Conservation of Biological Diversity through Improved Forest Planning Tools

Government of Malaysia and UNDP/GEF Project

Mid Term Review

Authors: Douglas Sheil and Mohd Shahwahid Haji Othman

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Cover photographs Douglas Sheil

Executive summary

Description of project

The *Conservation of Biological Diversity through Improved Forest Planning Tools* project (or CBioD project) seeks to improve the maintenance of biodiversity and other values in tropical forest landscapes managed primarily for timber. The project will produce information, methods and decision-guidance tools. While the initial field activities are focused on hill dipterocarp forests in Perak State, in Peninsular Malaysia, outputs aim to have wider relevance.

The Forest Research Institute of Malaysia (FRIM) implements the project. The Ministry of Natural Resources and Environment (NRE, home to both FRIM and the Forestry Department) is the Executing Agency and assumes overall responsibility. A Project Steering Committee (PSC) oversees implementation. Significant components are guided by international collaborators.

The project's principle field site is the Temenggor Forest Reserve's Perak Integrated Timber Complex concession area (PITC). The Forestry Department Headquarters of Peninsular Malaysia (FDHPM) and Perak State Forestry Department of Perak (PSFD) are considered the key national stakeholders to adopt project outputs.

Context and purpose of the evaluation

A mid-term review (MTR) examines project relevance and performance, makes an assessment of likely outcomes, impacts and lessons, and suggests improvements. The four principle objectives are: i) to monitor and evaluate results and impacts, ii) to provide a basis for decision making on necessary amendments and improvement; iii) to promote accountability for resource use; and iv) to document, provide feedback on, and disseminate lessons learned. The evaluation involves site level and project level assessments. The review covers the 'entire project' including non-GEF financed components.

Main conclusions, recommendations and lessons (see main text for detail)

The mid-term evaluators (MTEs) are *overall* content with the project. The problems noted are neither excessive nor requiring culpability. With increased attention to the practicalities of achieving the projects longer-term goals, there is no obvious reason why the project should not be successful.

A research-for-conservation project brings multiple challenges in terms of oversight and monitoring. As well as the standard project oversight there is a need to bring in the key target groups, academic guidance and also to ensure that the conservation goals are well conceived, reflect genuine needs, and are realistic.

We raise a large number of technical questions and concerns in the main text. Here we summarise a few key non-technical recommendations.

Research is the means not the end. There is a need to better *focus on achieving conservation outcomes.* Any steps than can give credibility, and assurances, concerning this overall process should be explored. A new verifier is proposed: in the final year of the project (before or during the final evaluation) of a poll of at least three (ideally more) experienced conservation professionals who have been fully briefed on the project's approach and results, a majority agree that application of the tools has at least a 75% chance of contributing significantly to the long-term conservation of (a) Perak's forest

biodiversity and (b) biodiversity elsewhere in Malaysia and (c) forest biodiversity outside Malaysia.

Experienced conservation professionals also need to be more closely involved in day-to-day project development and oversight. Project credibility will be improved and valuable guidance accessed, if the project better engages with local conservation NGOs and accesses their expertise and endorsement.

The uncertainties inherent in research should not be used as an excuse for postponing consideration of implementation. The project requires a clear process for developing plans and actions – key steps need to be proposed, reviewed, mapped out, and then regularly revisited. This process should be led by FRIM with oversight from UNDP and ITTO. Progress on these themes should be a focus of both the TWC and PSC. The MTEs recommend that the project team should prepare draft documents detailing strategies, activities roles and time line for each activity to show how the goals and indicators shall be achieved. These plans can and should be revised as the project progresses.

A concerted effort needs to be made to work with all relevant stakeholders to clarify *shortcomings* in the current Malaysian land and forest cover planning processes (including factors reducing the likelihood of implementation), and the various factors that *should* be included in planning (for conservation and other factors). For example the topic of 'flexibility' and political interference in land-use planning must be debated and confronted in a transparent fashion. Failure to do so undermines the credibility of conservation planning as a meaningful investment.

Clear mechanisms (e.g. regular external assessments and feedback) need to be built into the development process to ensure that tools and models (their inputs, outputs and operation) match as far as possible with local needs and abilities. It will be important to engage planners and conservationists who have experience in developing and applying plans for conservation outcomes (expertise may need to be sought outside the region).

A clear formulation and budget for the neglected NTFP activity is required.

The risk that an external contractor might fail to fulfil obligations needs to be addressed.

The involvement of, and oversight from, the *orang asli* required by the project document has not been achieved. This needs to be rectified.

Communications with UPEN (Perak local Gov') needs to be improved. One option would be to invite UPEN chair the state level steering committee.

Risks to the field team should be assessed and reduced as far as is reasonably possible.

The project is ambitious. A budget neutral project extension of six or twelve months may be judged valuable once the final implementation plans are better developed. Ideally these ideas would be clarified in the next 18 months.

The Project will produce software based tools. The capacity and responsibility to support these tools and their users beyond the project life-time requires attention.

Training in the use of project tools and guidance on their use will need to be scaled up and integrated with programs outside the project context to ensure they can outlast the project.

Incentives for improved forest management are insufficient for commercial operations. The Malaysian government (State and National) should ask FRIM to work with them to review ways they can encourage and facilitate good forestry practices (e.g. tax breaks etc).

Acronyms and terms

AAC	Annual allowable cut
CBioD	*Conservation of Biological Diversity* [= abbreviated project title]
CIFOR	Centre for International Forestry Research
CTFS	Centre for Tropical Forest Science
DID	Drainage and Irrigation Department
EPU	Economic Planning Unit
FDHPM	Forestry Department Headquarters of Peninsular Malaysia
FRIM	Forest Research Institute Malaysia
GEF	Global Environment Facility
Ha	Hectares
HCVF	High Conservation Value Forest
IAP	International Advisory Panel
IBA	Important Bird Area
IRPA	Intensified Research Priority Area
ITTO	International Tropical Timber Organisation
IUCN	World Conservation Union (International Union for the Conservation of Nature)
KPU	Ministry of Primary Industries
MNS	Malaysian Nature Society
MTCC	Malaysian Timber Certification Council
MTEs	Mid-term evaluator(s)
MTR	Mid-term review
NGO	Non-government Organisation
NIES	National Institute for Environmental Studies
NRE	Ministry of Natural Resources and Environment
NTFP	Non-timber Forest Product
PDF	Project Development Fund
PITC	Perak Integrated Timber Complex
PRF	Permanent Reserved Forest
PSC	Project steering committee
PSFD	Perak State Forestry Department
R&D	Research and development
RIL	Reduced Impact Logging
SFM	Sustainable Forest Management
SFO	State Forestry Offices
SRP	Scientific Review Panel
TWC	Technical Working Committee
TWG	Technical Working Group (see TWC)
UKM	Universiti Kebangsaan Malaysia
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UCTA	University Putra Malaysia
VJR	Virgin Jungle Reserve
WWF	World Wide Fund for Nature

Introduction

The evaluation

Purpose

The overall purpose of the MTR is to examine project performance since implementation, suggest modifications to improve effectiveness, and make a forward looking assessment of likely outcomes, impacts and lessons. All UNDP/GEF projects covering 5 or more years must undergo a mid-term review. The Evaluation is conducted in line with the UNDP/GEF policies and procedures. There are four objectives: i) to monitor and evaluate results and impacts, ii) to provide a basis for decision making on necessary amendments and improvement; iii) to promote accountability for resource use; and iv) to document, provide feedback on, and disseminate lessons learned.

Key issues addressed

The evaluation involves assessments, at both the site level, and the overall project level. The review covers the 'entire project' including non-GEF financed components. The evaluation should address: project formulation (including relevance, country ownerships and stakeholder involvement, 'replication approach' as well as UNDP's role and 'comparative advantage'); project implementation, accomplishments, effectiveness and efficiency (including adequacy of management arrangements); achievements and progress (including key challenges and the ability of the project to achieve its goals); costs and financial arrangements; likely and potential impacts (especially with regard to improved planning and management of productive forest landscapes); and project sustainability (will benefits continue after the project has ceased?). The evaluators are required to provide ratings for the relevance, efficiency and effectiveness of different project outcomes and their sustainability as well as the project's monitoring system. (For a fuller account please refer to the MTR TOR – appendix 1).

In addition some specific topics were raised by UNDP for the evaluators to comment on. These included the recruitment of a national project manager, clarifying the need to represent NGOs in project steering, the desirability of including REDD in the project and the need for a no-cost project extension.

Approach

The evaluators (MTEs) reviewed project documents (all available documents pertaining to the UNDP/GEF project and also the ITTO funded project). Many additional documents, some only in draft form, were also evaluated. In some cased the MTEs were able to examine data sets (e.g. for some of the ecology studies) and review methods being applied (e.g. the valuation studies). No project research publications have yet been finalised, though some seminars have been made, and a few draft documents are in preparation.

A field visit to the project site in Perak was included. Offices of key stakeholders were visited in both Perak and KL.

Many key project staff, partners, collaborators, contractors and stakeholders were interviewed including various government officials. The evaluators meetings and site visits, the formal documents reviewed and the interviews conducted are listed in appendix 2. Two of the key collaborators were not available in Malaysia during the review period – one was contacted by *skype* (phone) and both responded to email queries. Additional email comments and discussions were requested and received from another non-Malaysia based national who was unavailable at the time of the MTR.

Some key areas were raised for group discussion in a stakeholder meeting (see appendix 3). This group (which also included most of the locally based researchers) was also asked to write [on condition of anonymity] three things they valued about the project and three areas where they were concerned or saw room for improvement. At the end of the meeting

they were also requested to write down any points, concerns or suggestions that they felt might help the evaluators in suggesting improvements to the project. These responses proved a rich source of information and also served to clarify some issues from a wider perspective.

A meeting was also held with the researchers (without management and administration staff). This provided an opportunity to discuss their needs and to discuss some technical details of the work.

At least two versions of the UNDP/GEF project document and logframe exist due to the revisions during the inception phase. The MTE used the revised version of the UNDP/GEF project document (produced after the inception report) for their assessment and the numbering of the logframe outputs etc. follow that logframe. There is some variation in language and emphasis amongst project documents – when in doubt as to the purpose and role of a given output the MTR refer firstly to the detailed accounts given in the annexes to the *original* project document (noting that these annexes have not been updated to fit the amended logframe).

The MTR report was drafted by the two MTEs. This document, which included a number of queries, was then circulated for clarification and comment amongst the project team, collaborators and various stakeholders. Based on the feedback received this final report was developed and agreed by the MTEs.

Note that the project is primarily about conservation (even though no outputs or outcomes are defined in explicitly conservation terms). The ultimate value of a GEF project must be considered in terms of conservation gains and environmental impacts.

Limitations

The evaluators agree with the comments from several project staff that the MTR was performed several months too early. Few milestones or outputs were ready for verification. In consequence many statements of progress are based on judgement and indirect evidence (e.g. by seeing the data sets or draft reports).

The MTR did not overlap with the IAP[1] nor did the IAP offer any suggestions for the MTR (as required by their TOR[2]).

The MTR team never met with representatives of the *orang asli* community. Attempts to address this, requested by the MTEs, proved impossible to fulfil within the schedule. This omission becomes important when evaluating the status of the project component addressing NTFPs and the question of how this group is represented within project oversight (see later).

The MTR provides a chance for the project team to re-examine their larger goals but researchers and project management seemed under time stress. Due to other short-term commitments, including a recent stakeholder consultation, they had had limited time to reflect on larger project goals and thus offered relatively few suggestions for adjustments. The MTE would have been facilitated if the project team, notably the researchers knew what was expected of them and had given thought to what they might gain from the process. All project documents should have been assembled and made available *in advance*.

[1] According to the project document "Where possible, the evaluation [MTR] will be arranged that it will overlap with an IAP meeting to enable the evaluators to interview IAP members and members of the TWG and PSC. The input received from the IAP and TWG will provide the additional information to the evaluators on the progress of the project and the research".

[2] "The IAP members do not yet have enough information to contribute on this topic" they said.

Team

The MTE team consisted of: Dr Douglas Sheil (an Irish national with expertise in the conservation value of managed forests) as team leader and Professor Dr Mohd Shahwahid Haji Othman (a Malaysian national with expertise in natural resource and environmental economics).

The project and its context

The project

The *Conservation of Biological Diversity through Improved Forest Planning Tools* project (or CBioD project) is implemented by the Forest Research Institute of Malaysia (FRIM) the national agency for forestry research in the country and a major centre of expertise (with over 500 staff and more than 50 researchers at doctoral level). The Ministry of Natural Resources and Environment (NRE) is the Executing Agency, assuming overall responsibility and accountability. The NRE is home to both FRIM and the Forestry Department. Significant components of the research are guided by international collaborators based overseas.

The project field site is the Perak Integrated Timber Complex (PITC) concession area. PITC is a subsidiary of the Perak State Development Corporation and is committed to good practice (e.g. RIL) and the attainment of internationally certified timber. The Forestry Department of Peninsular Malaysia, State Foresty Departments (notably Perak in the initial phases) and (at least in theory, though subject to wide stakeholder requirements and agreement) the Malaysian Timber Certification Council are considered key stakeholders in the CBioD Project, as the tools and methods created through this project will be implemented by these agencies. PITC was granted a 30-year license to manage the concession.

A Project Steering Committee[3] (PSC) governs and guides the implementation of the CBioD Project and ensures goals are achieved. It coordinates the agencies involved in the project. The members of the PSC are as follows: Ministry of NRE Malaysia, FRIM, Economic Planning Unit, Forestry Department HQ Peninsular Malaysia, PSFD, Perak ITC Sdn Bhd, Orang Asli Affairs Department and UNDP Malaysia.

An International Advisory Panel (IAP) provides advice on technical matters and 'facilitates the dissemination and management of knowledge'. A national Technical Working Committee[4] (TWC) also provides advice on technical issues as well as providing a link to Perak State Forestry, NGOs, Local Universities, and the FDPM.

Project structure

The project has been divided into four sections. The first concerns biodiversity assessment in space and time and alternative timber harvesting approaches. The second concerns the economic values that derive from forest landscapes. The third integrates results from the first two sections in planning tools. The fourth deals with outreach and implementation.

Table 1. Outcomes and outputs are listed here for reference:

Outcome 1: Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest management planning
Output 1.1: Efficient statistical methods for estimating biodiversity from small samples.
Output 1.2: Improved harvesting, assessing roles of VJRs, assessment tools and methods

[3] Referred to as the "National Steering Committee" in older project documents.

[4] Referred to the "Technical Working Group" or TWG in some documents.

Output 1.3: Manuals and software that provide assistance and guidance in implementing biodiversity friendly forest planning and harvesting.

Output1.4: Staff of Perak SFO and at least one other SFO trained in application of methods to measure biodiversity and in implementation of biodiversity-friendly forest planning and harvesting

Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations

Output 2.1: Feasible methods for estimating non-extractive values of tropical rainforests.

Output 2.2: Manuals and software that provide assistance and guidance in full valuation of goods and services

Output 2.3: Staff of Perak SFO and at least one other SFO trained in full valuation of goods and services

Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level

Output 3.1: Models for predicting biodiversity within and between forest community types, taking into account logging status and location

Output 3.2: Models for predicting impacts on biodiversity and associated economic costs and benefits

Output 3.3: Staff of Perak SFO trained in application of models that integrate ecological and economic tools in forest planning decisions at a landscape level

Outcome 4: Capacity exists to apply methods developed by the project in tropical forest management operations

Output 4.1: Revised Malaysian criteria and indicators of sustainable forest management incorporate procedures developed by the project as standard requirements

Output 4.2: ITTO criteria and indicators incorporate procedures developed by the project as standard requirements

The site and its conservation significance[5]

PITC concession is a block of 9,000 hectares of apparently pristine hill forest. It lies within the Temengor Forest Reserve within Hulu Perak District, in the state of Perak Darul Ridzuan. Temengor Forest Reserve is part of a large forest landscape that extends from theThai forests in the north to the neighbouring States of Pahang and Kelantan in the south. Most of this forest landscape has been gazetted within permanent forest estates. Other large tracts include the Belum Forest Reserve (Perak) and the Ulu Muda Forest Reserve (Kedah).

