



**TFL-PD 037/13 Rev. 2 (M) Implementing a DNA timber tracking
system in Indonesia**

Ex-post Evaluation Report



Prepared for the ITTO

By

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List of abbreviations

<u>Abbreviation</u>	<u>Full description</u>
BRIN	National Research and Innovation Council, Indonesia
BBPSIK	Center for Forest Instrument Standard, Indonesia
Biro KLN	International Cooperation Bureau
CFBTI	Centre for Forest Biotechnology and Tree Improvement
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DNA	Deoxyribonucleic acid is a nucleic acid
EU	European Union
FLEGT	European Commission Action Plan on Forest Law Enforcement, Governance and Trade
FORDA	Forestry Research and Development Agency Indonesia
FORISA	Center for Forest Instrument Standard Assessment
GOA	Government of Australia
GOI	Government of Indonesia
ITTA	International Tropical Timber Agreement
ITTO	International Tropical Timber Organisation
MoEF	Ministry of Environment and Forestry Indonesia
SVLK	Sistem Verifikasi Legalitas Kayu/Timber Legality Verification System (Indonesia)
TFLET	ITTO Thematic Programme on Forest Law Enforcement, Governance and Trade
TI	Thünen Institute – German Federal Research Institute for Rural Areas, Forestry and Fisheries
UA	University of Adelaide
WRI	World Resources Institute

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Consultant

Executive Summary

Introduction

1. The Committee on Economic, Statistics and Markets and the Committee on Forest Industry, during their Fifty-sixth Session in November 2022 decided that an ex-post evaluation of TFL-PD 037/13 Rev. 2 (M) to be conducted in order to establish how well the Project served its purposes and to draw up recommendations for future action. The decision of the Committees was based on the Council Decision 3(XXVIII) of 30 May 2000 which specifies the criteria for selection of projects to be ex-post evaluated.
2. Project TFL-PD 037/13 Rev. 2(M) had been implemented by the Government of Australia (GOA) with University of Adelaide (UA) as the executing agency, and Center for Forest Biotechnology and Tree Improvement (CFBTI) and Thünen Institute – German Federal Research Institute for Rural Areas, Forestry and Fisheries (TI) as the collaborating agencies.

Evaluation Scope, Focus and Approach

3. The primary purpose of the ex-post evaluation is to learn lessons from the Project and to draw conclusions for future projects.
4. This evaluation was carried out 52 months after the completion of Project TFL-PD 037/13 Rev. 2 (M), from its inception to its completion regarding administrative and financial matters, organizations, communication, consultation, and cooperation.

Project Facts

5. The project arose from illegal timber trading, which contributes to deforestation, biodiversity loss, and undermines the rule of law. It originated from a workshop in Kuala Lumpur, Malaysia, in 2012, where partners met to plan the project.
6. The development objective of the Project was to contribute to the strengthening of forest law compliance and governance through improved national policy and legal frameworks, strengthened enforcement and other institutions, improved data and knowledge, strengthened partnerships and improved cooperation among the private sector, civil society organisations and other stakeholders. The specific objective of the approved project was: development and implementation of species identification and timber tracking system with DNA fingerprints for two commercial timber tree species.
7. The specific objective of the project was to be achieved through delivery of four outputs derived from 17 activities that had been implemented within the sanctioned financial and time budget i.e. US\$ 549,763.28 and 34 months, including about seven months of project suspension due to financial impairment faced by ITTO.

Findings

8. The key problems addressed in the project were not adequately analyzed. The causes and sub-causes relationships in the problem tree were intended to be translated into

project outputs and activities. Any adjustments and modifications to the project's outputs and activities would require corresponding changes in the logical framework matrix (LFM) to ensure consistency with the project's specific objectives, and alignment with the project's development objective.

9. Considering that Indonesia has approximately 1000 timber species traded under around 100 timber trade names, it was important for the project proponents to recognize that the initial databases for DNA barcoding of 50 targeted timber species and DNA fingerprinting of two timber species would be expanded later by the Indonesian partner. These expansions are crucial to fully realize the potential of DNA technology in timber species identification and tracking, particularly for timber control schemes like the SVLK.
10. Technology transfer had been performed through different means: project team members were invited as trainers and presenters to 12 meetings, workshops, and conferences, and two planned stakeholders' workshops were conducted.
11. Counterpart training and knowledge sharing on DNA analysis: two researchers from Australia, visited the laboratory in Indonesia to support field work planning and implementation, development of SOPs for sampling and to advise on best practice in the laboratory for curation of samples, and one researcher from Indonesia undergone training on laboratory techniques for Advanced DNA Identification and Forensics Facility at the University of Adelaide.
12. The awareness on the potential applications of DNA fingerprinting for wood identification and timber tracking has significantly improved among the target beneficiaries. The databases created as part of this project serve as a crucial groundwork for stakeholders to extend their efforts and encompass a broader range of timber species traded, thereby promoting widespread adoption within the industry.
13. This project had demonstrated the potential for improved traceability through the use of DNA fingerprinting, which is expected to strengthen custom authorities' capacity to monitor and identify CITES species. The active participation of SVLK representatives in project workshops highlights their preparedness to make necessary policy or regulatory adjustments in order to further strengthen the SVLK system.
14. Regarding the physical environment, the collaborating agency or laboratory recently underwent reorganization and made changes to the technical staff. However, thanks to the outputs achieved in this project, the newly assigned agency or laboratory responsible for the initiative can readily resume and expand the DNA fingerprinting databases to cover all species traded in Indonesian. The progress made thus far facilitates a smooth transition and ensures the continued development of the databases by the responsible entity.
15. The sustainability of the project relies heavily on its actual and potential contributions to the primary beneficiaries, which include the forest industries and government agencies. The DNA databases developed for precise timber identification and tracking offer compelling benefits that serve as strong incentives for regulatory agencies to support the maintenance and expansion of the databases established through the project.

