phase I and discussions with stakeholders. The

screening is done based on the description of the Project and its envisaged activities as described in the Cambodia Mid-Term Workshop Document of 31 August 2010[5].

(i) Scoping

The scoping of the environmental impact of the Project activities is carried out in the assumption that the activities are technically sound and have the inherent potential and high probability of achieving their biodiversity conservation objective.

The most significant impact of the Project is expected to be generated by restored connectivity between fragmented forests. This will lead to habitat restoration, halt degradation and support continued provision of ecosystem services, together with all the indirect, secondary and cumulative beneficial impacts this will generate for biodiversity conservation. Most potentially adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed readily. Improved livelihoods and community infrastructure, increased natural resources management capacity and additional biodiversity conservation skills will contribute to sustaining the environmental benefits generated by the Project.

Possible negative impacts that have been identified are related to the location and design of the Project and its activities, and to construction and operation activities. They include pollution (waste, pesticides, dust, noise), changes to drainage patterns (erosion, sedimentation, water quality, flooding), erosion, landslides, landscape modifications, habitat loss, impact on cultural heritage elements, distribution of invasive species, introduction of inappropriate species, inappropriate (forest) habitat structure creation, and traffic hazards.

The assessment of the potential environmental impact of Project activities is done against the background of existing environmental issues in the Project area. The main environmental issues in the Project area include the following: (1) **Deforestation and plantation agriculture**. Clearing and degradation of forests has occurred in the Project area for a long time as the result of logging, shifting cultivation practices, roads construction, water reservoir creation, and more recently also for the establishment of cash crop plantations and mining activities. (2) **Hydropower generation**. Some hydropower schemes have been completed and many more are planned or under construction. Hydropower schemes impact on the environment in the Project area through the formation of reservoirs clearing and fragmenting forest areas, altering hydrology of streams, affecting groundwater levels, and, locally, by erosion, landslides and forest and vegetation clearing for high-voltage power transmission lines. (3) **Unexploded ordnance**. The recent wars in the region have left large amounts of unexploded ordnance (UXO) scattered throughout the Project area, and in particular in Mondulkiri. (4) **Mining**. There are a few dozen mining concessions in the Project area, covering several thousands of hectares, and there are reports of small-scale illegal mining - mostly for gold. The environmental impact of the mining ranges from limited to severe, depending on the methods used, the location and the nature of the mining operation (gold, bauxite, ores, coal). (5) **Invasive species**. 51 species are listed[6] as invasive species for Cambodia, 18 of which invade natural forest and 15 enter planted forests. Nearly half of the invasive species in Cambodia use ruderal or disturbed lands (for shifting cultivation, roads construction, deforestation but also reservoir impoundment and irrigation canals) to proliferate. (6) **Tourism infrastructure development.** Both the coastal areas of Koh

[5] ADB. 2010. *GMS Biodiversity Conservation Corridors (ADB R-PPTA 7459). Mid-Term Workshop, Koh Kong, Cambodia.* 31 August 2010.
[6] IUCN. Global Invasive Species Database. www.issg.org

Kong province, with its beaches, mangroves and islands, and the forested mountains have high potential for (eco-)tourism development. Recent completion of bridges and road connections with Thailand and Phnom Penh is facilitating tourism and several tourism infrastructure developments are ongoing and many more are planned. The absence of a clear tourism development plan, including zoning and environmental safeguarding requirements means that tourism development is a driver of environmental degradation in the province. In Mondulkiri, facilities and infrastructure are also improving but the environmental pressure from tourism development is still relatively small.