The Malaysian Nature Society is on record as identifying timber harvesting practices as being a threat to the biodiversity in this region (MNS 2005). MNS launched a campaign to save the Belum Temengor Forest Complex In April 2006. The main threat noted at that time

[5] This section is based on various texts including project documents, online materials and most notably: WWF Malaysia (undated) Biodiversity Assessments and Conservation Planning for Sustainable Production Forestry in High-Conservation Value Forests The First 5-Years Logging Cycle Perak Integrated Timber Complex, Temengor Forest Reserve, Perak Peninsular Malaysia -- A Preliminary Biodiversity Assessment prepared by WWF Malaysia with the support of Tropical Rainforest Trust.

was a proposed plantation of *acacia* along the corridor adjacent to the East West Highway that would effectively fragment the Complex into North and South[6].

The forests of Belum and Temengor comprise species characteristic of two different botanical regions: the ever-wet Sundaic equatorial rainforests as well as some from the more seasonal rainforests in the Thai and Indochinese region. The area's biodiversity is globally significant with more than 3,000 species of flowering plants, 100 species of mammals and 274 species of birds (including all ten species of hornbill known from Malaysia). Many species possesses localised distributions. The area supports notable large-mammal populations including Asian Elephant, Sumatran Rhinoceros, Malayan Tiger, Malayan Gaur (Seladang), Leopard and Tapir. The area is recognized internationally as an Important Bird Area (IBA).

The PITC concession area is rugged (47% of the area is considered 'steep' or 'very steep', >21 degrees). Slopes of 60 – 70 degrees are considered common. The majority of the PITC concession falls lies between 100 and 500m above sea level (a.s.l.) but reaches 1000 m in the south. The concession area drains into three rivers, the Singor, Sengoh and Talong. Much of the concession lies over sedimentary rock with some granitic rock to the south. Salt (or clay) licks of significance to local wildlife occur.

PITC's mean gross timber stocking (for stems over 30 cm diameter) is estimated at just over 208 m^3ha^{-1}. The Perak State Forestry Department limits timber extraction to 85 m^3ha^{-1}. Data from PITC's Blocks 1, 2 and 3, show that only 5-6 trees are removed from each hectare providing typical volumes of around 40 m^3ha^{-1}. AAC is estimated at 2.09 $m^3ha^{-1}y^{-1}$. PITC does not permit timber extraction in wet conditions. The concession has achieved FSC certification (see next section).

Mammal species known to occur in the concession include the critically endangered Sumatran rhinoceros (see WWF Malaysia [undated] for a fuller account). The endangered Asian elephant, leopard, serow, tapir and tiger have also been recorded as have the Malayan sun bear, deer, seladang/gaur, banteng, white-handed gibbon and siamang. Notable birds include three that are globally threatened, the Plain-pouched Hornbill *Rhyticeros (Aceros) subruficollis*, the Blue-banded Kingfisher *Alcedo euryzona* and Wallace's Hawkeagle *Spizaetus nanus*. Twenty-seven other bird species are categorized as 'Near Threatened'.

Twenty six species of amphibians have been identified in the concession including one species not previously known in Malaysia. Reptiles are poorly known but unverified reports suggest False Gharial *Tomistoma schlegelli* occur.

A number of notable plants have been reported, e.g. "Bukit Langgar in compartment 25 contains quite exceptional vegetations. The Seraya (*Shorea curtisii*) associated with Daun Payung (*Johannesteijsmannia altifrons*) forest is relatively unique in the context of Malayan floristics. In its foothill, *Didymocarpus dawnii* (a newly described Gesneriaceae found by the MNS Belum expedition)".

PITC's forest management plan states that around 20% of the concession is considered closed to extraction due to reserves, buffer zone, steep slopes, areas over 1000 m etc. Three HCVF sites (total area 62 ha) have been demarcated and are totally protected from exploitation. This plan also states that "Assessment of suitable HCVF sites will continue to be undertaken as more forest areas are assessed prior to logging activities and as new information is made available through stakeholder consultations". Riparian buffer zones combine to add another 677 ha of protected area.

The Temengor area alone is considered too small to sustain tiger populations without connectivity with adjacent areas. It has been suggested that the required biological corridor

[6] http://www.birdlife.org/news/news/2006/05/belum.html

would pass through PITC's concession[7] – though this is now contradicted by the observation that tigers cross the East-West Highway from various points in Belum FR (Reuben Clements WWF pers. comm.).

The concession land is owned by Perak State. No settlements or traditional claims occur within the concession area though around 700 indigenous people live in the nine nearby villages. These people are considered dependent on the forest to varying degrees, hunting and collecting NTFPs. Wild rattan collection is a significant source of local income. The concession itself contains significant NTFP resources including rattan and bamboo. There are also various fruit and medicinal plant resources though it is believed that these were not exploited in the recent past due to limited access. Harvesting of *gaharu* (*Aquilaria* spp.) is noted in some reports. In addition, snares, electro-fishing and fish blasting have occurred in the past – the MTEs were unable to clarify the current status of such activities.

There are no outstanding land claims by the *orang asli* on the concession land. As far as is known there are no sites of cultural significance. Presumably all such concerns have been assessed and found satisfactory during PITC's certification.

Certification of PITC

On the July 31 2002, it was announced that PITC was the first natural forest in mainland Asia, to receive the Forest Stewardship Council (FSC) certificate of good forest management[8]. However, the certificate was suspended in 2006 as PITC failed to comply with (or make satisfactory progress with) some FSC requirements[9]. Certification was reissued in February 2008.

"Towards this end, PITC fully supports the principles and criteria of the FSC for forest management certification. In the same light, PITC is also committed to achieving fulfilling the Malaysian Criteria and Indicators 2002 for forest management certification (MC&I 2002)."

Co-funding and other contributions

Aside from the GEF through the UNDP, funding and various 'in kind' contributions are provided by ITTO, the Malaysian Government (through FRIM), PITC and the CBioD Project's US based collaborators.

Table 2: Sources of financing*

Source	US Dollars
UNDP-GEF	2.26 mil
FRIM (in kind)	2.31 mil
FRIM (cash)	0.08 mil
International Tropical Timber Organisation	0.53 mil

[7] http://www.perakitc.com.my/index.php?ch=pln&pg=pln_plan&ac=7

[8] Following the FSC's Principles and Criteria as elaborated by the SCS Interim Standard for Malaysia, V 3.0, and October 2006. The project was funded by ScanCom and supported by Tropical Forest Trust, WWF, Global Vision and Friends of the Earth.

[9] The MTEs were unable to locate formal documentation on these concerns. But other sources include The Star Online, 'Blow to timber exports.' 14 July 2006, http://www.thestar.com.my/news/story.asp?file=/2006/7/14/nation/14835197&sec=nation.

University of Miami & Duke University, US (in-kind)	0.53 mil
Perak Integrated Timber Complex (in-kind)	0.05 mil
Total Amount	5.76 mil

* source UNDP web site updated by FRIM (pers comm. to MTEs)

PITC consider that they have incurred significant additional costs (delayed timber harvesting and extended period of road maintenance). During the course of the CBioD Project various additional contributions have been made. For example, PITC has extended financial support for the building of additional staff camping facilities.

In addition FRIM and their overseas collaborators have spent funds on a number of "supporting studies" – that is activities that supplement but are not expressly planned in the CBioD Project[10].

Project start and its duration

After some delays, the CBioD Project was finally planned to run for 60 months starting from 1st April 2007. The PSU Office was established at FRIM on 3rd April 2007. The recruitment of the five PSU staff was completed by the 1st week of May 2007. The first Annual Work Plan Meeting was held before the end of that month (May 22).

Problems that the project seek to address

Forest management practices throughout the tropics tend to emphasise timber production. Concerns about sustainability, conservation and environmental goods and services are inadequately addressed leading to a range of environmental and social costs at various scales. These deficiencies reflect various factors including limited technical knowledge, institutional constraints, perceived costs and limited human capacity. The project seeks to improve understanding, gain institutional engagement, lower costs and increase the abilities and human capacities needed for improved management of trade-offs between timber production biodiversity and other values in managed forest landscapes. Demonstration by implementation is required.

Immediate and development objectives of the project

The CBioD Project seeks to improve biodiversity conservation and the maintenance of other values in tropical forest landscapes managed for timber production. The project will produce information, methods and decision-making 'tools' to better maintain the conservation value, and other values, of production forest landscapes. Methods will make efficient use of limited data sets.

While the CBioD Project focuses on the hill dipterocarp in Perak State, in Peninsular Malaysia, there is an intention that outputs will have wider relevance. Adoption of procedures in other Malaysian states and one other country are required before the end of the project. The project incorporates various training and dissemination activities.

[10] According to FRIM, examples include work on alkaloids of tree species (15,000 USD), bat DNA assessment (28,000 USD), carbon and biomass studies, soil moisture study, soil fungi, and economic studies on the impact of changes in forest cover on down-stream activities. The UC Berkeley support to these activities is said to have reached 80,000 USD already.

Main stakeholders

1. Perak Integrated Timber Complex (PITC). PITC host the field project and are willing to adopt the selected approaches and methods.
2. Perak State Forestry Department (PSFD). Hosts PITC.
3. The Forestry Department Headquarters of Peninsular Malaysia (FDHPM). If satisfied with the new tools and methods they would consider their wider application.
4. Based on consultation with and approval from its stakeholders the Malaysian Timber Certification Council (MTCC) has the potential to adopt new tools and methods in its Malaysian Timber Certification Scheme subject to the approval of its stakeholders and the MTCC Board.
5. The Forest Research Institute Malaysia (FRIM) has direct interest in the project as it is fully in line with its mission to plan and implement research for the development of the forestry sector and conservation of forest resources.
6. Similarly the international collaborators have direct interests in providing their technical services towards the joint-development of the new tools and methods

Other than the above primary stakeholders; various additional entities participated in the stakeholders consultations (see p.50 of the *Project Brief*).

Results expected

The CBioD Project documents identify a number of outputs and outcomes. Specific reference is made to the log-frame associated annexes (which add justifications and details). Here is the summary of 'Project Deliverables' (from section 1.5 of the inception report).

"At the end of the CBioD Project the tools listed below are to be available for relevant government agencies, notably FRIM, the Forestry Department and MTCC and the industry notably PITC. Together with GEF OP3 projects, they will also have a better understanding of the impacts of their interventions of the forest ecosystem especially on its sustainability and biodiversity.

I. Computerised system and database for recording and managing biodiversity

II. Efficient statistical methods for estimating biodiversity from small samples

III. Improved methods for assessing biodiversity

IV. Improved understanding of the overall impacts of logging on biodiversity

V. Models that relate economic values associated with biodiversity to ecological and socioeconomic factors that influence them

VI. Improved models for predicting biodiversity taking into account logging systems and locations

VII. Employ harvesting protocols and technology that would conserve or protect biodiversity

VIII. Improved forest planning model for allocation of lands between protection and production taking into consideration biodiversity and economic benefits and costs

IX. Increased skills and capacity of local counterparts in all aspects of the research

X. Dissemination of the tools and methods to other countries"

These outcomes, and their relevance and progress are discussed in greater detail in the following sections.

Findings and Conclusions

The MTEs are *overall* content with the project: its formulation, relevance, adaptability and management. An MTR should be seen as a constructive opportunity to adjust – while much of the following text inevitably focuses on perceived problems and challenges the MTEs underline that their judgement is generally positive. While comments are often critical, none suggest a crisis; the problems noted are neither excessive nor requiring culpability. With continuing flexible management, and an increased attention to the practicalities of achieving the project's longer-term goals, there is no obvious reason why the project should not be successful.

The MTEs congratulate the project team on their progress so far and encourages them to continue to seek successful outcomes.

Project formulation/conceptualisation

Despite the long time since its original formulation, the project remains appropriate for its goals.

The ultimate goal of the CBioD Project is to bring about more effective biodiversity conservation in forest landscapes managed for timber and other benefits. But the project formulation does not emphasise this ultimate goal. Research, tools and plans are not ends but means. Effective conservation, as the ultimate goal, should be made more explicit in project processes and outcomes. No CBioD project outputs or outcomes are defined in terms of convincing conservation benefits. Furthermore, practical experienced field conservationists have had limited involvement in guiding project activities[11]. The project risks developing overly theoretical approaches of limited practical use. Three steps would reduce this concern.

1. In the final year of the project (before or during the final evaluation): of a poll of at least three (ideally more) experienced conservation professionals[12] who have been fully briefed on the project's approach and results, a majority agree that application of the tools has at least a 75% chance of *contributing significantly to the long-term conservation of* (a) *Perak's forest biodiversity* and (b) *biodiversity elsewhere in Malaysia* and (c) *forest biodiversity outside Malaysia*.
2. Experienced conservation professionals need to be more closely involved in day-to-day project development (especially the tools) as well as periodic project appraisal and oversight (one of the steering groups, likely the IAP which should be allowed to include at least one regional/local conservation expert). Note that endorsement by conservation NGOs will also add to credibility.
3. Implementation needs to be planned and credible. A concerted effort needs to be made to work with all relevant stakeholders to clarify *shortcomings* in the current Malaysian planning processes (including factors reducing the likelihood of implementation), and the various factors that *should* be included in planning (for conservation and other factors). Based on this a project led 'action-plan' should be developed as to how each of these challenges will be addressed. These analyses should not be limited in scope and should be prepared to identify legal concerns, capacity limitations and threats such as poaching. Ideally, commitments will be sought as needed to minimise risks and

[11] A number of opportunities are identified in project documents, for example WWF-Malaysia's request that the project develop guidelines on biodiversity protection, monitoring and management, particular for large mammals (in TWC June 2008).

[12] We suggest that the major NGOs and regional institutions can be called upon to identify suitable evaluators: obvious options include CIFOR (DS can provide introductions), WWF, MNS, TNC and IUCN. UNDP and ITTO should also be able to provide support.

maximise the potential. The recent ITTO-IUCN guideline on biodiversity conservation in managed forests[13] provides may provide a useful checklist of such issues.

The primary activity for the initial phase of the CBioD Project is research. It is the nature of research that results cannot be fully anticipated and their ultimate utility cannot be guaranteed. Some vagueness is reasonable in an R&D project that wishes to leave room to adjust to study outcomes and stakeholder inputs. The MTEs are thus sympathetic to this and agree with earlier project evaluators who obviously felt that the associated risks were and are worth taking. Nonetheless, vagueness must be reduced as the project progresses and this needs emphasis to ensure the transition is effective. The project has perhaps become too comfortable with using research as an excuse for being vague – the MTEs believe this is a trap as project objectives require a more active and planned process of engagement. The project needs a clear process for developing plans and actions from the research – key steps need to be proposed, reviewed, mapped out, and then regularly revisited and updated to ensure everyone keeps their eye on the goal. If research outcomes are unclear then a range of plausible scenarios should be considered. This process should be led by FRIM with oversight from UNDP and ITTO. Progress on these themes should be a focus of both the TWC and PSC.

The CBioD Project documents lack clarity in various aspects. It would have been desirable that all the key concepts were clearly explained to the non-technical reader. There are many examples of obscure phrasing[14], and missing justifications (e.g. the unexplained sampling goals, where do they come from and why). For example, the primary goal of the project is to "remove scientific barriers to mainstreaming biodiversity in tropical forest management decision-making" but what are "scientific barriers"? What is "mainstreaming biodiversity"? Why is the word "conservation" avoided? The phrasing seems obscure and inappropriate – what are really being offered are improved information, methods and understanding (to improve conservation outcomes). While individual criticisms are minor, and thus appear petty, they all impede communication. Key stakeholders are excluded when they should be engaged. The key question now is whether the project team can reach their ultimate (non-technical) users, and engage with them without trying to bamboozle them? The wording of this primary goal could easily be changed (see above suggestions). There is a need to promote clear communication and to value understanding. All involved (project staff, UNDP, etc) should improve their ability to communicate technical content in clear language to non-specialists (avoid unnecessary jargon).

The *concept* of biodiversity being addressed in the CBioD Project, and its link to achieving conservation, is not explicit. Who has defined these goals and why? This can be addressed through engagement with conservation interests (see above).

The CBioD Project document lacks explicit capacity building activities for the Malaysian scientists. The MTEs also note the funds allocated outside the country as Malaysian expertise was deemed unavailable. Local capacity is necessary for sustainability (see later). To some degree capacity concerns have been informally addressed by imaginative project management and the good will of the project partners. It is also tackled by the ITTO funded project components.

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[13] Guidelines for the Conservation and Sustainable Use of Biodiversity in Tropical Timber Production Forests.