16. Overall, the project has achieved a moderate level of success in delivering its planned outputs and meeting its intended objectives, as assessed based on the indicators defined in the Logical Framework Matrix.
17. The sanctioned total amount of project budget was US \$ 549,763.28 comprising contributions of ITTO and EA in the amounts of US\$ 518,833.28 and US\$ 30,930 respectively. A sum of US\$ 86,589.28 was retained by ITTO for ITTO Monitoring and Evaluation costs, ITTO Mid-term, Final and Ex-post evaluation costs, and Program Support Cost. At project completion, a sum of US\$ 426,278.53 was disbursed to EA.

Lessons learned

18. A thorough problem analysis is essential to develop a conceptually and operationally robust project design. Understanding the direct and indirect causes and consequences of the key problem addressed by the project ensures the relevance and effectiveness of project interventions. This will minimize any realignment or/and refinement of project outputs and activities.
19. To minimize adjustments to planned project objectives and activities during implementation, it is crucial to involve project collaborators and beneficiaries fully in project identification and problem analysis.
20. Clear definition/scope of the involvement of partners and collaborators in project activities and funding requirements are important. Obtaining prior consents and commitments from them are crucial to avoid non-participation during project implementation.
21. Given the large number of timber species (~1000) harvested and traded in Indonesia, it is necessary to justify the selection of a specific number of priority species during project formulation. Proper allocation of resources and manpower needs to be considered in this justification.
22. Members of the PSC should meet more than once a year when there were significant changes or realignment to the outputs/activities needed and be kept informed of the progress in implementation that any delay could receive immediate and timely attention.
23. Any changes to the project outputs/activities or delay shall be discussed in the Project Steering Committee meeting and communicated to ITTO for an official approval with the issuance of No Objection Letter.

Conclusions

24. The report identifies several key findings regarding the project design and contribution to achievements. It highlights that the initial analysis of the key problems addressed in the project was inadequate and suggests the need for adjustments and modifications to align the project's objectives and activities with the logical framework matrix (LFM).
25. The evaluation assesses the achievement of the project outputs and objectives. While some outputs were partially achieved, such as the completion of DNA barcode sequences for 100 timber species and independent timber tracking with DNA fingerprints, significant progress was made. DNA barcoding data was generated for

70 Dipterocarpaceae species, and DNA fingerprinting markers were developed for *Shorea laevis*. Training and communication efforts were successful in providing information to forestry officials and identifying enabling conditions for timber tracking using DNA markers.

26. Regarding the specific objective of developing a species identification system and timber tracking system with DNA fingerprints, the report confirms that the objective was partially achieved. DNA barcode sequences were available for 70 timber species, and DNA fingerprints timber tracking system was ready for use only for *Shorea laevis*. The independent timber tracking with DNA fingerprints in Indonesia was not realized.
27. In terms of the development objective, the report acknowledges that no evidence of a cost-effective and non-paper-based timber tracking system has been developed and implemented in Indonesia to date. However, the databases generated on DNA barcodes for 70 timber species and DNA fingerprints for *Shorea laevis* are seen as valuable contributions to potentially strengthening forest law compliance and governance. Further enhancement and verification are recommended considering the wide range of timber species traded in Indonesia.
28. The report also reflects on the project's impact and relevance. The evaluation mission gathered information indicating that the research institution and agencies involved in the project in Indonesia underwent reorganization. The project's completion and its outcomes were presented to the stakeholders, and collaboration for further work related to DNA barcoding and DNA fingerprinting was expressed.
29. Overall, while the project achieved significant progress in developing DNA-based tools for timber species identification and tracking, there are areas that require further attention and enhancement. The report underscores the importance of depositing the DNA reference databases with the responsible agency in Indonesia to facilitate the ongoing development for wood species identification and timber tracking purposes.

Recommendations

30. For future similar projects should strictly adhere to the existing ITTO Manual on project formulation and ensure full participation of primary beneficiaries to achieve a sound and feasible project design.
31. Minor changes to project outputs and activities may be necessary during project implementation, but any realignment that impacts on the approved project's logical framework matrix should be avoided unless scrutinized and approve by ITTO.
32. During project implementation, additional funding opportunities may be pursued through a separate proposal with defined scope, rather than modifying or amending the existing approved project document to avoid complications in implementation, reporting and monitoring.
33. The completed DNA databases for wood identification and fingerprinting in timber tracking should be officially deposited with a laboratory representing the collaborating agency in Indonesia. Significant efforts are required to enhance or built on the databases.

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1. Introduction

1.1. Background and rationale of the ex-post evaluation

The Committee on Economic, Statistics and Markets and the Committee on Forest Industry, during their Forty-sixth Session in November 2022 decided that an ex-post evaluation of TFL-PD 037/13 Rev. 2 (M) to be conducted in order to establish how well the Project served its purposes and to draw up recommendations for future action. The decision of the Committees was based on the Council Decision 3(XXVIII) of 30 May 2000 which specifies the criteria for selection of projects to be ex-post evaluated.

1.2. Project identification

Project serial number	:	TFL-PD 037/13 Rev. 2 (M)		
Project title	:	Implementing a DNA Timber Tracking System in Indonesia (Australia)		
Host Government	:	Government of Australia (GOA)		
Executing Agency	:	University of Adelaide (UA)		
Collaborating Agency	:	Center for Forest Biotechnology and Tree Improvement (CFBTI)		
Budget	:	Total	US\$	549,763
		ITTO	US\$	518,833
		EA	US\$	30,930
Starting	:	15 August 2015		
Ending	:	18 August 2017		
Completion	:	31 October 2018		
Duration	:	38 months (approved project duration 24 months), extended for 14 months including project suspension of seven months due to ITTO financial impairment.		

1.3. Project context

The specific objective of ITTO Project TFL-PD 037/13 Rev. 2(M) was the development and implementation of species identification and timber tracking systems using DNA fingerprints for important commercial species in Indonesia. Its development objective was to strengthen forest law compliance and governance through improved national policy and legal frameworks, strengthened enforcement and other institutions, improved data and knowledge, strengthened partnerships and improved cooperation among the private sector, civil society. The Project's objectives were consistent with TFLET objectives and ITTA 2006 as outlined below:

TFLET specific objectives:

- i) Strengthen forest law compliance and governance through improved national policy and legal frameworks.
- ii) Improve transparency and effective management of supply chains and increased domestic and international trade in legally produced tropical timber.
- iii) Contributing to sustainable development and poverty alleviation.