(ii) Impact identification and assessment

Impacts related to location. The Project will endeavour to reverse the loss of forest habitat in key locations to restore connectivity for biodiversity conservation. There is a risk that in doing so, other valuable, non-forest habitats may be lost, whether they are secondary habitat types or natural habitats that occur in the Project area. The risk is small, and can be readily mitigated. Targeted reforestation, enrichment planting, gap filling and natural regeneration will modify the landscape over a long period of time. Some of the small-scale infrastructure, and in particular rural roads, have the potential to affect the landscape as well. Proper planning and design of the project will minimise this impact. The forestry activities, the small-scale infrastructure investments and some livelihoods support activities can cause modifications to local drainage patterns, cause erosion and sedimentation and generate associated changes in water quality. These could lead to the creation of specific risks to human habitation of flooding and landslides. The risk is moderate but impact can be avoided through proper design and detailed risk assessment. There are no known significant cultural heritage elements that will be affected by the Project. The forests and mountains offer locations of worship and special significance for some of the local population. The risk is small and readily mitigated, the impact is likely minimal. The Project activities extend inside protected areas. While this is at the very core of the Project strategy, there is a risk of impact if the Project activities are not adequately aligned with the protected area's protection objectives or specific management plans if these have been developed. The risk is small and readily avoided. Unexploded ordnance is a considerable risk in the Project area, and many of the Project activities are likely to be located in areas that are not declared safe from UXO. The risk is high, and requires adequate mitigation.

Impacts related to design. The Project forestry activities may result in the introduction of inappropriate species or the creation of inappropriate habitat structures. The risk is medium and will be mitigated through focused design in line with the Project objective of biodiversity conservation. The design of small-scale infrastructure supported by the Project could result in modification of local drainage patterns, erosion, unnecessary loss of valuable (non-forest) habitats, and changes to the landscape. The risk is low and impact can readily be avoided in most cases through proper design measures.

Construction impacts. During the construction[7] phase of the Project activities, a number of impacts on the environment may be generated in addition to the ones described as related to their location or design. During construction, there is a specific risk that the distribution of invasive species is facilitated. The risk is medium, and can be mitigated by limiting the extent and duration of disturbance of soil and other control measures. During construction, impacts may be caused on valuable

[7] The term 'construction' is used here in reference to all activities of establishing, creating or initiating physical arrangements (e.g. preparation of nursery grounds or enrichment planting) as initial part of activities carried out or supported by the Project

habitats in the vicinity of the Project activity. Cultural heritage elements are also at risk, and the landscape may be changed during construction. The risk is moderate but the impact likely minimal. Construction carries particular risks of pollution, in particular from the unmanaged disposal of waste and the generation of dust and noise. These risks are considerable but the impacts would be rather small, and readily mitigated through proper construction management. Temporary changes to local drainage patterns can lead to erosion and sedimentation, as well as the creation of risks to human habitation of flooding and landslides. The risks are small, and the impact limited. Construction for activities located inside protected areas has a greater requirement to limit or avoid environmental impact.

Impacts related to operation. Pollution from nursery operations (waste, pesticides) and inappropriate disposal of operational waste in general can have an impact on the environment. The risk is considerable but readily mitigated through pollution control measures and waste management. Changes to drainage, erosion, sedimentation, and subsequent risks of flooding and landslides are possible impacts related to the operational phase of the Project. In particular the small-scale infrastructure also has a potential to cause habitat loss and fragmentation. The overall risk is small, but the cumulative impact of a number of small-scale infrastructure activities in an area might be significant. Mitigation and prevention through proper planning and location selection. Dust pollution can be a problem along rural roads during the dry season. Traffic hazards are inherent to all roads. Both risks are low given the expected low traffic volumes and the fact that most of the vehicles will be motorcycles. During operation, impacts may be caused on valuable habitats in the vicinity of the Project activity. This is a low risk but requires planning and monitoring. There could be some impact on cultural heritage elements, and there may be an impact on the landscape. In both cases, any impact is expected to be minimal.

There may be other potential environmental impacts from Project activities due to the location, design, construction or operation of subprojects that will be formulated during project implementation. The above description will cover most and the Environmental Assessment and Review Framework (EARF) procedures will ensure that any other impacts are identified and addressed in due course.

(iii) identification of mitigation measures

The mitigation measures that have been identified are related to planning and design, implementation arrangements and modalities, and monitoring. Most of the mitigation will be achieved through integrating environmental considerations into planning and design activities. They focus on preventing negative environmental impacts. As such, they bare no specific cost to the Project and the additional cost to designing and planning of the activities is negligible. An overview of the mitigation measures is given in Annex 1.

The mitigation measures related to design and planning of Project activities will be monitored through the regular Project reports that are being prepared by the Provincial Project Management Units (PPMU). Some of the measures related to implementation of Project activities will be monitored based on guidelines that the Project will develop for these activities and their compliance based on Project reports and site visits. The mitigation that will be achieved through monitoring of environmental conditions will be monitored in itself through site visits, Project reports and incidence reports of the events they are intended to prevent.