[14] For example, we note a confusion between the words 'method' and 'methodology' (a common trend and one shared by UNDP documents). The *American Heritage Dictionary of the English Language* provides a conventional definition for 'methodology' (the study of methods) before commenting: " … in recent years, however, *methodology* has been increasingly used as a pretentious substitute for *method* in scientific and technical contexts". Indeed so. Such usage reduces clarity.

The MTEs noted that the output under 2.1 (NTFPs and *orang asli*) was well justified in the original CBioD Project document. This output was later reduced in the inception phase due to funding cuts (this process was documented though it is not clear whether anyone representing the *orang asli* was present in those discussions). At the time of the MTR the status of the NTFP study was unclear – apparently it had been first overlooked and then forgotten, i.e. there was no plan and no-one had a clear responsibility to follow up. Discussions showed willingness to acknowledge the oversight and to 'do something small' based largely on the NTFP expertise already present at FRIM. Socio-economic researches have been undertaken by FRIM in various locations in the country. These research areas involve the state of sociology and economics of utilisation of NTFPs by local communities that include *orang asli*, valuation (e.g. Petai and medicinal plants) and measures of dependence. A clear formulation and budget for the NTFP activity is required. Among the tasks the MTEs suggest a focus on reviewing: (1) value estimates (critically evaluated) regarding the availability and utilisation of NTFPs from forests where timber harvesting occurs versus those where timber is not extracted – with, as far as possible, preliminary explanations for differences; (2) the various methods that can be used in the valuation of NTFPs and their contribution to local livelihoods. The review would ideally help guide the choice of suitable methods for specific circumstances with guidance on good practice in data collection, analyses and interpretation.

The CBioD Project documents recognise the need for involvement of, and oversight[15] from, the *orang asli*. This has not been effectively carried through. At the time of the MTR the sole role of the *orang asli* seems to be as paid labour at the field site. This does not reflect well on the project (Malaysia, and even Perak, are subject to criticism on such issues[16]). There are clearly difficulties in achieving the representation required (various unsuccessful efforts have been made). The MTEs are flexible about what is finally done (ideally we would consult the *orang asli*). It must be more than a token gesture. There is a need to find a representative (or several if there is no cohesion as is said to be the case) who can speak for the community and can participate in at least one of the higher level CBioD Project steering groups. This requires the CBioD Project's management to directly engage and consult with the communities. Note that the department for The Department of *Orang Asli* Affairs does not represent the *orang asli* but the government. In addition, Malaysia supports the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the CBioD Project should examine what this implies for forest land-use planning in Malaysia and the wider region (even if the implications in PITC are minimal this is unlikely the case in all other target regions).

The wish to build internationally recognised and credible research outputs means that several key CBioD Project outputs are dependent on external collaborators – as it was deemed that suitable capabilities are not present in Malaysia. The risk that a contractor might fail to fulfil obligations has not been addressed[17]. In consultation with their international collaborators, and perhaps with the IPR, the CBioD Project management needs to think through such contractor risk scenarios and how the project would adapt and respond.

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[15] See page 6 of the project document "A representative of the indigenous community will be invited as a member of the National [=Project] Steering Committee [that is now called the "PSC"] to ensure that the views of the community are represented".

[16] See for Perak, e.g. http://www.perakspeak.com/v2/newsperakspeak/orang-asli/170-orang-asli-defending-our-forest-.html, and more recently http://www.aliran.com/index.php?option=com_content&task=view&id=969&Itemid=45 and for external views http://www.aitpn.org/Reports/JHEOA.pdf.

[17] Note we are criticising arrangements not anyone's reliability. It is perhaps the blurring of this distinction that has made the Malaysian project staff shy to address this topic.

Furthermore the ability of international collaborators to recognise and respond to local concerns (within the CBioD Project and without) is somewhat *ad-hoc* and not subject to effective oversight. Their near absence from the MTE process, despite their key role in guiding the project, is an example [related also to scheduling of the MTR]. Clear mechanisms (e.g. regular external assessments and feedback) need to be built into the development process to ensure that tools and models (their inputs, outputs and operation) match as far as possible with local needs and abilities – international collaborators will need to be effectively guided by these processes.

The Project will produce software based tools. The capacity and responsibility to support these tools and their users beyond the project life-time requires attention. Addressing this will require support from stakeholders beyond the life-time of the current project. Ideally there will be multiple stakeholders with the skills required to improve the software and to help users address their specific requirements. This should be planned for by all the concerned stakeholders including UNDP and ITTO.

Much of the quality control of the project focuses on academic outputs and peer review. While necessary, this is *not* enough to achieve projects goals. Attention will be needed to building acceptance and credibility with real field practitioners. While some efforts have and are being made they will need attention and effort to ensure they are not too top-down and prescriptive in nature but reflect local needs and capacities. As the project moves from research to application there will be an increasing need to engage with stakeholders who can best represent the needs of the end users and interests (notably conservationists). These will include planners who have experience in developing and applying plans for conservation outcomes (expertise may need to be sought outside the region).

Data can be collected, plans produced and boxes ticked without any genuine conservation gains. The emphasis must be on implementation and the achievement of long-term conservation gains[18]. Any steps than can give credibility, and assurances, concerning the viability of this overall process should be explored. (Various other recommendations also address this point).

The comments of the STAP reviewers (Annex IV of the Project Brief) remain pertinent. Criticisms such as the limited time available to observe changes, the ability to generalise across forest types, and relevance to non-virgin forests, remain valid (if hard to solve). As these observations will regularly re-appear they deserve constructive reflection by the project team so that these arguments can be acknowledged, and do not undermine project credibility.

FRIM and overseas collaborators would like to amend the formal project structure to fully acknowledge their additions contributions with regard to additional studies. The MTE has no objection but suggests that the role of these studies in supporting the overall project goals needs to be carefully articulated.

Formulation

The CBioD Project team needs to be better able to answer tough questions than they are at present. The project is research driven, but this is not an indefinite excuse for vague answers. Those who challenge the project's claims and assumptions should expect a clear and convincing response. In that spirit, and bearing in mind the comments above, a brief critique is offered.

[18] The MTEs acknowledge some reservations from project members who prefer to see the project as "about providing tools and options" – but do not accept this as sufficient as a justification for the use of UNDP GEF funds. Beneficial *impacts* must be the project's goal.

Outcome 1 – "In determining AAC for 2011-16, Perak SFO utilizes tools and methods developed by the project" may be achievable though the MTEs note the comment from the FD (in Annex 6 p. 22 of the Inception Report) that they did not believe this should be fixed in advance (but rather suggest a ten year time-line). There are clearly different views on this, but the FD needs to be in agreement that this is attainable. Evidence that this remains possible was noted in the PITC management plan (PITC 2007, p.14-15) which states "the entire Plan will to be reviewed and updated by 2010 to further to keep it current and to integrate new research findings and trends in thinking in order to maintain its relevance and flexibility in accordance with the needs of the time".

Output 1.1: This study, while of academic interest, remains poorly justified in terms of the contribution that this can make to improved conservation (see previous discussions). Arguably rather than "Efficient statistical methods for estimating biodiversity from small samples" the need is for cost effective identification and status assessment of species (or communities) of conservation concern, along with an assessment of any threats and what can be done to reduce them – ideally this would make good use of existing data. The MTEs are not convinced that one approach will be the most practical in all contexts. There needs to be a practical explanation (perhaps a decision tree) of how the estimation of site diversity and landscape diversity can contribute to conservation goals.

Efforts to develop maps to guide conservation are seldom if ever based on species richness data *per se* but rather highlight sites or areas of specific concern or value. The MTE are not aware of any productive forest landscape anywhere in the world being managed on the basis of its local or regional diversity patterns nor does it seem clear what the managers would be expected to do with these data. The MTE's raised these questions and no-one associated with the project has provided a convincing answer.

Mapping for conservation needs to include a range of information relating to both values to be protected and the threats that impinge on them. Currently it seems that such data needs have not been carefully considered and reviewed in a practical context. For example, sites such as salt/clay licks seem significant at PITC.

Most experiences in cost effective conservation priority setting involve (but are not restricted to) surveys by experts identifying species or communities of conservation concern – will it be clear at any point why that approach is less efficient than the measures (or indices) of richness being sought?

The MTE also notes that there is a need to be transparent about how some choices are going to be made. How for example will the "shortlist of taxa, proven as good bio-indicators at a compartment/landscape level" be judged?

There is also a need to shift focus from proximate onto ultimate goals. For example "guidelines for assessing and monitoring biodiversity in production hill dipterocarp forests" cannot stop there they need to show how and why such data can improve conservation outcomes.

Output 1.2 (also activity 1.3.4): This study, while narrowly defined, seems relevant and well conceived. The MTEs suggest that more attention will need to be given to how these methods might apply in forests already on their second or third cutting cycle. Another minor concern here is whether the assumption that there is no need to leave seed 'mother' trees, will be valid if such a procedure is executed in already harvested (second or third cycle) forests. Furthermore the project team is in the habit of emphasising the need to 'maintain vertical structure' but this is debateable (is the average change in vertical structure really going to be less? It depends what is measured) rather it is about ensuring a more even (less heterogeneous) distribution of canopy opening (with a greater chance that some large trees will survive the first cut). High quality 100% tree maps and planning to begin two years ahead of the harvest are significant requirements.

Activity 1.3.1 is of value. The MTEs are pleased that the project design was increased from three to six reserves (but even this may be too low to really pin down the influence of reserve size versus other confounding factors). The limited scale of sampling and replication within the study lacks statistical power. The MTEs anticipate many 'no-significant effect' results just because the effect sizes are too low. Little can be done at this point other than reminding the researchers to avoid the common error that equates non-significance with no effect and where possible to estimate the statistical power of their approaches (rather than "Our results do not detect any effect of the VJR on X" use "Our results suggest that any effect of the VJR on X is less than Y at 95% confidence").

Activities 1.3.4 – Harvesting Experiment. Looking at the changes in flora and fauna only a few months after timber cutting and extraction will not give a very clear impression of the real consequences of different harvest techniques over the full cutting cycle. The short-term nature of the planned study will limit the value of the initial conclusions. The MTEs endorse efforts to maintain and re-measure the study plots over an extended period if support can be identified.

Output 1.3 and 1.4: the CBioD Project will need to think very carefully if they intend to base their manuals and trainings solely on their own work as such a limitation might be counterproductive. To promote best practice the project should not necessarily limit themselves to promoting the methods they have developed and examined directly but should also make a careful review of good practice and recommendations from elsewhere (e.g. via UNDP ITTO and others who can provide guidance) and *help* the users to judge what is most relevant in any given situation.

If this output ultimately includes details on how to collect data relating to 'indicator taxa' (or similar) there must be clear guidance as to how managers are to use (respond to) these data.

The practical utility of any 'biodiversity indicators' must be clarified. We are not concerned about these being a subject of research. But to provide methods that will be (a) used by managers and (b) contribute to conservation outcomes there will need to be clarity as to their (potential) use and effectiveness in this context. There has been too little formalisation of (a) what the indicators will indicate (b) how this will be formally evaluated and (c) how managers will benefit from the resulting data. While various answers to (a) and (b) have been forthcoming these are generally 'research questions'. It will not be enough to provide guidelines for data collection without clear thought on their use in management. Notably, the academic literature is not especially helpful in this case as utilitarian studies and applications are few. This does not mean that progress is impossible; rather that practical options and limitations are unclear. The research team needs to discuss this "indicators-for-what" challenge and find a convincing response. They may need help. Results of this discussion may require some adjustment in project strategy regarding who will generate and use these tools and data, and for what purpose with what expectations.

Some specific technical limitations of these studies (such as the uncertain effects of seasonality) could have been addressed (and still could be) with some additional sampling. The IAP raises a number of concerns of this nature. Various others have been raised and discussed during the MTR. Opportunities to address these points should be sought and utilised where possible.

Outputs for 2. Tools for economic valuation of goods and services.

Activity 2.1.1: To compile data for constructing a landscape-level, statistical model that predicts the economic consequences of changes in hydrological functions caused by changes in forest cover.

Economic valuation studies linking forest cover changes and hydrology are much needed in the region. The Project can access valuable time series of hydrological data and forest

cover from several Peninsular Malaysian states. Forest cover data have already been obtained for Perak and Johor though there have been delays for other states. It is important that this activity is scaled up to include other states that are prone to floods such as Kelantan and Trengganu and take cognizance of the role of other non-hydrological variables such as rapid construction of residential and commercial projects exceeding the capacity of drainage facilities[19].

Activity 2.1.2: Surveying Peninsular Malaysian households to generate data necessary for estimating two non-extractive non-timber values: recreation and passive use.

Promoting conservation of forest areas would require assessing environmental goods and services beyond the extractive goods which would account to a limited number of people – timber and NTFP harvesting contractors, workers and local communities depending on the NTFPs. The non-extractive non-timber values of recreation and passive / non-use values such as for land use supply of refugia and bio-diversity habitat would be able to capture the importance that mainstream society places on the conservation of forest areas. The values expressed per individual member of society when extrapolated over the whole population could influence decision makers on how large society associates the natural forest to have. In this sense, developing economic tools of valuing the non-extractive services of forest could add to highlighting the total economic values of forest. The choice modelling (Conjoint analysis) is being selected in the valuation exercise which is a more complex approach over the simpler contingent valuation approaches. In this context a richer source of information is provided since the values could be appropriated to various combinations of forest attributes if needed. This is a greater advantage.

At the stage of the MTR, this activity had been slightly delayed. The project team and Malaysian research contractor (PE Research) guided by the international collaborator have framed and pre-tested the questionnaire. The project team has developed the choice sets in the valuation questionnaire. The team is now planning on getting the representative sample to ensure that the value information obtained is unbiased and could be extrapolated for the whole population. At the end of the exercise the team is anticipating to try to get estimates of the values on an area basis. The value estimates would be regressed with standard demographic variables like education and income of the household. This model would be useful for forecasting and in conducting benefit transfer of values in other regions.

Activity 2.2.1 Using the data from Activities 2.1.1 -2.1.2 for the development of models that are less data-intensive than the benchmark models

It is anticipated that user friendly manuals would be developed and disseminated to all relevant stakeholders. At the time of the MTR, project teams have not provided any written documents for evaluation.

Outcome 3: This outcome emphasises the planning tools.

There are key questions about the process that have not been carefully reviewed. Who will set the conservation objectives and how? Who is qualified to lead this? The practical demands abilities of the planning tools are very vague in the document. It is very unclear to most of the stakeholders just what to anticipate. There is a need to engage better with the local stakeholders, especially those representing conservation interests, before deciding what scenarios are sought.

'Optimization' in the context of conservation is not something that can be defined within a limited segment of a landscape – but needs to reflect the global context. If the goal is to ensure the maximum species within a limited landscape the problem is then to ensure that globally rare, endangered and vulnerable species and communities gain full representation

[19] According to the project the team already plans to study 13 other river basins in Peninsular Malaysia.

in contrast to widespread, non-threatened and weedy communities. Are suitable data collections being planned to address this?

Output 3.1: Models for predicting biodiversity within and between forest community types, taking into account logging status and location.

Output 3.2: will produce models that predict the biodiversity maximizing spatial allocation of forestland, subject to constraints. But again is this what conservation (and conservation interests) require?

Outcome 4:

There is nothing to review by the time of the MTR. The intended wider outreach and impacts are valid and appropriate, but also ambitious.

Implementation approach

The CBioD Project (and associated activities) has generally been well implemented. The project has adapted and addressed challenges as they have arrived. The logical framework was adapted at the project inception. Funding shortfalls have been met due to the willingness and flexibility of FRIM, the additional funding from ITTO, and contributions to specific activities from other project partners.

A research-for-conservation project brings multiple challenges in terms of oversight and monitoring. As well as the standard project oversight and engagement with key stakeholders and target groups, there is also the need for expert academic guidance and for efforts to ensure that the ultimate conservation goals are well characterised and can be met.

Project credibility will be improved and valuable guidance accessed, if the project better engages with local conservation NGOs and accesses their expertise and endorsement. Experts from these NGOs should be invited to see the project and to discuss its goals (not simply send whoever is free to attend the odd workshop or committee).

The implicit forest landscape planning concept, though rather fuzzy in the CBioD Project documents, appears from discussion to be a 'top down' model. This may limit wider acceptance in those large areas of the World where local people have some rights and access. Demonstrating the application of the project's tools in a more participatory process of landscape planning (if such an opportunity can be identified) may allow/encourage wider application.