- Objective (c): Contributing to sustainable development and to poverty alleviation
- Objective (d): Enhancing the capacity of members to implement strategies for achieving exports of tropical timber and timber products from sustainably managed sources
- Objective (k): Improving marketing and distribution of tropical timber and timber product exports from sustainably managed and legally harvested sources and which are legally traded, including promoting consumer awareness
- Objective (n): Strengthening the capacity of members to improve forest law enforcement and governance, and address illegal logging and related trade in tropical timber

2. Evaluation Scope, Focus and Approach

2.1 Scope and focus

The primary purpose of the ex-post evaluation is to learn lessons from the Project and to draw conclusions for future projects. The ex-post evaluation should establish to which the results of the Project intervention, in terms of outputs, objectives, impacts and sustainability have been achieved and draw conclusions and recommendations for similar interventions in the future. Therefore, the evaluation is collection of information, the on-the-spot assessment and in-depth analysis of the performance and impact of the Project after its completion, with the intent to establish how well it served its purposes, its degree of effectiveness and efficiency, and its sustainability.

The evaluator is to assess all aspects of Project TFL-PD 037/13 Rev. 2 (M), from its inception to its completion regarding administrative and financial matters, organizations, communication, consultation and cooperation. The specific terms of reference for the ex-post evaluation and ITTO-Consultant agreed timeline are presented in Annex 1 and 2 respectively.

2.2 Approach of evaluation

This ex-post evaluation was carried out 52 months after project completion. The evaluation involved:

- A review of the project document, technical reports, completion report, financial reports and other available documents;
- An entry meeting with the Collaborating Agency was held on the project implementation and outputs; and
- Visit to the Center for Forest Instrument Standard Assessment (FORISA) previously Center for Forest Biotechnology and Tree Improvement (CFBTI)

Annex 3 is the schedule of ex-post evaluation meeting and field visit in Indonesia. The visit was well organized by the Ministry Of Environment and Forestry Indonesia. The meeting held during the visit was organized in close consultation with the ITTO Manual for Project Monitoring, Review and Evaluation, third edition (2009).

The key stages of the evaluation included:

- i) Analysis of the project design
 - The analysis was carried out based on the approved project document and completion report in order to learn weaknesses and strengths of the design; and
 - The project design was assessed using the ITTO Manual for project formulation, second edition.
- ii) Assessment of project performance
 - Appropriateness of implementation process was assessed by studying the project planned activities against actual implementation, outputs and outcomes produced as well as compliance with the project agreement and established rules and procedures applying to ITTO Projects;
 - Achieved outputs and objectives were assessed in light of the logical framework matrix (LFM) or its revision, as appropriate; and
 - Impact and sustainability were evaluated using the information obtained through the discussion with representatives of the intended project beneficiaries namely the Center for Forest Instrument Standard Assessment (FORISA) and Ministry of Environment and Forestry Indonesia.

3. Project Facts

3.1 Project origin

The project stemmed from the trading of illegally harvested timber that contribute to deforestation and by extension global warming, causes loss of biodiversity and undermines the rule of law. Illegal logging takes place when timber is harvested, transported, bought or sold in violation of national laws. These illegal activities undermine responsible forest management, encourage corruption and tax evasion and reduce the income.

Responding to the widespread illegal logging in Indonesia's forests, the Indonesian Ministry of Forestry has set out combating illegal logging as one of the top five priorities of the Ministry of Forestry national strategy. In the international forum, the development of specific initiatives targeting the problem of illegal timber, such as the EU Action Plan on Forest Law Enforcement, Governance & Trade (FLEGT), and government procurement policies in consumer countries, are a consequence of this need.

This project was an outcome of a workshop held in Kuala Lumpur, Malaysia between 24-26th April 2012 on 'Identification of Timber Species and Origins', organised by the Global Timber Tracking Network, at which the project partners met and began planning the project. The proponents recognized the need to introduce DNA tracking system for some of major dipterocarps species of Indonesia. Implementation of such tracking method would not only help Indonesia to clamp down on illegal logging but equally important, would also enhance the efforts to conserve the diminishing resources of the species.

3.2 Development objective

As defined in the project proposal, the development objective of the Project was to contribute to the strengthening of forest law compliance and governance through improved national policy and legal frameworks, strengthened enforcement and other institutions improved data and knowledge, strengthened partnerships and improved cooperation among the private sector, civil society organisations and other stakeholders.

3.3 The problems addressed

The two key problems addressed by the project were the inefficient tree species identification and control of timber origin in Indonesia. It was reasoned by the project proponent that the key problems would perpetuate illegal timber cases with manipulated documents claiming legality on the market. Furthermore, the cost of illegal timber is significantly lower, there will also remain a market disadvantage for legally harvested timber.

3.4 Specific objectives and outputs

The specific objective of the approved project was: development and implementation of species identification and timber tracking system with DNA fingerprints for two commercial timber tree species.

The expected outputs, as defined in the original project document, were:

- Output 1: 50 tree species from the meranti group have been identified by DNA barcoding
- Output 2: Genetic reference data to control the country of origin for two important timber species have been created
- Output 3: Indonesian personal trained for timber species identification and control of origin
- Output 4: Demonstration of control of chain of custody with one meranti species and stakeholders have been involved

Amendments were made to the project activities and refinement of the project outputs during the project inception as presented below.

- Output 1: Generation of DNA barcodes for 50 Dipterocarpaceae species by the end of the project
- Output 2: Provision of training and information sharing to Indonesian timber stakeholders including government, industry and certification bodies for timber species identification and control of origin of Indonesian timber, by the end of the project
- Output 3: Development of genetic markers for control of chain of custody of one Indonesian Dipterocarpaceae timber species by the end of the project
- Output 4: Project coordination

The revised project outputs/activities significantly differed from the initially approved project. As a result, a revised Logical Framework Matrix (LFM) was submitted in the Yearly Plan of Operation for the period 01/06/2015 to 31/05/2016. This evaluation will assess the project outputs and achievements based on the indicators specified in the revised LFM.