In addition to the mitigation measures identified and described here, there is a provision under the EARF to identify and implement additional specific mitigation measures.

(iv) Identification of monitoring requirements

Annex 1 includes the environmental performance indicators for each of the mitigation measures, as well as their means of verification. It is recommended that performance monitoring for environmental safeguarding is undertaken 6-monthly during the initial three years of the Project and annually thereafter. The frequency of monitoring of specific risks such as slope instability or erosion areas must be adjusted as required. The Environmental Assessment and Review Procedures (EARP) may identify additional monitoring requirements based on the specific subprojects that will be identified.

(v) Environmental assessment reporting

Six-monthly reports on environmental performance by the Project will be produced during the first three years of Project implementation, and annually afterwards. The reports will be prepared by the National Environmental Safeguarding Specialist, attached to the Executing Agency at the national level for the Project. These reports will be submitted to the National Steering Committee, as well as ADB, for approval. In addition, the EARP will define a monitoring and reporting schedule for the subprojects based on the Project work plans. Monitoring and reporting will be carried out in accordance with the ADB requirements, as well as any conditions that may be imposed by MOE.

E. Institutional Requirements and Environmental Monitoring Plan

The owners of the Project are responsible for compliance with the ADB and Royal Government of Cambodia (RGC) environmental safeguarding requirements. The Executing Agency are the owners of the Investment Project. The Provincial Executive Committees (EX COM) in Mondulkiri and Koh Kong will oversee the project activities as they are implemented through PPMUs. Villages, communes and district level local authorities will be involved in Project implementation, in particular in the management of the CDF. Other technical agencies will provide support services to the provinces.

The elements of the Environmental Monitoring Plan are included in Annex 1 (mitigation measures, indicators and means of verification), in the section on identification of monitoring requirements, in the section on environmental assessment reporting and the EARF. The focus of the environmental safeguarding activities of the Project lies with the prevention and minimising of negative environmental impact during the identification of the subprojects. The design, planning and approval phase of subprojects is therefore a critical time during which the foundations for minimal negative environmental impacts are laid. In addition, there will be a second important moment for environmental monitoring during the construction phase of the subprojects. The specific monitoring requirements will be determined during the design of the subprojects and the timing will match the implementation schedule of the subprojects. During operation of the subprojects, environmental monitoring will be carried out as appropriate in function of the characteristics of the activity and of the anticipated possible impact.

F. Public Consultation and Information Disclosure

Consultations have taken place throughout the PPTA among central, provincial, district and commune level stakeholders, as well as with the beneficiary communities and villages and implementation partners. Throughout the range of stakeholders, there was widespread support for the Project and its objectives, in particular in areas where the BCI Phase I activities had been implemented. The main environmental

concerns at village and commune level related to resettlement, flooding, landslides and food security.

The issues that have been identified have all been addressed in the design of the Project. The Project will not undertake any activities that would result in forced or economic resettlement of people. Risks of flooding and landslides have been incorporated as attention points in the environmental monitoring. Food security issues will be supported through the livelihoods development activities of the Project.

Subprojects that are yet to be identified will take the considerations of the public into account. The Environmental Assessment and Review Procedures have been designed in a way to ensure that the views of all stakeholders are collected and considered and be given an appropriate response.

G. Findings and Recommendation/Conclusion

The Project will generate overwhelmingly positive environmental impacts. Biodiversity conservation in the Project area is of global significance and will support several critically endangered species through the conservation and restoration of habitats essential to their survival.

Some of the Project activities have a potential for generating localised, manageable negative environmental impacts. These have been identified, as well as the measures to prevent or mitigate such impacts.

The Project takes a sector-like approach to a number of its activities, whereby exact locations and type of activity will be determined during Project implementation by the local implementation partners within the established geographical boundaries and according to the Project objectives. The Project has been designed to take environmental considerations into account for subprojects as and when these are being formulated. A framework for environmental safeguarding of subprojects has been developed and will be applied.

The Project activities that have the potential of causing negative environmental impacts include the forestry activities, the support to livelihoods development and improvement, the small-scale infrastructure development, and the activities supported by the village/commune development funds. Identification and design of all of these activities will be finalised during Project implementation.