(The lack of explicit capacity building for Malaysian scientists under the UNDP funded activities and the need for planned outreach and engagement is described elsewhere in this report).

Possible additions

Is there a good reason to include REDD in the project? Certainly it fits with trying to identify trade-offs between timber extraction and other values and could usefully be added in such presentations. On the other hand consultation does not suggest a strong demand from within Malaysia for *research* on REDD. The basic techniques (inventory) are well established – and while there are many aspect of REDD (both biophysical and policy related) that justify research the project is unlikely to make a major contribution at this point. For basic carbon accounting the required data (stem diameters) will be available to make reasonable estimates. The MTEs do not see a particular research benefit in adding REDD activities to the project. However, the computer based modelling tools would provide added value to users if standard carbon calculations can be included and this might ultimately make the tools more attractive to some end users and is thus encouraged.

At the same time the MTEs have no problem with carbon research being conducted in the project site (as currently appears to be the case through project partners). This may give rise to synergies and opportunities in the future. Dr Potts notes that "The delay of the

harvesting has also presented the CBioD Project a unique and timely opportunity to investigate the impacts of timber harvesting on changes in carbon stocks and fluxes". Through funding from Berkeley and CTFS he has developed a small collaboration with FRIM that will track above and below ground carbon stocks and fluxes in the PITC study site. He requests that these efforts might be "incorporated into the project work plan with the identification of funding". While the MTEs endorse these studies and acknowledge their contribution they leave it to FRIM and UNDP to clarify funding (the MTE have not seen budgets or proposals for these activities). Official interest in REDD in Peninsular Malaysia appears much lower than in most tropical countries. Our recommendation is that adding REDD into the project is neither required nor discouraged. If the opportunities are available and do not have major costs they may bring benefits.

Does the project require a budget neutral extension of six or twelve months? There is currently little evidence on which to make any judgement – however given the ambitious nature of the project and especially the need for supported implementation in additional sites, the MTEs are sympathetic to the proposal that such an extension may be judged valuable at a later date (once the implementation plans are well developed). Ideally these ideas would be clarified in the next 18 months.

Country ownership/Driveness

Despite the emphasis on external expertise the project shows good national ownership. Support from FRIM, PITC and other local and national stakeholders is strong. The MTR's concerns about the dependence on foreign inputs were mentioned above (these relate more to oversight than to ownership). Concerns about differences in pay, ability to publish as first authors etc. were raised and noted but are not seen as major obstacles. The contribution of local partners needs to be clearly noted. The MTEs emphasize the need to give full credit and acknowledgement for the very significant local contributions to the project (namely from PITC and FRIM).

Stakeholder participation

Many meetings have been conducted. Steering committee meetings involved several relevant Government Departments including the Economic Planning Unit, Department of Forestry, Department of Wildlife and Parks Management, FRIM, Ministry of Natural Resource and the Environment. Also attending were PITC and at least one Non-Governmental Organisation, one local university representative, MTCC and the Orang Asli Department.

The representation of NGOs, university and local communities is limited. Specific weaknesses include representation for the *orang asli*, (see above) conservation interests (see above) and expertise in economic valuation. These weaknesses should be addressed when possible.

Communications with UPEN (Perak local Government) has clearly been insufficient. This needs to be addressed by the project. One option would be to invite UPEN chair the state level steering committee.

MTCC do not wish to be formally identified as a key stakeholder. The basis for this discomfort requires exploration and explanation (it was only brought to the MTEs notice when the draft report was circulated – it had not been evident during earlier discussions and interviews). The apparent paradox of having a "key stakeholder" (as identified in numerous project documents) seeking to delete such references in the MTR demands attention and clarification by the project management, UNDP and PSC who should examine the issue further (possibly raising it with EPU or the Ministry of Plantation Industries and Commodities if this is merited). It may simply be a matter of wording and the need to stay independent and represent their own stakeholders – but it may also reflect some more fundamental issues.

Replication approach

This CBioD Project, when it is further advanced, should offer lessons for other projects.

The information and tools themselves could (indeed should) have wider value in other forest landscape projects.

The Malaysian Government is aware of its mixed international image with regard to conservation and is keen to be seen as proactive in this regard. Discussions with government staff show an interest, even an enthusiasm, in adopting better environmental practices as long as the costs and other demands are not excessive.

There will be scope for UNDP and ITTO to consider how these tools might be useful in other UNDP projects that involve forested landscapes. In addition the MTCC and the Malaysian Government, state governments, and various agencies (such as conservation NGOs) also offer potential target groups with direct and indirect influence on various project who may be able to adopt some or all of the procedures.

CBioD Project goals fit within the Government of Malaysia's plans 8 and 9, and are anticipated to fit well with plan 10 that is currently in the process of development.

The project's approaches and goals are relevant to making some aspects of the FSC's concept of HCVF (that currently lacks clear thresholds and requirements) better defined and operational. These opportunities should be explored as the project advances.

Links between the CBioD Project activities and the recently accepted ITTO/IUCN guidelines of biodiversity conservation in managed forest landscapes should also be explored and potentially formalised with ITTO.

The CBioD project will contribute to a new project being developed by UNDP-GEF on management and financing of protected areas in Malaysia. Lessons learnt from the CBioD project can contribute to the design and formulation of the goals and indicators of this project.

Another initiative that will benefit from CBioD is the proposed integrated management plan for Belum-Temenggor Complex being undertaken by the Northern Corridor Implementing Agency and Perak government.

More specifically UNDP will learn whether an R&D project can provide the kinds of benefits required from a GEF project of this scale. The experience of managing such a project will be useful. The MTEs would especially highlight the need to think through the process from R to D in the R&D as this is poorly articulated in the current project formulation. There may be a need for steering group members to include researchers and practitioners as well as a wide range of other practical interests.

Cost-effectiveness

This project will generate new tools and methods to help and improve planning and related decision making. For the local counterparts, the Project expenditures offer high returns on investments that could potentially improve conservation in these production forest. The experience should generate outputs and intellectual property that outlive the project.

As to the rest of the stakeholders; the FDPM and PITC seem convinced that the new tools and methods will help fulfil their needs. FDPM is willing to experiment with improved tools that could raise forest conservation, and PITC is willing to go along with activities that could raise its continued status of FSC certified while looking at potential avenues for gaining payment for environmental services (PES) for its willingness to raise conservation of the production forest. The MTE's interviews implied that the MTCC is willing to consider tools and methods developed by the project for inclusion in the Malaysian Timber Certification

Scheme requirements if they are adopted by the Forestry Department and are acceptable to their stakeholders.

No irresponsible and/or inefficient expenditures and activities have been detected. Nevertheless, the high costs of international collaboration especially for travel to the study site, is noted. Considering the need for qualified collaborators this budget is unavoidable. The project team should ensure that a systematic and lasting transfer of knowledge to all interested parties within and outside Malaysia.

UNDP comparative advantage

UNDP seems well placed to support the CBioD Project. UNDP believed in the project's basic premise and had the vision, abilities and connections required to develop it. No other GEF agency had that potential. It is useful that ITTO has also participated. Through its membership base ITTO has complementary abilities to UNDP, with a clear focus on tropical timber production.

The long time taken between proposal submission and ultimate implementation was noted in several interviews and UNDP bears some responsibility for this. Initial delays cost the project some good-will and diminished the 'cutting edge' nature of the research – though the basic concepts remain valid and relevant. UNDP/GEF must seek ways to have proposals reviewed approved processed and implemented more rapidly.

The CBioD Project provides a test-case for UNDP research-led project. Project success will potentially inform future UNDP projects. While UNDP has limited experience with such projects the willingness to experiment is commended.

Linkages between project and other interventions within the sector

The project has established partnerships between a national research institution (FRIM) and a consulting firm with foreign academics as co-researchers; and a local concessionaire (PITC) in providing a field site. Other than as a research partner, Government institutions involvement in the project is via the PSC. Regarding the economic valuation methods, various institutions have provided databases including the Department of Forestry, Headquarters, and the Department of Irrigation and Drainage. The output of the project has interest for the work of the MTCC. As yet there are no indications of links or collaborations with similar projects in the region (though such links are not unrealistic, via FRIM, UNDP, MTCC, FSC, ITTO and others).

Indicators[20]

The CBioD Project's indicators are satisfactory – though a clearer emphasis on conservation would be desirable and the MTEs propose an addition to address that (see above). From the MTR perspective it would have been desirable for more to have been defined as verifiable within the first two years. Clearly too some of the later goals are ambitious. There are many unknowns in achieving these goals which should be addressed by planning. The MTEs recommend that the project team should prepare draft documents detailing strategies, activities roles and time line for each activity to show how the goals and indicators shall be achieved. These plans can and should be revised as the project progresses but can also be used as a basis for the team (including the overseas researchers to monitor their own progress. (The MTEs accept that the project should be

[20] TOR: "The adequacy of the project monitoring and evaluation indicators retro-fitted by the Project and the effectiveness of this approach as a tool in project monitoring".

allowed to shift emphasis depending on what the research offers – but this should not be accepted as an excuse to delay planning for impacts. Plans should be revised as needed.)

Management arrangements

The CBioD Project has been competently managed. The managers and researchers generally work well together. Systems have allowed for the flexibility required in a project of this type. Nonetheless, there is a need for additional staff and clarity on roles. Scientists involved will need to have some control over project outreach materials.

Staff position

The CBioD Project manager resigned in early 2009. Despite the position having been twice advertised by UNDP a suitably qualified candidate has not been found. The current management team have filled the gap for four months already. At the time of the mid-term review project management was short-staffed and over-committed, with researcher often asked to fulfil management roles. The current and anticipated management burden justifies an additional member in the management team. The MTEs have been asked to comment on the role and qualifications of the position. The MTEs foresee increasing demand for: the leadership and oversight needed to ensure impacts; close liaison with stakeholders; the production of various technical publications (including project technical report); and more general dissemination and publicity.

There are three possibilities (a) to continue to seek a technically trained manager (with a slightly lower level of experience and qualification than advertised previously, e.g. perhaps an MSc and 5 years of professional experience) (b) to seek an assistant to deal primarily with publicity and outreach or (c) to seek an assistant to deal with project management tasks in an *ad-hoc* manner. The MTEs see risks in (a) unless a very engaged and skilled person can be identified – bringing in a new person who has not been involved in the project to oversee day-to-day tasks and relationships would require a very rapid learning curve and could be disruptive. It does not make sense to demand a well qualified manager primarily to help write project outputs which the scientists should develop with the help of a good editor. The MTEs suggest that an assistant position is recruited for (i.e. option b and/or c above) with the final decision depending on the candidates coming forward. If funds are saved these may provide some opportunity to hire consultants to help develop particular materials, spear-head certain promotional activities or develop specific training schemes. If a near ideal candidate under option 'a' is identified the MTEs have no objection to that option being taken if that is the preference of the PSC.

Roles and responsibilities

The MTEs note some (relatively minor) dissatisfaction from the researchers concerning administration. The researchers are unclear what support they can expect. Support roles, responsibilities and authorities should be discussed and clarified. Rather than rules, good will and flexibility should be encouraged (the team is too small for an effective 'work by rule' system). Some one-to-one interviews with the admin' team by the National project director, as well as some general briefing of the research team, are proposed. Some team building exercises may be justified.

Financial controls

Financial controls appear satisfactory. No major concerns were observed or brought to the MTEs attention. Day-to-day oversight is provided within the project and also by the FRIM

system. One annual audit has so far been conducted (in 2008 for spending in 2007) and another is anticipated soon. Despite the overlapping project lines (ITTO and UNDP/GEF) there is no way that an expense can be claimed more than once – each must be declared explicitly against one specific budget line.

Outreach materials

Some researchers raised concerns about the accuracy of project outreach materials (apparently hypothetical[21]). On the whole everyone agrees that up to now the materials are acceptable and well conceived, but the *technical details* of the message will be of increasing concern in the next years as results are developed, and researchers are unclear what controls they can keep over that. A procedure to ensure all project messages are technically acceptable to the researchers (by some agreed criteria) needs to be devised by the project management in discussion with the researchers. Realism and self-criticism will help credibility and defuse debates that may otherwise be distractions at a later point, and may be used as an excuse by actors to avoid engagement. Information regarding short-comings, assumptions and technical debates should not be hidden but should be freely shared and presented (this is better than having detractors do this externally).

Implementation

Financial Planning

The CBioD Project budget suffered devaluation of the US dollar. FRIM has largely softened the blow by making up the shortfall (estimated at around 290,000 Ringgit). UNDP should consider how it can better assist projects to cope with unforeseen currency fluctuations.

UNDP is flexible in allowing 'budget neutral' reallocation of expenses between activities and periods. In contrast, FRIM must spend its budgeted funds within a limited period. This difference in flexibility means that all the unspent money in each period is left under the UNDP allocation. This in turn causes 'aging' (unspent money sitting for a long period after having been issued). This aging is exacerbated by the necessity of having enough funds, and a safety margin, for each month for operations that occasionally have to be rescheduled, or incur unforeseen costs. Overall the financial operations are sensible and well managed. The 'aging' of UNDP funds should be viewed as assisting the project to work (providing necessary safety margins and flexibility noting that the actual costs have largely been met by FRIM). No remedial actions are necessary or desirable.

Monitoring and evaluation

The CBioD Project is overseen by a number of mechanisms (See pages 13-20 of the project document). CBioD Project activities are also subject to oversight by FRIM and (in most cases) also to the closely associated ITTO project which imposes distinct reporting requirements. FRIM itself controls expenditures. FRIM's audits include not only financial but physical asset and progress assessment.

The comments of the IAP (December 2008), will not be repeated in full here. But their comments and suggestions, especially their section 1.4, deserve careful appraisal (e.g. efforts to address seasonality).

Self critical dialogue within the research component of the project should be improved. The MTEs got the impression that rather than serving as a basis for imaginative thinking and

[21] No specific cases of mis-representation were implied or identified.

self-reflection the IAP's comments have been treated defensively – perhaps because the process is overly formal. Currently, with the exception of the sediment catchers, benefits appear limited. This is a shame as the points raised are deserving of fuller open minded discussion. The TOR for the IAP appears satisfactory, but somehow a less formal process of interaction and debate is desirable. The project should encourage a fuller (less defensive) dialogue in which references and technical details are discussed in an open and constructive manner. Overseas collaborators need to be integrated in this discussion.

As already mentioned, an area where additional oversight is now needed is in ensuring the projects practical conservation relevance. There is a need to include experts with practical conservation planning in project oversight and advice.

Execution and implementation modalities

The execution and implementation of individual research activities seemed effective (with the exception of the NTFP element). Progress of all activities needs to be reviewed by the project management and the PSC to ensure none are forgotten (as with the NTFP component).

It is less clear how the later integration activities will be implemented. Team members are unclear of their roles. The project leaders have to consult and brief research team members comprehensively to address uncertainties regarding their roles in later stages of the project. Some team workshops may be helpful.

Management by the UNDP country office

The UNDP country office's support and guidance is appreciated by the CBioD Project management and is seen as valuable. But there is agreement too that UNDP are locally overstretched. One example mentioned was that UNDP cannot always attend important meetings as they 'have to make choices and chase the crises' – this is regretted by both UNDP and the project and risks diminishing the standing of the project in the eyes of the other stakeholders who do attend. It also appears that a major problem in one UNDP project leads to reduced oversight in another. Time limitations may reduce UNDPs abilities to follow through on their support to some project deliverables (most notably application of the tools in another country). UNDP should free up enough staff time to fulfil all their expected official CBioD Project roles, have time to engage with project activities more regularly, guide planning (especially the later project goals which will require UNDP support) and to deal with problems as they arise.

The MTEs note, from CBioD Project documents (e.g. Project Implementation Review 2008), that UNDP do not necessarily consider naturally regenerating production forests designated as permanent forest estate as 'protected areas'. This is in contrast to IUCN who would view permanent forest estate (at least so far as permanence can be legitimately claimed) as IUCN category VI protected areas (managed mainly for the sustainable use of natural ecosystems) or perhaps category IV protected areas (in which conservation is achieved through local interventions that influence use). The official protection status of permanent forest estate (criteria) should be clarified within UNDP's reporting system (or UNDP's project area statistics will continue to lack consistent definitions).