3.5 Starting date and duration

The project commenced on 18 August 2015, originally scheduled to last for 24 months. However, due to financial difficulties faced by ITTO, the project was temporarily suspended from April 2016 to November 2016. This suspension period had created uncertainty that affected the operation and impacted the progress of the planned outputs/activities. Consequently, the project required a 14-month extension, completing in

a total of 38 months. The financial closure of the project occurred by the end of October 2019, facilitated by the submission of the final financial audit report from the Executing Agency to ITTO.

3.6 Budget

<u>Source</u>	<u>Approved, USD</u>	<u>Actual, USD</u>
ITTO	518,833.28	512,868.81
UA	30,930.00	30,930.00
Total	549,763.28	543,798.81

Based on the approved budget, a total fund of USD 432,244.00 was to be disbursed to the EA. At project completion, the total fund disbursed to EA was USD 426,278.53 or 98.64% of approved sum.

4. Findings and Lessons Learned

4.1. Findings

4.1.1 Project design and contribution to achievements

Based on the project document, insufficient analysis was conducted on the key problems addressed by the project. The identified causes and sub-causes in the problem tree were intended to be transformed into project outputs and activities. It was expected that if these activities were carried out comprehensively, no changes, realignment, or re-grouping would be necessary during project implementation. However, adjustments and modifications to the project's outputs and activities would require corresponding changes in the logical framework matrix (LFM) to ensure that the indicators for verifying the achievement of the specific objective and development objective remain consistent and aligned. These changes aim to synchronize the project's specific objectives, ensuring that the adjusted outputs are in line and contribute to the achievement of the project's development objective.

In the proposal, the project's scope of work only focused on a limited portion of the complete databases, specifically DNA barcoding for 50 timber species and DNA fingerprinting for three timber species. However, given that there are approximately 1000 timber species traded in Indonesia, the evaluators of the project should have taken into account and recommended an appropriate design for the Logical Framework Matrix (LFM). Even if the project activities and outputs are successfully carried out, the resulting reference databases may not provide sufficient coverage to fully integrate DNA timber identification or DNA timber tracking into existing timber legality schemes. Nonetheless, the outcomes of the project will encourage and facilitate collaborative efforts to develop comprehensive reference databases that can be adopted by both importing and exporting countries implementing timber legality schemes. The ultimate goal is to enhance control over the trade of illegal timber.

In Indonesia, approximately 1000 timber species are traded under about 100 timber trade names. Since DNA barcoding and DNA fingerprinting are specific to each species, the use of timber trade names in reporting should be avoided to prevent confusion. For example, in this project, DNA fingerprinting was exclusively carried out on *Shorea laevis*, while the

trade name "Bangkirai" encompasses *Shorea laevis*, *S. laevifolia*, *S. kunstleri*, and *Hopea beccariana*.

4.1.2 Achievement of the outputs and objectives

a. The Outputs

The original project outputs and activities had been revised and adjusted significantly as reported in the project completion report. However, these were different from the amended logical framework matrix presented in the YPO dated 18/06/2015. It was observed that the indicators for the outputs and specific objective were inconsistent. However, for the lack of a final documented approved Logical Framework Matrix, the LFM dated 18/06/2015 was used in this Ex-post project assessment.

Output 1. Generate geographically discriminating DNA barcodes for at least 100 species

Output Indicators:

- (1) By the end of the project, the DNA barcode sequences of at least 100 timber species is completed – Partially achieved (DNA barcode data generated for 70 Dipterocarpaceae species)
- (2) By the end of the 2nd year, sampling of wood probes, cambium or leaves is completed – Fully achieved (A total of 1841 cambium, 277 wood core and 308 leaves samples were collected)
- (3) By the end of the project, a spatial genetic reference database of important timber species is available online – Partially achieved (A spatial genetic reference database available but not reported if available online)

Activity 1. CFBTI in FORDA to sample wood probes and cambium or leaves from 1000 individual trees

Performance against Activity: Excellent - >1000 trees samples.

Activity 2. University of Adelaide to develop sampling app

Performance against Activity: Moderate – Sampling App conceptualized, alpha version created and tested in the field on two independent field trips. Further refinement and finalization required.

Activity 3. University of Adelaide and CFBTI in FORDA to develop markers for 50 tree species

Performance against Activity: Good – Genetic analysis of >70 species was undertaken and marker loci identified.

Activity 4. University of Adelaide to optimize DNA extraction protocols for wood

Performance against Activity: Excellent – extensive DNA extraction optimization on timber completed.

Output 2. Provision of training and communication for timber species identification and control of origin from Indonesian timber producer countries

- Output Indicators:
- (1) up to 30 forestry officials of mid and top management have received sufficient information of the potential of DNA markers for timber tracking – Fully achieved (43 forestry officials participated in the first workshop held on 10-11 March 2015 and 95 forestry officials participated in the final workshop held on 28-29 Aug 2018)
 - (2) enabling condition for implementation of timber tracking using DNA markers identified – Fully achieved
 - (3) recommendations on policy formulation for implementation are available – Partially achieved

Activity 1. Training in Australia and Indonesia of Indonesian scientists in marker development, barcoding and DNA fingerprinting

Performance against Activity: Good – Indonesian scientist visited Adelaide for a period of two weeks to train in the Advanced DNA Identification and Forensic Facility Laboratories on DNA extraction from timber, marker application and lab set up to minimize contamination risks. Australian scientists visited Indonesian laboratories for two days for provision of on-site training. Further study visits were planned at project inception but were curtailed due to the ITTO financial impairment impacts.

Activity 2. Development of communication strategy by CFBTI in FORDA and University of Adelaide to ensure that policy makers and general public are well informed

Performance against Activity: Moderately Good – a communication strategy was developed. Implementation of the strategy was limited however due to reduced outputs and delays as a result of the ITTO financial impairment.