All Project activities that will be defined during implementation will be subject to review for environmental impact during the planning stage, and further if and as required during detailed design, construction and operation. The design, location and other characteristics of the subprojects will be amended to minimise any negative environmental impact. The activities will cover the costs for required environmental monitoring and mitigation measures. Proposed subprojects with significant environmental impacts that might alter the environmental classification of the Project are not admissible. In addition to subproject-specific monitoring, there will be regular monitoring of the overall environmental performance of the Project as a whole, in line with the ADB environmental safeguarding requirements. Subprojects will comply with the prevailing environmental safeguarding regulations of the RGC.
It is recommended that the Project be classified as an Environmental Safeguarding Category B project in accordance with the ADB Safeguard Policy and Environmental

Assessment Guidelines[8]. Significant environmental impacts warranting and Environmental Impact Assessment are unlikely.

[8] ADB. 2009. *Safeguard Policy Statement*. Manila. ADB. 2003. *Environmental Assessment Guidelines*. Manila.

Annex 1. Mitigation measures and indicators for monitoring

Potential Environmental Impact	**Mitigation measures**	**Indicators / Means of verification**
Loss of habitat	Value of the habitat that will be used for Project activities must be assessed for its present biodiversity and livelihoods value	Habitat assessment reports
Changes to the landscape	Changes to the landscape need to be in harmony with the surrounding landscape and the natural characteristics of the area	Landscape impact analysis / project report
Modifications to local drainage patterns	Modifications to local drainage patterns must be prevented if they are likely to cause flooding, unintended habitat changes, a lowering of the groundwater table or affect water availability for humans in the area and their livelihoods activities	Drainage and ground water impact analysis / project report
Impact on cultural heritage elements	Impact on cultural heritage elements must be avoided or an acceptable solution sought with the stakeholders.	Participatory analysis of impact on cultural heritage elements / project report
Inside or in the vicinity of protected areas	Activities taking place inside or in the vicinity of protected areas must be conducive to the protection and conservation objectives of the protected area(s) and must not create conditions that are alien to the natural environment of the protected area(s).	Compatibility analysis with protection and/or management objectives of the protected areas / project report
Selection of inappropriate tree species	Tree species selected for use in reforestation reviewed and approved by Forestry Administration (FA) Cantonment and Provincial Department of Environment (PDOE)	FA Cantonment and PDOE approval documents / project report
Inappropriate forest habitat structure creation	Tree species selected for use in reforestation reviewed and approved by FA Cantonment and PDOE	FA Cantonment and PDOE approval documents / project report
Distribution of invasive species	Measures must be taken during construction to minimize the distribution of invasive species, e.g. by minimizing the area disturbed and not leaving disturbed area barren	Guidelines and instructions, requirements for contractors / project report, contracts
Pollution from disposal of nursery waste and pesticides	Pollution from disposal of nursery waste and distribution into the environment of pesticides used in nurseries must be prevented through the development of nursery waste management plans	Nursery management and operating guidelines / project report
Dust and noise pollution	Dust and noise pollution will be limited by covering of loads and spraying of water as required	Guidelines and instructions, requirements for contractors / project report, contracts / site visits

Potential Environmental Impact	Mitigation measures	Indicators / Means of verification
Erosion and sedimentation	Erosion and sedimentation must be monitored on a regular basis and preventative measures taken early on	Evidence of erosion, sedimentation or landslides / site visits, project report
Landslides	Risk of landslides must be monitored on a regular basis and preventative measures taken early on	Evidence of erosion, sedimentation or landslides / site visits, project report
Exposure to unexploded ordnance	Liaise with competent authorities for UXO information on each specific area and for plans for verification or clearance work	UXO incidents / Project report
Creation of specific risks to human habitation (flooding, landslides)	Activities must be assessed for their potential for creating risks to human habitation, in particular with respect to flooding and landslides	Risk assessment report / project report
Pollution from inappropriate disposal of construction waste	Pollution from disposal of nursery and other construction and operational waste and distribution into the environment of pesticides used must be prevented through the development of waste management plans	Waste management plans / project report
Traffic hazards	Adequate traffic safety measures and awareness raising	Traffic safety measures in place, awareness raising materials and activities / project reports