The UNDP web page concerning the CBioD project is out-of-date. Both the UNDP manager and the Project manager are in-correct. There should be effective ways to ensure that UNDP web pages are updated at least every 3 months.

Coordination and operational issues

There are no major issues of coordination that have not been noted already.

The project is burdened by its numerous reporting obligations and is short staffed at a management level. The need to chase short-term obligations may mean that more general reflection and planning have not gained the time and attention required. The MTEs cannot offer any direct solutions but, if there is any chance of flexibility, would encourage discussion on this topic by both ITTO and UNDP to see if the overall reporting burden can be better combined or reduced.

The challenges of long-distance communication between the Malaysia based team and the international collaborators may lead to some divergence in views, opinions and visions. Additional efforts to address these would likely be beneficial (at least in some instances). The apparent loss of the NTFP project would be a practical example (clearly there needs to be clarity who is responsible for doing what by when in all aspects of the project, it would also help if the project's bigger vision and how to get there was generally shared).

Some issues on accessing and sharing data (primarily outside the project) were raised but are inevitable and appear to be being dealt with. It appears that international involvement can facilitate access from government agencies.

Further training in first aid, and the availability of medical kits, safety procedures and emergency procedures should be followed up. There may be some safety issues with vehicle use in the project site – this should be formally assessed by FRIM.

Results

Attainment of objectives

At the time of this MTR very few outputs outcomes milestones or verifiers could be directly assessed (e.g. see TWC progress report minutes 28th July 2009). In most cases the MTEs judged progress based on project documents, discussions with project staff and comments from involved stakeholders.

The assessments of objectives 1 and 3 are largely based on written communications with Matthew Potts augmented by interviews with the FRIM team.

Outcome 1

Objective 1: Tools for ecological assessment of biodiversity in tropical forests are improved and disseminated.

Data recording and storage infrastructure (Activities 1.1.1-1.1.3). Progress is slightly behind schedule. Uploading of project data on *myernet* (the FRIM central database) has started (and was seen by the MTE) but is far from complete.

The CBioD Project's own data base is delayed (M. Potts is developing this and full functioning copies will be held in FRIM and FD). The Geospatial Innovation Facility (http://gif.berkeley.edu/) has been contracted to build the database and already has a working prototype for parts of the database (http://gif.berkeley.edu/Potts/). The full database with all project data entered has been delayed and is now scheduled for the end of October 2009.

Development biodiversity sampling and diversity estimation techniques (Activities 1.1.4-1.1.5). There has been good progress. A multi-author manuscript exploring the tradeoffs of different sampling methods for estimating timber volume and tree biodiversity, using existing Center for Tropical Forest Science (CTFS) plots data should be submitted in the next 3 months.

The USA based collaborators are well advanced in developing approaches to describe community turnover based on sample data. They believe they will have an efficient numerical estimation algorithm before the end of the year. They plan to conduct a workshop

to teach the project team how to analyze the project data. A specific date has not yet been set.

Activity 1.3.1 – VJR study. The fieldwork for this study is already completed and, when identifications have been completed, analyses of individual taxa data and a synthesis paper should be forthcoming. This is now tentatively planned for early 2010.

Activity 1.3.2 – PITC Biodiversity Assessments. Groups selected for field trials include: trees, ants, dung beetles, stingless bees, moths, birds, bats, and aquatic invertebrates. Groups originally suggested but rejected include: frogs, reptiles, small mammals, rattan and bamboo, lianas, soil fungi, wasps, and butterflies. A plan to include large mammals has been dropped also, though the project still hopes to gain survey data from WWF-Malaysia to aid the landscape planning process – though it was noted that the project has lost oversight on this. The project needs to discuss survey methods and data with WWF and clarify the potential for a more effective collaboration.

Harvesting has been delayed. Poor roads and bad weather are the main factors involved. The pre-harvest harvest fieldwork for this study is complete, and a number of papers looking at alpha and beta diversity patterns are forthcoming. Draft manuscripts exist for the ants and bats, and manuscripts for the dung beetles and stingless bees are being written (these draft papers have been viewed by the reviewers). The post-harvest assessment can only happen after harvesting, which should occur in the next 6 months.

Activity 1.3.3 – Validating Biodiversity Assessment Tools

The CBioD Project has identified a series of three watersheds in upper Belum that will serve as both a site to validate the biodiversity assessment tools and establish a proper control site to compare the harvest at PITC. While the control site is a significant distance from PITC, it was decided it was preferable for long-term monitoring to place the control plots in a large undisturbed forest. The biodiversity (and carbon) assessment should be completed by the end of October. There were delays in getting permissions to access these sites.

M. Potts suggests considering using the additional assessment in Belum to test various modifications of the field protocols "For example, these could take the form of investigating the impact of different types of dung on dung beetle capture rates or increasing the intensity of ant sampling to increase the abundance of rare species in the samples". Some carefully planned review of possible refinements and modifications seems well justified if adequate comparative data can be achieved.

Activity 1.3.4 – Harvesting Experiment

Development of the algorithms, to optimize the selection of trees to be harvested in the modified protocol is proceeding on schedule. A GIS tool incorporating these algorithms should be available by early next year. There is need to complete the digitisation of the field data.

The harvesting has been delayed. Rain makes the site inaccessible and is hard to account for. Availability of the cable-based log-fisher technology to extract logs in the experimental harvest blocks is hoped for. The identification of the large trees (> 30 cm diameter) in the PITC Block 5 has to be completed before harvesting.

Additional points on outcome 1 include:

Promoting any of the field methods brings responsibilities. Legal requirements, safety and impacts of the different methods need to be clarified and addressed within the guidelines produced. For example, bird netting requires qualification. Bat and bird handling may require special inoculations and other precautions. Holding small animals like bats with high metabolisms overnight without feeding may incur mortality.

Risk to the field research team should be assessed and reduced as far as is reasonably possible – do they have the inoculations and safety equipment required for the work they

are engaged in (e.g. rabies for bats, tetanus for all, first aid training, safety hats in the logged areas etc.?). Vehicles used (whether FRIM or concession) should be in a safe state of repair and driven by qualified staff.

The emphasis on improved harvesting should give some attention to all key aspects of land-use planning: notably road placement. This should be carefully considered.

There is an intention to 'scale down' the data collection to something that is simple but still useful. It will be essential to clarify these objectives (useful to whom and for what).

Outcome 2

Activity 2.1.1: construction of a landscape-level statistical model for predicting economic consequences of changes in hydrological functions caused by changes in forest cover

Currently, data for constructing a landscape-level, statistical model that predicts the economic consequences of changes in hydrological functions caused by changes in forest cover has been undertaken for the state of Perak. FRIM has just received data from the national forest inventories for another state to allow FRIM to replicate this study for the state of Johor. The other set of data on river flows has been furnished by the Department of Irrigation and Drainage (DID)

Dissemination of research outputs:
(i) Early findings for the state of Perak have been presented at the CBioD National Workshop, August 10-11, 2009Payment to Ecosystem Payment to Ecosystem Services (PES) by Ismariah Ahmad and Jeffrey R. Vincent. The gist of the reporting is on answering two questions:

1. How do changes in forest cover and logging status affect watershed services?

•Water quantity: reduced floods and droughts

•Water quality: reduced sediment loads

2. What are the costs of supplying increased levels of those services?

•Opportunity costs: forgone stumpage value in protected forests

Early findings suggest: Annual stream flow is lower in catchments with more virgin forest cover.

i. Virgin forests were found to reduce stream-flow during wetter and drier periods as well as during other times of year.

ii. Virgin forests therefore might play a role in mitigating flood damage.

iii. No evidence was found that virgin forests enhance dry-season flows.

(ii) A Paper has been prepared for the XIIIth World Forestry Congress, "Measuring Tropical Forests' Impacts on Watershed Services: Spatial Variation in Quantity and Costs" by Jeffrey R. Vincent, Ismariah Ahmad,* Kurt A. Schwabe, Emily Weidner, Rodziah Hashim, Marryanna Lion, and Jie-Sheng Tan-Soo.

The NTFP project seems to have been dropped partly as an oversight (see earlier). This occurred despite (pg 34 Initial Project Brief Annex I) the statement that the lack of reliable economic estimates and their often ignored in forest planning decisions.

No-one is clear who is doing it and how. The budget allocated for non-timber forest product utilisation by local communities is now only USD two thousand only. Clarifications during the

MTR suggest this activity should start in Yr 4 for integration into Land Use Planning model. Anticipated results would be estimates of monetary value flows of NTFP on a per ha forest basis

Our assessment is to propose (a) a review of NTFP values with (b) a simplified procedures manual on methods of NTFP valuation. TOR and clarity over who is responsible are now required. Additional funds may be required.

The project must translate theses various results into a useful input to forest planning.

Activity 2.1.2: Surveying Peninsular Malaysian households to generate data necessary for estimating two non-extractive non-timber values: recreation and passive use. At this stage of the MTR, there are no outputs, except the pre-tested questionnaire.

Activity 2.2.1 Using the data from Activities 2.1.1 -2.1.2 for the development of models that are less data-intensive than the benchmark models. It is anticipated that user friendly manuals would be developed and disseminated to all relevant stakeholders. At the time of the MTR no documents are yet available. It is anticipated that this would be more evident towards the final year of the project.

Outcome 3

There is little clarity of vision on these outcomes from the FRIM based project team. This section is based largely on written responses from Matthew Potts (in the USA) who is considered the activity leader.

Activity 3.1.1: Developing and testing statistical models that relate biodiversity and forest community types to forest characteristics Progress on the specific objective of this activity is dependent on finishing taxa level species identification and the statistical analysis of the tree structure and soil data. These analyses should be finished by the end of the year allowing work to commence on this activity by early next year. However, the groundwork for rapid progress on this activity has been laid in a series of training workshops for the statistical package R with the taxa leaders to teach them the statistical methods that they will need to relate their biodiversity to the forest structure data.

Activities 3.1.2 & 3.2.1: Modelling

Noting some lack of clarity amongst the CBioD Project staff over the current plan for the models, and potentially some changes in thinking since the CBioD Project document was written the MTEs asked for clarification regarding the tools and what they might be able to do. Matthew Potts responded as follows:

"Two distinct but related planning tools will be developed:

• Compartment-Level Tool: The tool will allow end-users (concessionaires, district forest officer staff) to operationally plan and project the harvesting of forested areas up to ~ 500 ha. Users will be able to use the tool in two different ways. The first way is that they will be able choose their own harvest strategy (i.e., individual tree selection, diameter cutting limits, etc.) and rotation length, and the tool will project changes over time in harvest volume, above & below ground carbon, and relative indices of biodiversity (which other project activities will have developed). The tool will also provide the total net present value (timber) of the harvest strategy for a given discount rate. The second way the tool may be used is for the users to specify an objective (i.e. certain level of carbon sequestration, volume target, etc.) along with constraints (i.e. level of damage, impacts on biodiversity, etc.), and the tool will determine the optimal harvest strategy and rotation length. The development of this tool requires placing a good existing forest growth model (such as FORMIX & FORMIND) in an optimization context. The tool will have a graphical user interface and require little specialized training to operate.

• Landscape-Level Tool: The tool will allow for end-users (federal forest department, state planning office) to plan the allocation of production and protected areas at the landscape level (~100,000 ha - ~ 1,000,0000 ha). For practicality, the tool will allow users to specify whether whole compartments (~ 500 ha) are to be harvested or protected. The program will allow the users to choose a varied, but limited, number of strategies to manage harvested compartments and allow the user to explore the long-term trajectory of a representative stand using the compartment-level tool. Again, the tool will have two ways in which is can be used. In the first way, the users may specify their own management strategy and project the changes in timber values, hydrological values, carbon stocks & fluxes, recreation and passive use values of protected area, and changes in biodiversity. In the second way, the user may specify a management objective and constraints, and the tool will find the optimal management strategy. The challenges in developing this tool are determining the landscape level production functions for biodiversity and solving this large-integer programming problem."

The MTEs also asked how the software-based tools would be ensured of suit local users' needs. To this M. Potts responded: "To ensure that the tools developed by the project are actually implemented, it was decided by the full project team that it was essential that stakeholders be included as part of the development process from day one. It was hoped that the national project workshop held August 10-11, 2009 would provide some guidance for the project team on the stakeholders' requirements for the tool. This appears to have been only somewhat successful. To ensure that the process of developing the tools is adequately informed by the stakeholders who will use them, over the next 6-8 months the following actions will be undertaken:

• A questionnaire will be developed by the national and international project staff to elicit key stakeholder requirements for the project tool. Individual interviews will be held with each stakeholder group to document requirements. These results will be compiled, and a unified vision of the planning tool produced.

• Based on the information gained from the questionnaires, demo front-ends of the project tool will be developed and presented to the stakeholders.

• While this is ongoing, work will continue on key backend components."

The MTEs endorse these activities (see above) and note that closer engagement with the Malaysia based researchers, the end users (including conservationists and conservation planners), is needed. The stakeholder workshop 10-11 August is an important step in the right direction.

Outcome 4

The project newsletter is valuable. The various planned publications seem helpful. There were some problems with the project's website at the time of the MTR. This was rectified about 3 weeks later. The site is a useful means to communicate with the wider world. Efforts should be made to link the web site to other relevant sites, to make it more visible, and to ensure it is working well. There is a need to ensure the researchers are happy with the messages presented (see previous). Other activities under this outcome are not advanced sufficiently to allow any assessment.

Sustainability

One of the hardest things to assess with a project like this is whether it can lead to a lasting benefit. Many issues pertain to this concern and the following should be seen as an initial effort to highlight some that have not yet been raised in this MTR.

Theoretical advances and academic publications *can* make a lasting contribution to the global community – but such contributions cannot be predicted. In this case, it would seem that the advances being sought have value more generally. However, the principle goals of this project are stated in more immediate and practical terms.

If the principle research goals are met the impacts in Perak seem likely to be sustained for several years at least. PITC's commitment is clear.

Wider impact is also likely within the Malaysian context. There is demand for certification and demand to have clear approaches to guide good practice. Interest and good will amongst the key actors and stakeholders seem favourable.

Local technical capacity may be a problem. Staff turnover, notably amongst senior personnel (and potentially in trained field staff) may prove a problem. Training will need to be scaled up and integrated with programs outside the project context.

Economic valuation is relatively new in South East Asia. In order gain appreciation of the values of the environmental services provided by forest ecosystem, and to increase research activities on these roles for further incorporation into land use decision making processes, would require a greater emphasis on capacity building among government policy making officers, private sector, and researchers. Such an effort cannot be expected from the project, but could be encouraged from the Government and UNDP.

The maintenance of natural forest on state land designated as forest estate is not guaranteed. Such areas can be planted with exotic tree crops etc. The MTEs even heard it said that "Certification, which is a voluntary process, cannot tie the hands of state government". The short-term nature of concessions in Malaysia accentuates this uncertainty (Sabah is an exception). A key question regarding planning is whether plans will be implemented. And if so, whether their influence is long term. Concession planning "Needs to be flexible" according to an interview at PTI. This is an area then where credibility can be questioned. While clearly a taboo subject, land use is known to be vulnerable to political interference. Planned concession areas can be switched at short notice (in contradiction of the planning). Politicians involved in such activities seldom suffer public censor as the processes lack transparency. The topic of 'flexibility' and political interference in land-use planning must be debated and confronted in a transparent fashion. Failure to do so undermines the credibility of conservation planning as a meaningful investment.

Costs are a concern. Incentives for good practice appear low. This is especially true for small scale activities. The Malaysian government (State and National) should ask FRIM to work with them to review ways they can encourage and facilitate good forestry practices (e.g. tax breaks etc).

The MTE were concerned that development and support for the computer based tools might cease at the end of the project thus limiting their potential for improvement, adaptations, and wider adoption. Matthew Potts responded as follows:

"The following approaches are being adopted to ensure continued development and support of the project:

• FRIM is in the process of recruiting Tzeng Yih Lam, a PhD student at Oregon State University, to join FRIM after completion of his PhD in Spring 2010. Within 18 months of graduating, Lam will spend 6 months to a year with me at UC Berkeley to work on developing and understanding the final planning management tool. Lam has the quantitative aptitude and training to serve as the key support person in Malaysia.

• Over the next 6 months to a year, the project will work to identify 1-2 key personnel at end-user agencies who will join the development team.

• The Geospatial Innovation Facility (http://gif.berkeley.edu/) at Berkeley will play an integral role in the developing of the final tool and will remain available as a resource beyond the life of the project."