Activity 3. CFBTI in FORDA and University of Adelaide to organize national workshop on timber tracking using DNA markers

Performance against Activity: Excellent – a well-attended workshop was held 10-11 March 2016 entitled “Implementing a Verification System for Indonesian Timber”.

Activity 4. CFBTI in FORDA and University of Adelaide work with stakeholders to identify the required conditions in Indonesia for the implementation of DNA markers in timber tracking

Performance against Activity: Good – the second half of the workshop (activity 3 above) was focused on industry perspectives of the potential utility of DNA verification and the conditions required to facilitate implementation. Further, through working directly with industry to apply DNA tests alongside SVLK certification, the appropriate conditions to promote uptake were further explored and understood.

Activity 5. CFBTI in FORDA to evaluate existing log tracking systems

Performance against Activity: Good - FORDA and DoubleHelix collaborated closely with forest management authorities and auditors involved in implementing SVLK in Indonesia. They organized workshops and invited stakeholders from the sector to contribute their perspectives and enhance the implementation of DNA timber tracking for verifying SVLK claims. Although implementing DNA checks for domestic markets was deemed not cost-effective, it was recognized that additional verification,

particularly for international markets and high-value timber products, would facilitate access to more profitable international markets.

Output 3. Demonstration of control of chain of custody involving one meranti species and stakeholders

Output Indicator: timber of individual trees can be traced back with DNA-fingerprints to their exact position of origin along the chain of custody – Partially achieved: genetic markers for control of chain of custody of *Shorea laevis* was developed but blind testing was not conducted.

Activity 1. CFBTI in FORDA to sample cambium or leaves and wood probes of 100 bangkirai trees

Performance against Activity: Achieved – 256 individual *Shorea laevis* trees were sampled from across Kalimantan. An additional 347 individuals of *Shorea parvifolia* were sampled.

Activity 2. CFBTI in FORDA and University of Adelaide to develop DNA fingerprinting markers for bangkirai trees

Performance against Activity: Moderate – genome sequencing complete for *Shorea laevis*, double digest restriction amplified DNA (ddRAD) analysis complete using 24 samples from across the sampled range of the species in Kalimantan. Putative SNP loci identified but no population screening or chain of custody testing completed using the developed markers. DNA barcoding on industry samples demonstrated in *Shorea laevis*.

Activity 3. CFBTI in FORDA and University of Adelaide to train local staff from enforcement and scientific testing agencies in Indonesia in the use of genetic markers for enforcement of Indonesian timber laws

Performance against Activity: Achieved – Participation as trainers by Project staff in two Indonesian and one international (PNG) workshop run jointly by INTERPOL and the US Department of Justice aimed at reducing illegal logging, land encroachment and related financial crimes. Project staff presented information on forensic timber identification methodologies and the current Project.

Activity 4. CFBTI in FORDA to organise meetings with stakeholders to engage them in project design and relevance and make them aware of the power and application of genetic markers for enforcement of Indonesian timber laws

Performance against Activity: Good – through a series of meetings and workshops, stakeholders from government and industry were invited to learn about the project and help steer its direction, as well as more broadly learn about the potential application of DNA testing to Indonesian timber supply chains.

Output 4. Project coordination

Output Indicator: Successfully achieve Project targets, Report to ITTO, Disseminate to industry and research base – Fully achieved

Activity 1. University of Adelaide to provide executive agency coordination

Performance against Activity: Good – despite the ITTO financial impairment, UoA was able to continue to manage and coordinate the project to completion.

Activity 2. CFBTI in FORDA and University of Adelaide to coordinate a kick-off meeting

Performance against Activity: Good – a kick off meeting was held early in the project to establish the strategy for undertaking the project

Activity 3. Steering committee formed by CFBTI in FORDA and the University of Adelaide

Performance against Activity: Good – a steering committee involving representatives from the Indonesian and Australian governments was established to monitor and direct the project

Activity 4. Steering committee and partners' meetings schedule developed by CFBTI in FORDA and the University of Adelaide

Performance against Activity: Moderate – Project Steering Committee meeting was held at the beginning of the project implementation and another as the end of project implementation.

b. Specific objective

By definition, delivery of the outputs pertinent to each specific objectives means that that particular specific objective has been achieved. The achievement is also verifiable using the indicators defined in the logical framework matrix as illustrated below:

Specific objective: Development and implementation of species identification and timber tracking system with DNA fingerprints for commercial timber tree species

Indicators: i) A species identification based DNA barcode is available for 50 Indonesian timber species – Fully achieved

DNA barcodes for timber species identification were developed for 70 timber species.

ii) A DNA fingerprints timber tracking system is ready for use for three timber species – Partially achieved

DNA fingerprints timber tracking system was available for *Shorea laevis*.

iii) Partners are doing independently timber tracking with DNA fingerprints in Indonesia – Not achieved

No record/evidence was presented during the course of evaluation that the partner is independently conducting timber tracking with DNA fingerprints in Indonesia.

The specific objective had been partially realized by end of the project.

c. Development objective

As the specific objective had been partially achieved, it must have contributed a step towards achieving the development objective. However, to date no evidence of a cost-

effective and non-paper based timber tracking systems has been developed and implemented in Indonesia.

Under the Global Timber Tracking Network (GTTN), DNA tools are recognised as additional options for timber species identifications and timber species tracking; these are continuously under development and improvement. For the certification of Indonesian timber under SLVK, DNA tools have yet to be included as optional means of timber species and timber tracking verifications.

The databases generated on DNA barcodes for 70 timber species and DNA fingerprints for *Shorea laevis* are reported available for use that will certainly contribute to strengthening of forest law compliance and governance through improved national policy and legal frameworks, strengthened enforcement and other institutions, improved data and knowledge, strengthened partnerships and improved cooperation among the private sector, civil society organisations and other stakeholders. However, the databases may require further enhancement and verification to fully realise the development objective considering the many timber species harvested and traded in Indonesia.