Potts's group, in collaboration with the Center for Tropical Forest Science, has a long-term commitment to working on issues of sustainable forest management in Malaysia and views the tool as a key part of ongoing research. While these initiatives will require financial

resources and such resources cannot be guaranteed. But the project will be in a good position to find additional support for both continued data collection and tool support.

A plan for the support of users of the computer based methods should be developed within the project's lifetime. UNDP, FRIM and partners should seek opportunities to allocate clear responsibility for computer system and related support beyond the life of the project.

Contribution to upgrading skills of the national staff by activity

Some aspects of this topic have already been discussed. Training was a weakness in the formal project document – though it is somewhat addressed by the ITTO component.

Generally the local scientists value the opportunity to work with international researchers. But, at the same time, they are slightly frustrated by their own inability to act as first authors in international publications. There is a need to provide help in developing and supporting this local capacity: FRIM and project partners should provide additional support by developing workshops on paper writing.

It is noted that researchers cannot be expected to publish in journals that they cannot read. Nor can they engage in debates about which they are poorly informed. FRIM and others need to explore how to gain online access (via e.g. ISI or Scopus) to a greater range of leading journals. Overseas partners should regularly share key papers with the research team. The research team themselves should regularly share and discuss – ideally debate – a topical and/or classic research paper relevant to the projects activities.

Outcome 1

The ecological and field assessments based part of the CBioD Project has contributed greatly to local capacity building by relying heavily on young researchers to implement the field surveys. (Note that this approach is heavily dependent on overseas MSc supervisors and taxonomists who may not have a clear view of the larger project, and not have much opportunity to contribute except via the students, hence there may be some tensions in the guidance given to the students [what is needed for an MSc] versus what is best for the project – as the MTEs did not meet any of these external supervisors this was not explored).

Outcome 2

The state of economic valuation of goods and services associated with forest watershed functions and survey-based stated-preference methods are limited in Malaysia. The Project has contributed to local capacity of FRIM and a local consulting firm. The dissemination of these capacities to interested parties should be planned before the Project ends.

Outcome 3

The MTEs are not aware of any major efforts in this yet though training is planned.

Outcome 4

The project's web site and newsletters are useful and informative means of keeping others informed. It is not clear if they contribute significantly to skills.

Acknowledgements

The reviewers thank the project management, administration, researcher and the many stakeholders who gave up their time to guide and inform the review process.

Table of scores by activities/etc

Table 3 Ranking of the relevance, efficiency, and effectiveness of project outcomes and outputs (this evaluation is a requirement of the MTE)

Project Objectives and Outcomes	Relevance[1]	Efficiency	Effectiveness
Objective 1: To remove scientific barriers to mainstreaming biodiversity conservation into tropical forest management decision making			
Outcome 1: Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest management planning			
Output 1.1: Efficient statistical methods for estimating biodiversity from small samples.	Satisfactory[2]	-	-
Output 1.2: Logging prescriptions that reduce impact on biodiversity	Highly satisfactory	Satisfactory	Satisfactory
Output 1.3: Manuals and software that provide assistance and guidance in implementing biodiversity friendly forest planning and harvesting.	Satisfactory	-	-
Output1.4: Staff of Perak SFO and at least one other SFO trained in application of methods to measure biodiversity and in implementation of biodiversity-friendly forest planning and harvesting	Satisfactory	-	-
Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations			
Output 2.1: Feasible methods for estimating non-extractive values of tropical rainforests.	Highly satisfactory	Satisfactory	Satisfactory (unsatisfactory for NTFPs)
Output 2.2: Manuals and software that provide assistance and guidance in full valuation of goods and services	Satisfactory	-	-
Output 2.3: Staff of Perak SFO and at least one other SFO trained in full valuation of goods and services	Satisfactory	-	-
Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level			
Output 3.1: Models for predicting biodiversity within and between forest community types, taking into account logging status and location	Highly satisfactory	-	-
Output 3.2: Models for predicting impacts on biodiversity and associated economic costs and benefits	Highly satisfactory	-	-
Output 3.3: Staff of Perak SFO trained in application of models that integrate ecological and economic tools in forest planning decisions at a landscape level	Satisfactory	-	-
Outcome 4: Capacity exists to apply methods developed by the project in tropical forest			

management operations.			
Output 4.1: Revised Malaysian criteria and indicators of sustainable forest management incorporate procedures developed by the project as standard requirements	Highly satisfactory	-	-
Output 4.2: ITTO criteria and indicators incorporate procedures developed by the project as standard requirements	-	-	-

[1]Assessments are provided only where there is sufficient information to justify a preliminary judgement. All assessments are tentative as no outputs are completed.

[2]Available information does not make this relevance clear, though the MTEs accept that the concept holds promise.

Table 4. Rating of the sustainability of project outcomes by financial resources, social political, institutional, and environmental outcomes. (This evaluation is a requirement of the MTE).

Sustainability Dimension	Outcomes	Rating
Financial Resources	**Outcome 1:** Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest management planning	Likely
	Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations	Likely
	Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level	Likely
	Outcome 4: Capacity exists to apply methods developed by the project in tropical forest management operations.	Likely
Socio-political	**Outcome 1:** Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest management planning	Moderately likely
	Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations	Moderately likely
	Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level	Likely
	Outcome 4: Capacity exists to apply methods developed by the project in tropical forest management operations.	Moderately likely
Institutional Framework and	**Outcome 1:** Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest	Likely

Governance	management planning	
	Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations	Likely
	Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level	Likely
	Outcome 4: Capacity exists to apply methods developed by the project in tropical forest management operations.	Moderately likely
Environmental	**Outcome 1:** Forest planners in Perak incorporate tools to measure impacts on biodiversity in their forest management planning	Likely
	Outcome 2: Forest planners in Perak utilize tools for full valuation of goods and services in their forest management planning and operations	Likely
	Outcome 3: Forest planners in Perak integrate ecological and economic tools in forest planning decisions at a landscape level	Likely
	Outcome 4: Capacity exists to apply methods developed by the project in tropical forest management operations.	Moderately Likely

Recommendations

The following recommendations are distilled from the previous texts, justifications are not repeated here.

Corrective actions for the design, implementation, monitoring and evaluation of the project

(i) Ensuring a clear focus on achieving conservation outcomes.

Data can be collected, plans produced and boxes ticked without any genuine conservation gains. The emphasis must be on the achievement of long-term conservation gains. Any steps than can give credibility, and assurances, concerning this overall process should be explored.

A new verifier is proposed: In the final year of the project (before or during the final evaluation) of a poll of at least three (ideally more) experienced conservation professionals[22] who have been fully briefed on the project's approach and results, a majority agree that application of the tools has at least a 75% chance of *contributing significantly to the long-term conservation of* (a) *Perak's forest biodiversity* and (b) *biodiversity elsewhere in Malaysia* and (c) *forest biodiversity outside Malaysia*.

Project credibility will be improved and valuable guidance accessed, if the project better engages with experienced conservation professionals and local conservation NGOs and accesses their expertise and endorsement. Ideally this would address day-to-day project

[22] We suggest that the major NGOs and regional institutions can be called upon to identify suitable evaluators: obvious options include CIFOR (DS can provide introductions), WWF, MNS, TNC and IUCN. UNDP and ITTO should also be able to provide support.

development (especially the development of tools) as well as periodic project appraisal and oversight (one of the steering groups, likely the IAP which should be allowed to include at least one regional/local conservation expert). Experts from conservation NGOs should be invited to see the project and to discuss its goals (not simply send whoever is free to attend the odd workshop or committee).

A concerted effort needs to be made to work with all relevant stakeholders to clarify *shortcomings* in the current Malaysian planning processes (including factors reducing the likelihood of implementation), and the various factors that *should* be included in planning (for conservation and other factors). The recent ITTO-IUCN guideline on biodiversity conservation in managed forests provides may provide a useful checklist of such issues. Based on this a project led 'action-plan' should be developed as to how each of these challenges will be addressed. These analyses should not be limited in scope.

(ii) Moving from research to implementation

The project requires a clear process for developing plans and actions – key steps need to be proposed, reviewed, mapped out, and then regularly revisited. This process should be led by FRIM with oversight from UNDP and ITTO. Progress on these themes should be a focus of both the TWC and PSC.

Clear mechanisms (e.g. regular external assessments and feedback) need to be built into the development process to ensure that tools and models (their inputs, outputs and operation) match as far as possible with local needs and abilities. It will be important to engage planners and conservationists who have experience in developing and applying plans for conservation outcomes (expertise may need to be sought outside the region).

The MTEs recommend that the project team should prepare draft documents detailing strategies, activities roles and time line for each activity to show how the goals and indicators shall be achieved. These plans can and should be revised as the project progresses.

(iii) Neglected activities

A clear formulation and budget for the NTFP activity is required from the project. Among the tasks the MTEs suggest a focus on reviewing: (1) value estimates (critically evaluated) regarding the availability and utilisation of NTFPs from forests where timber harvesting occurs versus those where timber is not extracted – with, as far as possible, preliminary explanations for differences; (2) the various methods that can be used in the valuation of NTFPs and their contribution to local livelihoods. The review would ideally help guide the choice of suitable methods for specific circumstances with guidance on good practice in data collection, analyses and interpretation. TOR, budgets and clarity over who is responsible are now required. Progress of all activities needs to be reviewed by the project management and the PSC to ensure none are forgotten.

(iii) Likelihood of success

The risk that an external contractor might fail to fulfil obligations needs to be addressed. In consultation with their international collaborators, and perhaps with the IPR, the CBioD Project management needs to think through such contractor risk scenarios and how the project would adapt and respond.

While clearly a taboo subject, land use is known to be vulnerable to political interference. Planned concession areas can be switched at short notice without planning. The topic of 'flexibility' and political interference in land-use planning must be debated and confronted in

a transparent fashion. Failure to do so undermines the credibility of conservation planning as a meaningful investment.

The Malaysian government (State and National) should ask FRIM to work with them to review ways they can encourage and facilitate good forestry practices (e.g. tax breaks etc).

(iv) Representation

The representation of NGOs, university and local communities is limited. These weaknesses should be addressed when possible.

The CBioD Project documents recognise the need for involvement of, and oversight from, the *orang asli*. This has not been effectively carried through. The MTEs are flexible about what is finally done (ideally we would consult the *orang asli*). This requires the CBioD Project's management to directly engage and consult with the communities. In addition, Malaysia supports the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the CBioD Project should examine what this implies for forest land-use planning in Malaysia and the wider region (even if the implications in PITC are minimal this is unlikely the case in all other target regions).

Communications with UPEN (Perak local Gov') has clearly been insufficient. This needs to be addressed by the project. One option would be to invite UPEN chair the state level steering committee.

The reasons that MTCC do not wish to be formally identified as a key stakeholder demands attention and clarification by the project management, UNDP and PSC (possibly raising it with EPU or the Ministry of Plantation Industries and Commodities if this is merited).

(v) Sustainability

The Project will produce software based tools. The capacity and responsibility to support these tools and their users beyond the project life-time requires attention. A plan for the support of users of the computer based methods should be developed within the project's lifetime. UNDP, FRIM and partners should seek opportunities to allocate clear responsibility for software development, computer system and related support beyond the life of the project.

Local technical capacity amongst concession management may be a problem for implementing project outputs more generally. Staff turnover, notably amongst senior personnel (and potentially in trained field staff) may prove a problem. Training will need to be scaled up and integrated with programs outside the project context.

(vi) Schedule

The MTEs are sympathetic to the proposal that a budget neutral extension of six or twelve months may be judged valuable at a later date (once the implementation plans are well developed). Ideally these ideas would be clarified in the next 18 months.

(vii) Safety

Risks to the field research team should be assessed and reduced as far as is reasonably possible – do they have the inoculations and safety equipment required for the work they are engaged in (e.g. rabies for bats, tetanus for all, first aid training, safety hats in the logged areas etc.?). Vehicles used (whether FRIM or concession) should be in a safe state of repair and driven by qualified staff.

Minor

FRIM and overseas collaborators would like to amend the formal project structure to fully acknowledge contributions with regard to additional studies. The MTE has no objection but suggests that the role of these studies in supporting the overall project goals to be carefully articulated.

There are some concerns regarding the clarity of formal project documents and communications. There is a need to promote clear communication and to value understanding. All involved (project staff, UNDP, etc) should improve their ability to communicate technical content in clear language to non-specialists (avoid unnecessary jargon).

The comments of the STAP reviewers remain pertinent (Annex IV of the Project Brief). All these criticisms deserve constructive reflection by the project team so that these arguments can be acknowledged, and do not undermine project credibility.

Regarding Output 1.1: There needs to be a clear practical explanation (perhaps a decision tree) of how the estimation of site diversity and landscape diversity can contribute to conservation goals.

The MTE also notes that there is a need to be transparent about how some choices are going to be made. How for example will the "shortlist of taxa, proven as good bio-indicators at a compartment/landscape level" be judged?

There is a need to shift focus, and criteria, from proximate onto ultimate goals. For example, "guidelines for assessing and monitoring biodiversity in production hill dipterocarp forests" cannot stop there they need to show how and why such data can improve conservation outcomes.

Output 1.2 (also activity 1.3.4): The MTEs suggest that more attention will need to be given to how these methods might apply in forests already on their second or third cutting cycle (e.g. how can sufficient mother trees be maintained).

Activities 1.3.4: The MTEs endorse efforts to maintain and re-measure the study plots over an extended period if support can be identified.

Output 1.3 and 1.4: To promote best practice the project should not necessarily limit themselves to promoting the methods they have developed and examined directly but should also make a careful review of good practice and recommendations from elsewhere (e.g. via UNDP ITTO and others who can provide guidance) and *help* the users to judge what is most relevant in any given situation. If this output ultimately includes details on how to collect data relating to 'indicator taxa' (or similar) there must be clear guidance as to how managers are to use (respond to) these data.

The practical utility of any 'biodiversity indicators' must be clarified. The research team needs to discuss this "indicators-for-what" challenge and find a convincing response. They may need help. Results of this discussion may require some adjustment in project strategy regarding who will generate and use these tools and data, and for what purpose with what expectations.

Some specific technical limitations of these studies (such as the uncertain effects of seasonality) could have been addressed (and still could be) with some additional sampling. The IAP raises a number of concerns of this nature. Various others have been raised and discussed during the MTR. Opportunities to address these points should be sought and utilised where possible.

Activity 2.1.1: This activity should be scaled up to include other states that are prone to floods such as Kelantan and Trengganu and take cognizance of the role of other non-hydrological variables such as rapid construction of residential and commercial projects exceeding the capacity of drainage facilities.

Outcome 3: There is a need to engage better with the local stakeholders, especially those representing conservation interests, before deciding what scenarios are sought developing the planning tools. Demonstrating the application of the project's tools in a more participatory process of landscape planning (if such an opportunity can be identified) may allow/encourage wider application.

The MTEs do not see a particular research benefit in adding REDD activities to the project. However, the computer based modelling tools would provide added value to users if standard carbon calculations can be included and this might ultimately make the tools more attractive to some end users and is thus encouraged. Our recommendation is that adding REDD into the project is neither required nor discouraged. If the opportunities are available and do not have major costs they may bring benefits.

The MTEs emphasize the need to give full credit and acknowledgement for the very significant local contributions to the project (namely from PITC and FRIM).

There will be scope for UNDP and ITTO to consider how these tools might be useful in other UNDP projects that involve forested landscapes. In addition he Malaysian Government, state governments, and various agencies (such as conservation NGOs and stakeholders to organisations like MTCC) also offer potential target groups with direct and direct influence on various project who may be able to adopt some or all of the procedures.

The project's approaches and goals are relevant to making some aspects of the FSC's concept of HCVF (that currently lacks clear thresholds and requirements) better defined and operational. These opportunities should be explored as the project advances. Links between the CBioD Project activities and the recently accepted ITTO/IUCN guidelines of biodiversity conservation in managed forest landscapes should also be explored.

More specifically UNDP will learn whether an R&D project can provide the kinds of benefits required from a GEF project of this scale. The experience of managing such a project will be useful. The MTEs would especially highlight the need to think through the process from R to D in the R&D as this is poorly articulated in the current project formulation. There may be a need for steering group members to include researchers and practitioners as well as a wide range of other practical interests.

The project team should ensure that a systematic and lasting transfer of knowledge to all interested parties within and outside Malaysia.