4.1.3 Impact and relevance of the project gathered during the project evaluation mission

Below are the report of current conditions and project impacts based on the information gathered during the meeting at CFBTI together with representative from the Ministry of Environment and Forestry, Indonesia:

Meeting at Centre for Forestry Instrument Standard Assessment (Balai Besar Pengujian Standar Instrumen Kehutanan), BBPSIK (previously CFBTI) on 11 March 2023.

The meeting was chaired by Dr Dwi Prabowo Y.S., Head of BBPSIK and attended by: Gan Kee Seng, Anto Rimbawanto (Indonesia Project Coordinator and now with BRIN), Sya'roni AW (Biro KLN), Iman (Biro KLN), Abdul Aziz (BBPSIK), Henri S (BBPSIK), Ima Triwisuka (BBPSIK) and Dian Wijayati (BBPSIK).

The research institutions/agencies under the various ministries in Indonesia are currently under-going reorganisation and housed under Badan Riset dan Inovasi Nasional, BRIN (National Research and Innovation Council). FORDA had since then been dissolved, and the facility of CFBTI has changed to BBPSIK with new functions and still under the MEF Indonesia. The researchers of CFBTI were given options to remain under newly formed BBPSIK or moved over to BRIN.

Dr Anto Rimbawanto, on behalf of CFBTI, presented the project overview from its project formulation to completion as a Collaborating Agency. The scope of work for CFBTI were mainly on sample collection and DNA extraction. The rests of the more advanced work were conducted in the University of Adelaide. Dr Anto Rimbawanto expressed his willingness to further assist and collaborate when needed on the further work related to DNA barcoding and DNA fingerprinting.

It is not clear if the caretaker of this completed TFL-PD 037/13 Rev. 2 (M) is under BRIN or not; MoEF continues to take charge of the project as approved, implemented and completed, and made the necessary arrangement for this visit. As CFBTI (now defunct), BBPSIK and MEF are the stakeholders of this project, it is imperative that a copy of DNA

reference databases developed under this project should be deposited here for further development; Considering that the databases are only for a limited number of timber species, this responsible agency in Indonesia will be able to undertake further work to build up the databases for the intended purposes of wood species identification and timber tracking.

A walk-through of the laboratory was conducted. Some samples of this project are still kept in this laboratory. Presently, the DNA equipment is left idle and will be reactivated when the new functions of the laboratory are adopted and implemented.

4.1.4 Effectiveness of technology transfer

Technology transfer has been performed through different means as follows:

- i) Wide dissemination of the technical information/reports produced under the project through presentations in meeting, workshops, and conferences namely:
 - National enforcement training on illegal logging, land encroachment and related financial crimes – Balikpapan, Kalimantan, 7-10 March 2017
 - National enforcement training on illegal logging, land encroachment and related financial crimes – Medan, Northern Sumatra, 7-10 November 2017
 - Financial Investigation and prosecution related to forestry crimes, landuse and other related crimes – Port Moresby, PNG, 15-18 October 2018
 - Launch of industry incubator – Singapore, 1 July 2019
 - INTERPOL Asia-Pacific Forestry Conference – Singapore, 9-11 April 2019
 - APEC-EGALIT meeting, Santiago, Chile – 24 February 2019
 - Food and fibre safety and traceability conference – Clariden, Melbourne, 22 January 2019
 - Global Timber Tracking Network (GTTN) Regional Meeting – Beijing, China, 23 May 2019
 - APFORGEN Expert Workshop on Forest Genetics – Kuala Lumpur, Malaysia, 22-24 March 2017
 - Society for Wildlife Forensic Science Conference – Edinburgh, Scotland, 5-9 June 2017
 - Global Timber Tracking Network (GTTN) Working Group meeting – Washington DC, USA, 19-20 October 2017
 - Botany 2016 – Savannah, Georgia, 30 July-3 August 2016
- ii) Conducted two stakeholders' workshops
 - “Implementing a verification system for Indonesian timber” Jogjakarta, 10 - 11 March 2016.
 - “Final workshop – Implementing a verification system for Indonesian timber” Jogjakarta, 29th August 2018.
- iii) Counterpart training and knowledge sharing on DNA analysis
 - Two researchers from Australia, visited the laboratories in Indonesia in August 2015 to support field work planning and implementation,

development of SOPs for sampling and to advise on best practice in the laboratory for curation of samples.

- One researcher from Indonesia visited the group of Professor Andrew Lowe at the University of Adelaide for a period of two weeks from the 16 - 29 November 2015. The training covered the laboratory techniques carried out in the Advanced DNA Identification and Forensics Facility at the University of Adelaide in relation to the Project. Specifically DNA extraction from wood and cambium, DNA barcoding, and best practice for contamination control when working with low-copy number DNA as found in timber.

4.1.5 Overall post-project situation

The prevailing situation after project completion can be summarized as follows:

i) Raised awareness of target beneficiaries

The awareness of the potential applications of DNA fingerprinting for wood identification and timber tracking has significantly improved among the target beneficiaries. The databases created as part of this project serve as a crucial groundwork for stakeholders to extend their efforts and encompass a broader range of timber species traded, thereby promoting widespread adoption within the industry. Given that cost is a primary consideration for the industry, it would be beneficial to conduct a more thorough investigation into the economic aspects of implementing DNA technology for the intended objectives of the project

ii) Strengthening policies on timber tracking

The Timber Legality Verification System (SVLK) plays a crucial role in Indonesia's implementation of the EU FLEGT Voluntary Partnership Agreement. Lead by the Ministry of Environment and Forestry, this system represents a significant effort to enhance the country's ability to monitor and control species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This project had demonstrated the potential for improved traceability through the use of DNA fingerprinting, which is expected to strengthen custom authorities' capacity to monitor and identify CITES species. The active participation of SVLK representatives in project workshops highlights their preparedness to make necessary policy or regulatory adjustments in order to further strengthen the SVLK system.

iii) Physical environment

Regarding the physical environment, the collaborating agency or laboratory recently underwent reorganization and made changes to the technical staff. However, thanks to the outputs achieved in this project, the newly assigned agency or laboratory responsible for the initiative can readily resume and expand the DNA fingerprinting databases to cover all species traded in Indonesian. The progress made thus far facilitates a smooth transition and ensures the continued development of the databases by the responsible entity.

4.1.6 Unexpected effects and impacts

Other than the planned stakeholders' workshops, project personnel were invited as trainers in three workshops run by INTERPOL and the US Department of Justice to support Indonesian (two workshops) and PNG (one workshop) forest law enforcement personnel to understand and better exploit the capacities of DNA timber identification. Besides that, the project team members had received numerous requests or invitations both as resource person or presenter in many fora on DNA technology for wood identification and timber tracking.

4.1.7 Effectiveness of the project implementation

A project inception report and One yearly plans of operation (YPO) had been submitted by the executing agency to and endorsed by ITTO as the guiding documents of project operations; four bi-annual progress reports had also been submitted to ITTO; two PSC meetings were organized; one final audited report were produced with the assistance of independent, certified public accountant and the reports were duly endorsed by ITTO; and a completion report was submitted to ITTO.

After encountering some administrative delays, the project commenced in August 2015. The University of Adelaide took on the role of the project's executive agency and coordinator. As outlined in the approved project document, the other partners involved were the Centre for Forest Biotechnology and Tree Improvement (CFBTI) within Indonesia's Forest Research and Development Agency (FORDA), the Institute of Forest Genetics at the Thünen Institute in Germany, and the World Resources Institute (WRI) based in the USA. However, due to changes in high-level personnel and subsequent shifts in the organization's direction, WRI was unable to actively participate in the project, which was communicated during its inception.

In the implementation of the overall project, bilateral Memoranda of Understandings (MOUs) were signed between the executing agency and the project partners. However, only the MOU between the University of Adelaide and FORDA was executed during the implementation of the project activities. The project had also engaged with Double Helix Tracking Technologies Pte Ltd, based in Singapore, to conduct industry testing on timber species identification using the developed DNA barcoding database.

Throughout the project implementation, there were continuous interaction via email between the Project coordinator and collaborator. The Project Steering Committee meetings were chaired by the Director General of Agency for Research Development and Innovation (FORDA), Ministry of Environment and Forestry.

All the bi-annual progress report documents examined were prepared in conformity to the existing relevant ITTO manuals, with distinct consecutive time coverage, and in compliance with the project agreement as well as established rules and procedures applying to ITTO projects.

The project implementation was suspended between April and November 2016 due to ITTO financial impairment. This was reported to have a significant impact on the planned activities as the loss of contract technical staff during this time and escalation of cost had led to delay in the technical work. The project was extended 14 months to complete the planned activities with no additional funding from ITTO.

4.1.8 Overall sustainability

There are several project elements that are conducive to sustaining contribution of the project to combat illegal logging and trade of illegally sourced timber; among the prominent ones are:

- The project activities have effectively demonstrated the utility of the developed DNA barcoding database for timber species identification and the DNA fingerprinting database for timber tracking. These databases have the potential to be expanded or enhanced by the respective laboratories, allowing for the confident adoption of DNA technology within existing control mechanisms such as SVLK.
- The project team has consistently worked towards refining and improving the accuracy of the databases. Additionally, through the ITTO Fellowship Programme, specifically the project 'Developing a DNA timber tracking system for Southeast Asian timber' (049/20A), efforts were made to utilize the collected samples in this project to identify DNA markers. These markers can be utilized to develop simple, fit-for-purpose DNA tests that verify economically significant timbers in the Dipterocarpaceae family in Indonesia.
- The project team has already devised plans for the second phase of activities aimed at further developing these databases. It is imperative that the respective agencies provide encouragement and support to fully realize the immense potential of DNA technology in safeguarding the sustainable supply of timber.

The sustainability of the project relies heavily on its actual and potential contributions to the primary beneficiaries, which include the forest industries and government agencies. The DNA databases developed for precise timber identification and tracking offer compelling benefits that serve as strong incentives for regulatory agencies to support the maintenance and expansion of the databases established through the project.

4.1.9 Overall success/failure of the project

Overall, the project has achieved a moderate level of success in delivering its planned outputs and meeting its intended objectives, as assessed based on the indicators defined in the LFM (Logical Framework Matrix).

It is important to note that this project focused on a limited number of timber species that are harvested and traded in Indonesia. Consequently, the DNA barcoding database developed may not encompass a sufficiently comprehensive range of timber species for identification purposes. Nevertheless, this initial database serves as a foundation upon which relevant agencies can build, thereby harnessing the full potential of DNA technology. The project team members have received requests for training and presentations on DNA technology, indicating that the project has successfully raised awareness among key stakeholders, especially those in the timber industry and regulatory agencies.

Furthermore, the project's implementation has bolstered the technical capacity of the collaborating laboratory in Indonesia, enabling them to continue developing DNA

databases. The project has also identified the focus areas for the next phase of work, which are necessary to fully realize the potential of DNA technology in timber identification and tracking in Indonesia.

4.1.10 The overall cost of the project

The sanctioned total amount of project budget was US \$ 549,763.28 comprising contributions of ITTO and EA in the amounts of US\$ 518,833.28 and US\$ 30,930 respectively. A sum of US \$ 86,589.28 was retained by ITTO for ITTO Monitoring and Evaluation costs, ITTO Mid-term, Final and Ex-post evaluation costs, and Program Support Cost. At project completion, a sum of US \$ 426,278.53 was disbursed to EA.

During the implementation of this project, it faced a suspension period between June and November 2016, by ITTO due to its internal issues, which led to a hold on the project and a delay in funding. As a result, the operation and progress of project activities were significantly affected. During this period, contract staff had to be honoured in accordance with Australian law, which caused a significant deficit in the project's budget. Consequently, certain planned activities had to be adjusted and scaled back.