UNDP/GEF must seek ways to have proposals reviewed approved processed and implemented more rapidly.

The current and anticipated management burden justifies an additional member in the management team. The MTEs suggest that an assistant position is recruited for (i.e. option b and/or c above) with the final decision depending on the candidates coming forward. If funds are saved these may provide some opportunity to hire consultants to help develop particular materials, spear-head certain promotional activities or develop specific training schemes.

The MTEs note some (relatively minor) dissatisfaction from the researchers concerning administration. Support roles, responsibilities and authorities should be discussed and clarified. Rather than rules, good will and flexibility should be encouraged (the team is too small for an effective 'work by rule' system). Some one-to-one interviews with the admin' team by the National project director, as well as some general briefing of the research team, are proposed. Some team building exercises may be justified.

A procedure to ensure all project messages are technically acceptable to the researchers (by some agreed criteria) needs to be devised by the project management in discussion with the researchers. Realism and self-criticism will help credibility and defuse debates that may otherwise be distractions at a later point, and may be used as an excuse by actors to avoid engagement. Information regarding short-comings, assumptions and technical debates should not be hidden but should be freely shared and presented (this is better than having detractors do this externally).

UNDP should consider how it can better assist projects to cope with unforeseen currency fluctuations.

The 'aging' of UNDP funds should be viewed as assisting the project to work (providing necessary safety margins and flexibility noting that the actual costs have largely been met by FRIM). No remedial actions are necessary or desirable.

Regarding the IAP: The project should encourage a fuller (less defensive) dialogue in which references and technical details are discussed in an open and constructive manner.

The project leaders have to consult and brief research team members comprehensively to address uncertainties regarding their roles in later stages of the project. Some team workshops may be helpful.

UNDP should free up enough staff time to fulfil all their expected official CBioD Project roles, have time to engage with project activities more regularly, guide planning (especially the later project goals which will require UNDP support) and to deal with problems as they arise.

The official protection status of permanent forest estate (criteria) should be clarified within UNDP's reporting system (or UNDP's project area statistics will continue to lack consistent definitions).

The UNDP web page concerning the CBioD project is out-of-date. Both the UNDP manager and the Project manager are incorrect. There should be effective ways to ensure that web pages are updated at least every 3 months.

The project is burdened by its numerous reporting obligations and is short staffed at a management level. The MTEs cannot offer any direct solutions but, if there is any chance of flexibility, would encourage discussion on this topic by both ITTO and UNDP to see if the overall reporting burden can be better combined or reduced.

Further training in first aid, and the availability of medical kits, safety procedures and emergency procedures should be followed up. There may be some safety issues with vehicle use in the project site – this should be formally assessed by FRIM.

Results

Activity 1.3.2 – Regarding PITC the project needs to discuss survey methods and data with WWF and clarify the potential for a more effective collaboration.

Some carefully planned review of possible refinements and modifications of field protocols seems well justified if adequate comparative data can be achieved.

Promoting any of the field methods brings responsibilities. Legal requirements, safety and impacts of the different methods need to be clarified and addressed within the guidelines produced.

The emphasis on improved harvesting should give some attention to all key aspects of land-use planning: notably road placement. This should be carefully considered by the project.

Activities 3.1.2 & 3.2.1: The MTEs endorse the activities that will be undertaken for developing the planning tools (see main text above) and note that closer engagement with the Malaysia based researchers, the end users (including conservationists and conservation planners), is needed.

Efforts should be made to (a) link the project's website to other relevant sites, (b) make it more visible, and (c) ensure it is working well.

There is a need to provide help in developing and supporting local research capacity. FRIM and project partners should provide additional support by developing workshops on paper writing, analyses etc.

FRIM and others need to explore how to gain online access to a greater range of leading journals. Overseas partners should regularly share key papers with the research team. The research team themselves should regularly share and discuss – ideally debate – a topical and/or classic research paper relevant to the projects activities.

Actions to follow up or reinforce initial benefits from the project

See above.

Lessons learned

There should be plenty of lessons from the project. It remains too early to state what these lessons may be (but see section above "Replication approach" for some tentative views). The need to achieve both research success and application poses special challenges.

The MTEs would especially highlight the need to think through the process from R to D in the R&D as this is poorly articulated in the current project formulation. Attention to this process may help guide similar projects in the future.

Best and worst practices in addressing issues relating to relevance, performance and success

It is premature to comment. The MTEs do not see any "extreme" examples of practice in the current project.

Annexes

Annex 1 TOR

Preamble (description of project etc.) removed (starts section '3')

3. OBJECTIVES OF THE MID-TERM EVALUATION

In accordance with the UNDP/GEF M&E policies and procedures, all projects with long-term implementation period (e.g. over 5 or 6 years) must undergo mid term review at the mid of the of the project. The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts, ii) to provide a basis for decision making on necessary amendments and improvement; iii) to promote accountability for resource use; and iv) to document, provide feedback on, and disseminate lessons learned.

The purpose of the Mid-term Review is to examine the performance of the project since the beginning of its implementation. The Review will include both the evaluation of the progress in project implementation, measured against planned outcomes set forth in the Inception Report in accordance with rational budget allocations; and the assessment of features related the process involved in achieving those outcomes, as well as the initial and potential impacts the project. The evaluation will also address the underlying causes and issues contributing to targets not adequately achieved.

The Mid-term Review is intended to identify weaknesses and strengths of the project design and to come up with recommendations for any necessary changes in the overall design and orientation of the project by evaluating the adequacy, efficiency, and effectiveness of its implementation, as well as assessing the project outcomes to date. Consequently, the Review mission is also expected to make detailed recommendations on the work plan for the remaining project period. It will also provide an opportunity to assess early signs of the project success or failure and prompt necessary adjustments.

The Review mission will also identify lessons learnt and best practices from the Project which could be applied to future and other on-going projects. The review covers the entire project including non-GEF financed components.

The input received from the International Advisory Panel (IAP) and Technical Working Committee (TWC) will provide the additional information to the evaluators on the progress of the project and the research.

4. SCOPE OF THE MID TERM REVIEW

The Evaluation will involve evaluation, both qualitative and quantitative assessments, at two levels—*a)* the site level, and *b)* the overall project level.

The following shall be observed at the site level:

i. Evaluation of the project activities implementation ;
ii. Assessments of data collection process and relevance ; and
iii. Observation on the integration process and inputs received from the relevant co-projects supported by other donors.

At the overall project level, the following shall be observed:

i. Assessments of planned activities against achievement of outputs, work in progress, as well as the processes involved in the implementation with reference to the Project Document, Project Inception Report, and the budget;
ii. Assessments of the effectiveness of communication and coordination between the project site and the Project Support Unit, as well as the project and the relevant stakeholders at the national- and state-levels to ensure interactions, and sharing of information, relevant issues, lessons learnt, best practices and outputs;
iii. Assessments of preliminary and potential impacts generated by the project;
iv. Adequacy of the project design, i.e., whether it allows flexibility in responding to internal and external changes of the project environment;

v. Assessment of implementation difficulties, i.e. whether unexpected constraints and obstacles identified were adequately dealt with, the approaches taken and solutions considered; and
vi. Strengths and weaknesses of the existing project organisational structure and management arrangements.

5. DETAILS OF THE EVALUATION ASSIGNMENT

The Evaluation will be conducted in line with the UNDP/GEF Monitoring and Evaluation policies and procedures aiming to monitor and evaluate results and impacts, to promote accountability in resource use, as well as to document, provide feedback and disseminate lessons learnt.

The Evaluation Mission will cover in full the following areas:

a. Project Formulation

- *Relevance:* The relevance of the Project Objectives and strategies in promoting/demonstrating the conservation of biodiversity in Malaysia, within the context of the sustainable development concept adopted by the country;

Conceptualisation: This should assess the approach used in design and the appropriateness of problem conceptualisation and whether the selected intervention strategy addresses the root causes and principal threats in the project area. It should also include an assessment of the logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, economic, legal and regulatory settings of the project. Were the capacities of FRIM, State Forestry Department and other counterparts properly considered when the project was designed? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval? Were counterpart resources (funding, staff, and facilities), enabling legislation and adequate project management arrangements in place at project startup?

Country-ownership: Assess the extent to which the project idea/conceptualisation had its origin within national, sectoral and development plans and focuses on national environment and development interests of Malaysia.

Stakeholder involvement: Assess information dissemination, consultation and "stakeholder" participation in design stages.

Replication approach: Determine the ways in which lessons and experiences coming out of the project are to be replicated or scaled up in the design and implementation of other projects.

Other aspects: The evaluators should assess what UNDP comparative advantages as a GEF Agency for this project were; the consideration of linkages between projects and other interventions within the sector; and the definition of clear and appropriate management arrangements at the design stage.

b. Project Implementation, Accomplishments, Effectiveness and Efficiency

Implementation approach: This should include assessment of the following aspects:

The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions;

Initiative and elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed and updated;

The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives;

Adequacy of management arrangements as well as monitoring and backstopping support given to the project by all parties concerned.

Achievements and progress: This include the following:

- The project achievements and progress being made in each of the expected main outputs and their contribution towards the Project Objectives and intended situation defined in the Project Document and Inception Report;
- Key challenges that have emerged in the course of implementation in meeting the Project Objectives and its implications to the delivery of particular outputs;
- The overall institutional arrangements and organisational structure for the project implementation and the effectiveness of the project management in coordinating project work and exchanging information among the key stakeholders and similar initiatives in the country/region;
- The ability of the Project as a whole to achieve its goals and in this view to recommend changes if necessary for future implementation;

- The adequacy of the project monitoring and evaluation indicators retro-fitted by the Project and the effectiveness of this approach as a tool in project monitoring;
- UNDP's efforts in supporting the project implementation;
- The execution arrangements and the appropriateness of the funding administration by UNDP, and implementing bodies including FRIM, relevant state agencies, local authorities and the ITTO Component in contributing to the effectiveness of project implementation; and

An assessments of:

The actual project cost: total and by outcomes, outputs, activities;
Financial management (including due diligence in the management of funds through Audit Negara);
Co-financing (if there was a difference in the level of expected co-financing and actual co-financing. Did the extent of materialisation of co-financing affect the project's outcomes and/or sustainability, and whether it did affect outcomes and sustainability).
Stakeholder participation: This should include assessments of the mechanisms for information dissemination in the project implementation and the extent of stakeholder participation in management, emphasising the following:
- *The production and dissemination of information generated by the project;*
- *Stakeholders' participation in project implementation and decision-making and in the process of delivering the major project outputs;*
- *The establishment of partnerships and collaborative relationships developed by the project with local, national and/or international entities and the effects they have had on project implementation; cooperation with similar projects in the region; and*
- *Involvement of governmental institutions in project implementation, the extent of governmental support of the project.*
- *To suggest means of improving the effectiveness of the working relationships and cooperation between and among key government stakeholders.*

c. Project Impacts:

- To assess the initial and potential impacts thus far, enumerating positive influences resulted from the project implementation in terms of awareness of economic valuation of potential usage for biodiversity conservation using Payment for Ecosystems (PES), inter-sectoral coordination, resources planning, decision-making process; and
- To determine the long-term project impacts on the sustainable forest management and the effectiveness of integration of biodiversity conservation into decision making process.

d. Project Sustainability: This should include evaluation of the extent to which the benefits (at the level of outcomes) of the project will continue, within or outside the project domain, after it has come to an end; the commitment of the government to support the initiative beyond the project period, including:

- To assess the project ownership, attempts made to address this and recommend changes required to improve this;
- To asses the sustainability of the policies or strategies adopted by the Project;
- To assess whether the local institutional structures and enhanced capacity could be sustained beyond the project lifespan; and
- To comment on the project's contribution to the country's sustainable development and its implementation of the Convention on Biological Diversity.

Ratings of Key Review Criteria

In accordance with GEF Guidelines for mid term Evaluations, the evaluators will provide ratings for the following as indicated broadly below, and further elaborated in the Guidelines, which must be carefully referred to.

1. Rate the relevance, efficiency and effectiveness of different Project Outcomes as:

HS = Highly Satisfactory

S = Satisfactory

MS = Moderately Satisfactory

Moderately Unsatisfactory (MU)

US = Unsatisfactory

HS = Highly Unsatisfactory

2. Rate the sustainability of project outcomes along 4 key dimensions, Financial Resources, Socio-political, Institutional framework & governance and Environmental using the following scale:

Likely (L)

Modearately Likely (ML)

Moderately Unlikely (MU)

Unlikely (U)

3. Rate the Project's M&E system as follows:

HS = Highly Satisfactory

S = Satisfactory

MS = Moderately Satisfactory

Moderately Unsatisfactory (MU)

US = Unsatisfactory

HS = Highly Unsatisfactory

6. EVALUATION METHODOLOGY

The evaluation will start with a desk Evaluation of project documentation including but not limited to the Project Document, Project Inception Report, Minutes of all Steering Committee meetings including other relevant meetings, Project Implementation Report (PIR/APR), Quarterly Operational Reports, and other internal documents such as the consultant and financial reports, as well as, all the project publications.

The exercise will include field visit to the project site or interviews (by phone if necessary) with key individuals both within the project, the federal and state government offices, donor representatives, other key stakeholders, including NGOs, as well as implementing agency personnel including the National Project Director, and the remaining project personnel. The Evaluation Mission is also expected to view the on-going situation, meet local leaders, and local government officials.

The evaluation methodology should be clearly documented in the mid term evaluation report including comprehensive review of the following:

-Documents reviewed

-Interviews conducted

-Consultations held with all key stakeholders

-Project sites visited

-Techniques and approaches used for data gathering, verification and analysis

7. EVALUATION TEAM

The MTE team will consist of two persons; an international consultant specialising in forestry science and natural resources management, and a national expert specialising in natural resource economics/environmental economics. The international consultant will be designated as the team leader who will have the overall responsibility of organising and completing the MTE , and submitting the final MTE report. The national consultant will provide supportive role both in terms of professional back up, translation, and facilitating local meetings. Under the guidance and close consultations with Ministry of Natural Resources and Environment, Forest Research Institute of Malaysia, and UNDP Malaysia, all consultants will evaluate the relevant documents for a few days at their respective stations before carrying out field visits and meeting the stakeholders.

a. Qualifications of the Forest Scientist (Team Leader):

- International/regional consultant with academic and/or professional background in forest science and experience in sustainable forest management/policy and/or natural resources management. A minimum of 15 years' relevant experience is required.
- Significant experience in evaluating similar technical assistance projects, preferably those involving UNDP/GEF or other United Nations development agencies and major donors.
- Excellent English writing and communication skills. Demonstrated ability to assess complex situations in order to succinctly and clearly distill critical issues and draw forward-looking conclusions.
- An ability to assess the institutional capacity and incentives required.
- Understanding of political, economic and institutional issues associated with sustainable forestry management, as well as good environmental governance within tropical countries particularly in the context of Malaysia's development.
- Experience in leading multi-disciplinary and multi-national teams to deliver quality products in high stress and short deadline situations.
- Excellent in human relations, coordination, planning and team work.
- Knowledge of tropical rain forest ecosystems.
- Prior experience working in the region/country would be an asset.

b. Qualifications of the Natural Resource Economist/Environmental Economist:

- National consultant with academic and professional background in natural resources economics or environmental economic, and have experience in biodiversity conservation and an understanding of the multi-use of the forest and biodiversity approach.
- A minimum of 15 years' relevant working experience is required.
- Experience in implementation of technical assistance projects.
- An ability to assess the institutional capacity and incentives required.
- Understanding of political, economic and institutional issues associated with sustainable forestry management, as well as good environmental governance within tropical countries particularly in the context of Malaysia's development.
- Excellent English writing and communication skills.
- Excellent in human relations, coordination, planning and team work.

8. PROPOSED SCHEDULE

The Mid-Term Evaluation will take place in July 2009 and it requires a 4-day desk Evaluation with the Project Support Unit and UNDP, 4-day field visit to the project site and consultations with various stakeholders. The draft Final Report should be submitted to UNDP/GEF for circulation to relevant agencies within two (2) weeks after the completion of the Evaluation. The Evaluation Team Leader will finalise the report within two weeks upon receiving comments and feedbacks from stakeholders compiled by UNDP/GEF. Detailed schedule will be prepared in due time by UNDP/GEF in consultation with the Executing and Implementing Agencies.

9. DELIVERABLES

The Review Mission will produce the following deliverables to UNDP/GEF, the Ministry of Natural Resource and Environment and the project management:

- Review results, workshop outputs, and minutes of meetings with stakeholders;
- A proposal of revised impact indicators for the project, if necessary; and
- A detailed final Mid-term Review Report in accordance with the UNDP/GEF format of evaluation.

The final Mid-term Review Report (no more than 30 pages, excluding the Executive Summary and Annexes) should be in accordance with following the outlines:

(i) Acronyms and Terms

(ii) Executive Summary (no more than 4 pages)
The Executive Summary should briefly explain how the evaluation was conducted and provide the summary of contents of the report and its findings.

(iii) Project Concept and Design Summary
This section should begin with the context of the problems that the project is addressing. It should describe how effectively the project concept and design can deal with the situation.

(iv) Project Results
Progress towards attaining the project's regional and global environmental objectives, and achieving the project outcomes. It should also try to answer the question: What has happened and why? The performance indicators in the logframe matrix are crucial to completing this section.

(v) Project Management
This section covers the assessment of the project's adaptive management, partnerships, involvement of stakeholders, public participation, roles and responsibilities, monitoring plans, assistance from UNDP and IMO , etc.

(vi) Recommendations
Here, the evaluators should be as specific as possible. To whom are the recommendations addressed and what exactly should that party do? Recommendations might include sets of options and alternatives.

(vii) Lessons Learnt
This is a list of lessons that may be useful to other projects.

List of Annexes (Terms of Reference, Itinerary, Persons Interviewed)

Annex 2 Mission schedule 17th – 25th August 2009 (updated)

Date / Time	Itinerary	Venue	Attending
	Mid Term Evaluators (MTE) arrive in KL		
17th August 2009			
0900	MTE Coordination meeting	UNDP Office	Dr Hari Ramalu
1200	Arrive in FRIM – Courtesy visit with DDG FRIM Dato' Dr Abdul Rashid Hj Ab Malik	DDG's Office	MTE, HR NPD, APM
1230	Lunch with Team	Canteen	ALL MTE, HR, DG, TKPO, TKPP, NPD, APM, DT, ML, ARK, CF, SM, IA, LHF
1400	General Briefing by NPD & Researchers review of management set up review of budget review of project monitoring set up presentation on progress of project review of IAP comments review on communication processes	PSU Meeting room	MTE, HR, NPD, APM, DT, ML, ARK, CF, SM, IA, LHF
18th August 2009			
0730	Vehicle pick up MTE & HR Vehicle pick up NPD, APM, SM, ARK, CF	To Ipoh	MTE, HR, NPD, APM, SM, ARK
1100	Meet UPEN Dato' Abu Bakar bin Hj Said – Director General Dr. Ahmad Fadzli b. Ahmad Tajuddin – Chief Assistant to Director General	Unit Perancang Ekonomi Negeri Pejabat Setiausaha Kerajaan Negeri Perak Aras 1,Bangunan Perak Darul Ridzuan Jalan Panglima Bukit Gantang Wahab 30000 Ipoh Perak Darul Ridzuan	MTE, HR, NPD,APM

1230	Lunch		
1600	Arrive at Royal Banding Rainforest Resort	Banding Island	MTE, HR, NPD,APM, ARK, SM. PITC
19th August 2009			
0730	Breakfast	Hotel	MTE, HR, NPD,APM, ARK, SM. PITC
0830	Depart to PITC		
0915	Arrive at PITC Base-camp General Briefing by En Zamzuri – General Manager, PITC CBioD Harvesting Team	PITC Base-camp	MTE, HR, NPD,APM, ARK, SM. PITC
1230	Lunch	Basecamp	
1430	Back at Base-camp Discuss Harvesting Regimes	PITC Base-camp eating area	MTE, HR, NPD,APM, ARK, SM. PITC
1530	Tea	PITC Base-camp eating area	MTE, HR, NPD,APM, ARK, SM. PITC
1630	Depart to Hotel	Hotel	MTE, HR, NPD,APM, ARK, SM. PITC
1900	Dinner	Hotel	
2100	Meeting with District Forestry Officer En Mohd Azid	Gerik Town	MTE, HR, NPD,APM, ARK, SM. PITC
20th August 2009			
0700	Depart from Hotel in Banding	Ipoh FD Perak	MTE, HR, NPD,APM, ARK, SM. PITC
1000	Meet with En Yap – Deputy Director Perak Forestry	FD Perak HQ	MTE, HR, NPD,APM
1100	Depart to KL		
21st August 2009			
1000	Meet Senior Manager – MTCC (Mr Yong)	PGRM, Cheras	MTE, NPD,APM
1200	Meet JPSM Dr Abdul Rahman Abdul Rahim – Deputy Director General Mr. Koh Ms. Poh Mr Chin En Samsudin Salleh En. Mohd Zin	JPSM HQ, KL	MTE, NPD,APM

1300	Lunch		
1500	Meeting with Puan Aziyah – Assistant Chief Secretary to MNRE En Wahid – Head of Forestry MNRE Puan Norsham	MNRE Building, Putrajaya	MTE, NPD,APM
	Email communications with Matthew Potts in the USA begin.		
22nd August 2009 (Saturday)			
0800	Meet with Dr. JR De Shazo – Economic Team International Collaborating Researcher UCLA Mr. Chang Yii Tan – PE Research Ms Chong Siew Kook – PE Research	PSU Meeting	
0900	Meet with Dr Christine Fletcher – Team Leader, CbioD BioD Assessment		
1000	Meet with Dr Shamsudin Hashim – CEO Perak SEDC Puan Hjh Rohati Shafie – PIRSB Bio Tech Sdn Bhd Tn Hj Zamzuri		
23rd August 2009 (Sunday)			
24th August 2009			
0900-1200	MTE Workshop with Stakeholders	Licuala	ALL, PSC, TWC Members
12:30-1400	'Closed door' meeting with FRIM based research team (without managers)	Licuala	MTE, researchers

Abbreviation

MTE	Mid Term Evaluators
HR	Dr Hari Ramalu
DG	Director General (FRIM)
TKPO	Deputy Director General –Operations (FRIM)
TKPP	Deputy Director General – Research (FRIM)
NPD	National Project Director

APM	Assistant Project Manager
DT	Daphine Tan (Admin Officer)
ML	Md Lela (Finance Officer)
ARK	Dr Abdul Rahman Kassim
CF	Dr Christine Fletcher
SM	Samsudin Musa
IA	Dr Ismariah Ahmad
LHF	Dr Lim Hin Fui
PITC	Perak ITC
PSC	Project Steering Committee
TWC	Technical Working Committee

Annex 3 Stakeholder consultation meeting

Attendance:

Name	Agency
Mohd Ali Hanafi Mohd Yunus	BPP, NRE
Adnan Ab Latif	DID, Hydrology and sumber Air
Abdul Latiff	UKM
Yeap Chin Aik	MNS
Dennis Tan	PERHILITAN
Poh Lye Yong	JPSM
Azeyla Ahmad	FRIM
Elizabeth Butod	FRIM
Joann Christine	FRIM
Nur Zati Akma Mustafa	FRIM
Christine Fletcher	FRIM
Shamsudin Ibrahim	FRIM
Mohd Faisal Jaafar	MTCC
Abdul Rahman Abdul Rahim	JPSM
Samsudin Salleh	JPSM
Ismariah Ahmad	FRIM
Ahmad Fitri	FRIM
Therese Tiu Kok Moi	EPU
Abd Rahman Kassim	FRIM
Jaya Radha Veerasamy	FRIM

Annex 4 Progress by activity

Bi-annual progress report (from Technical Working Committee Meeting minutes 28th July 2009)

	Activity	Percentage Executed	Estimated completion date
1.1.1 (UNDP/GEF 1.1.1)	Select image processing software and an existing spatial database as a single data management system and install it in FRIM, JPSM and other project partners' locations.	**70% (Installed in FRIM)**	**End of 2009**
1.1.2 (UNDP/GEF 1.1.2)	Develop a standard data recording system, to avoid incompatibilities and expensive data format conversions during the analysis phase of the project.	**80%**	**Mid 2009**
1.1.3 (UNDP/GEF 1.1.3)	Enter existing data on biodiversity in Perak and other relevant sites into the system.	**50%**	**End 2010**
1.1.4 (UNDP/GEF 1.1.4)	Building on research undertaken in the pre-proposal phase of the project, a method developed that minimizes the variance in an estimate of diversity of a large area from a given number and size of smaller sample areas.	**50%**	**Ongoing – 2011**
1.1.5 (UNDP/GEF 1.1.5)	Develop optimal statistical methods for identifying beta-diversity, the difference in species composition among several sample areas.	**50%**	**Ongoing – 2011**
1.2.1 (ITTO 1.1) (UNDP/GEF 1.2.1)	Establish biodiversity assessment plots in 6 Virgin Jungle Reserves (VJRs) of varying sizes within Peninsular Malaysia in adjacent to logged forests and in similar logged forests, more distant from these plots to determine the impact of local refugia on recovery of biodiversity in unlogged hill forests.	**85%**	**March 2009 (data analysis will continue)**
1.2.2 (ITTO 1.2.1) (UNDP/GEF 1.2.2)	Establish biodiversity assessment plots in the PITC concession to estimate biodiversity in logged and unlogged hill forests in Temenggor Forest Reserve.	**70%**	**June 2010 (extended due to delays in harvesting operations)**
1.2.3 (ITTO 1.2.2) (UNDP/GEF 1.2.3)	Establish assessment plots in the Lower Belum Forest Reserve to estimate biodiversity in unlogged hill forests.	**10%**	**September 2009**
2.1.1 (UNDP/GEF 2.1.1)	This activity will compile existing hydrological and land-use data for Peninsular Malaysia and use those data to construct a *statistical* hydrological model that predicts the impact of changes in land use, in particular forest cover and logging status, on the level and variability of stream flow and suspended sediments.	**55%**	**Ongoing – 2010**
2.1.2	This activity will survey Peninsular Malaysian households to generate data necessary for	**25% (household**	**August 2009 (house hold**

(UNDP/GEF 2.1.3)	estimating two non-extractive non-timber values; recreation and passive use.	**survey)**	**survey & data collection)**
3.1.1 **(UNDP/GEF 3.1.1)**	Developing and testing statistical models that relate biodiversity and forest community type to forest characteristics.	**35%**	**Ongoing – 2011**
3.2.1 **(UNDP/GEF 3.2.1)**	Construct a dynamic optimisation model, linked to the spatial database for Perak, that predicts the landscape-level allocation of forests between production and protection categories that maximises a specified biodiversity conservation objective (expressed in ecological or economic terms) subject to a set of timber management constraints (e.g., a desired annual allowable cut).	**40%**	**Ongoing – 2011**
4.1.1 **(ITTO 3.1.1)** **(UNDP/GEF 4.1.1)**	Hands on training for Perak State Forestry Department counterparts and more formal training for Malaysian decision makers, especially other State Forestry Department officers, as well as relevant regional participants and GEF OP3 project management teams.	**20%**	**End of Project 2011**
4.1.2 **(ITTO 3.2)** **(UNDP/GEF 4.1.2)**	Develop a website on the project status and outputs that can be assessed by all interested parties	**100%**	**Completed**
4.1.3 **(ITTO 3.1.2)**	Develop a scientific exchange programme through research fellowships	**15%**	**2011**

Annex 5 List of documents reviewed by MTEs

Project Documents:

1. UNDP-GEF: MAL/04/G31 and Annexes
2. ITTO: PD 165/02 Rev.3 (F)
3. Inception Report on the Conservation of Biological Diversity Through Improved Forest Planning Tools

Technical Working Committee Minutes of Meeting

1. 03/10/06 – ITTO
2. 05/10/07 – ITTO
3. 05/10/07 – GEF
4. 19/06/08 – ITTO
5. 19/06/08 – GEF
6. 10/12/08 – ITTO
7. 10/12/08 – GEF

Project Steering Committee Minutes of Meeting

1. 25/10/2005 – ITTO
2. 03/10/2006 – ITTO
3. 26/01/07 – GEF (NSC)
4. 10/12/07 – GEF (NSC)
5. 10/12/07 – ITTO
6. 13/02/09 – GEF
7. 13/02/09 – ITTO

Notes from Meeting JPSM

1. 27/06/08 – On VJR
2. 28/05/08 – Technical Committee Meeting

Reports to FRIM Board

1. Progress Report – 13/11/07
2. Progress Report – 26/02/08
3. Progress Report – 04/08/08
4. Progress Report – 03/11/08

ITTO Biannual Report

1. May 2006 – Oct 2006
2. Oct 2006 – Feb 2007
3. Mar 2007 – Jul 2007
4. Sep 2007 – Feb 2008
5. Mar 2008 – Aug 2008
6. Sept 2008 – Feb 2009

ITTO Request for Extension Report

Yearly Plan of Operations

1. YPO – 2006

2. YPO – 2007
3. YPO – 2008
4. YPO – 2009

UNDP-GEF Quarterly Progress Report

1. Q2 – 2007
2. Q3 – 2007
3. Q4 – 2007
4. Q1 – 2008
5. Q2 – 2008
6. Q3 – 2008
7. Q4 – 2008
8. Q1 – 2009
9. Q2 – 2009

UNDP-GEF Project Implementation Report

1. PIR 2008
2. PIR 2009

Project Bi-annual Progress Report

1. 2007 – Second Half
2. 2008 – First Half
3. 2008 – Second Half
4. 2009 – First Half

Events conducted by CBioD Project (Programs)

1. On the Use of Contingent Valuation to Measure Preferences for Environmental Goods by Prof Richard Carson – June 5th 2007
2. Fifty years of decline yet fifty years of discovery: Science informs policy for sustaining biodiversity by Prof Peter Ashton August 13 2007
3. Building Sustainable Forestry Management Systems: *Lessons Learned from the Pasoh Forest Dynamics Plot* by Dr Abdul Rahman Kassim and Prof Matthew Pots May 05, 2008
4. Seminar on Presentation on the results from the Hydrology and Land Use Study by Dr Ismariah Ahmad, Prof Jeffrey Vincent, Rodziah and Marryanne Lion April 22, 2009

Newsletters

Most recent four editions.

International Advisory Panel

1. Final Report from the Panel
2. Compiled research methodology for project's activities.

DRAFTs seen from the ecological studies include accounts on the following topics:

Bats

Birds (part)

Dung beetles (part)

Vegetation (part)

Ants (part)

Aquatic macroinvertebrates (part)

Paper prepared for the XIIIth World Forestry Congress, October 18 2009: Vincent, J.R., Ismariah A., Schwabe K.A., Weidner E., Rodziah H., Marryanna L. and Jie-Sheng T.S. 2009. "Measuring Tropical Forests' Impacts on Watershed Services: Spatial Variation in Quantity and Costs"

Draft (no title) Response by the project researchers to IAP

Outline for planned project based "Biodversity Book"

Web sites:

CBiod Project website, UNDP website, FSC website, PITC website, Tropical Forest Trust.

Others

Memo from Jeffrey Vincent to Shamsudin Ibrahim 28 August 2009.

Forest Research Institute of Malaysia (2007) Annual Report.

Government of Malaysia Ministry of Natural Resources and Environment (2009) '4th National Report to the Convention on Biological Diversity'.

Malaysian Nature Society (2005) MNS Position Statement, September 2005 'Conservation of the Belumtemenggor Forest Complex, Perak'.

PITC (2007) Perak ITC Forest Management Plan Draft Mid-Term Revision July 2007.

SIRIM QAS International (2008) Public summary of assessment of Perak FMU for forest management certification against the requirements of MC&I(2002).

Keurhout (2008). Validation report Perak.
http://www.keurhout.nl/pdf/VR_SFM_MTCC_PER_2008_09_18.pdf

H. F. Lim, W. C. Woon & M. Mohd Parid (2005?) The economic valuation of forest goods and services in the Temenggor Forest Reserve, Gerik, Perak. *Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor Darul Ehsan*
http://info.frim.gov.my/cfdocs/infocenter/highlight/IRPA_2005/Pg%2087-95.pdf

WWF Malaysia (undated) Biodiversity Assessments and Conservation Planning for Sustainable Production Forestry in High-Conservation Value Forests The First 5-Years Logging Cycle Perak Intergrated Timber Complex, Temengor Forest Reserve, Perak Peninsular Malaysia A Preliminary Biodiversity Assessment.