Compounding this issue, the ITTO encouraged the Executing Agency (EA) to apply for additional funds amounting to US\$247,911 in order to extend the project. In anticipation of this funding, decisions were made to expand the project, such as conducting additional sampling, in order to expedite progress. However, by the time the negative impacts of the suspension became evident, the additional expenses had already been incurred, further exacerbating the project's deficit. It is advisable to proceed with the implementation of the project according to the approved project document. If there is potential funding for additional scope beyond what had been approved, it should be presented as a separate new proposal and should not be funded from the existing project's budget.

4.2 Lessons learned

i. Project identification and design.

- A thorough problem analysis is essential to develop a conceptually and operationally robust project design. Understanding the direct and indirect causes and consequences of the key problem addressed by the project ensures the relevance and effectiveness of project interventions. This will minimize any realignment or/and refinement of project outputs and activities.
- To minimize adjustments to planned project activities during implementation, it is crucial to involve project collaborators and beneficiaries fully in project identification and problem analysis.
- Clear definition of the involvement of partners and collaborators in project activities and funding requirements is important. Obtaining prior consents and commitments from them are crucial to avoid non-participation during project implementation.
- Given the large number of timber species (~1000) harvested and traded in Indonesia, it is necessary to justify the selection of a specific number of priority species during project formulation. Proper allocation of resources and manpower needs to be considered in this justification.

ii. Project implementation

- Members of the PSC should meet more than once a year when there were significant changes or realignment to the outputs/activities needed and be kept informed of the progress in implementation that any delay could receive immediate and timely attention;
- Any changes to the project outputs/activities or delay shall be discussed in the Project Steering Committee meeting and communicated to ITTO for an official approval via the No Objection Letter (NOL); and
- Any project suspension will lead to project on hold and delay in funding, however contractual obligations have to be honoured that could cause budget deficit and resulted in adjustments and scaling back of planned activities. This would ultimately affect the achievement of project outputs and objectives.

5. Conclusions and Recommendations

5.1 Conclusions

In conclusion, this report evaluates the findings on the project outputs, objectives, and the impact of a project focused on the development and implementation of a DNA-based timber species identification and tracking system in Indonesia

The report identifies several key findings regarding the project design and contribution to achievements. It highlights that the initial analysis of the key problems addressed in the project was inadequate and suggests the need for adjustments and modifications to align the project's objectives and activities with the logical framework matrix (LFM). The scope of the project, which covered a fraction of the complete timber species database, is acknowledged as insufficient to fully incorporate DNA timber identification into existing legality schemes. However, the report emphasizes that the project's results will encourage collaborative efforts to build comprehensive reference databases for better control over the trading of illegal timber.

The evaluation assesses the achievement of the project outputs and objectives. While some outputs were partially achieved or not achieved, such as the completion of DNA barcode sequences for 100 timber species and independent timber tracking with DNA fingerprints, significant progress was made. DNA barcoding data was generated for 70 Dipterocarpaceae species, and DNA fingerprinting markers were developed for *Shorea laevis*. Training and communication efforts were successful in providing information to forestry officials and identifying enabling conditions for timber tracking using DNA markers. However, policy recommendations and independent timber tracking with DNA fingerprints were only partially achieved.

Regarding the specific objective of developing a species identification and timber tracking system with DNA fingerprints, the report confirms that the objective was partially achieved. DNA barcode sequences were available for 70 timber species, but DNA fingerprints timber tracking system was ready for use only for *Shorea laevis*. The independent timber tracking with DNA fingerprints in Indonesia was not realized.

In terms of the development objective, the report acknowledges that no evidence of a cost-effective and non-paper-based timber tracking system has been developed and implemented in Indonesia to date. However, the databases generated on DNA barcodes for 70 timber species and DNA fingerprints for *Shorea laevis* are seen as

valuable contributions to strengthening forest law compliance and governance. Further enhancement and verification are recommended considering the wide range of timber species traded in Indonesia.

The report also reflects on the project's impact and relevance. The evaluation mission gathered information indicating that the research institution and agencies involved in the project in Indonesia underwent reorganization. The project's completion and its outcomes were presented to the stakeholders, and collaboration for further work related to DNA barcoding and DNA fingerprinting was expressed.

Overall, while the project achieved significant progress in developing DNA-based tools for timber species identification and tracking, there are areas that require further attention and enhancement. The report underscores the importance of depositing the DNA reference databases with the responsible agency in Indonesia to facilitate their ongoing development for wood species identification and timber tracking purposes. The findings and recommendations from this evaluation will contribute to future efforts in improving the control and governance of timber trading, particularly in combating the illegal timber trade.

5.2 Recommendations

a. For the Executing Agency/Collaborating Agency

- Future similar projects should strictly adhere to the existing ITTO Manual on project formulation and ensure full participation of primary beneficiaries to achieve a sound and feasible project design;
- Minor changes to project outputs and activities may be necessary during project implementation, but any realignment that impacts on the approved project's logical framework matrix should be avoided unless scrutinise and approve by ITTO;
- During project implementation, additional funding opportunities may be pursued through a separate proposal with defined scope, rather than modifying or amending the existing approved project document to avoid complications in implementation, reporting and monitoring; and
- The completed DNA databases for wood identification and fingerprinting in timber tracking should be officially deposited with a laboratory representing the collaborating agency in Indonesia. Significant efforts are required to enhance or built on the databases.

b. For ITTO

- To ensure compliance of project proponent to existing manual on project formulation and implemetation is to be fully observed by the Expert Panel/Monitoring team in assessing any project proposal/implementation;
- To ensure synchronization and consistency of the project's Logical Framework Matrix, the ITTO/Expert Panel must vet any significant changes or realignment of project outputs and activities submitted in project inception report; and
- To ensure timely disbursement of project fund to project with high dependency on contract technical personel to avoid delay in project implementation.

Annex 1. The terms of reference

Terms of Reference for the Ex-Post Evaluation

TFL-PD 037/13 Rev. 2 (M) Implementing a DNA timber tracking system in Indonesia

- i. To assess the project's design and contribution to the achievement of its respective objectives.
- ii. To assess the achievement of the project's outputs and specific objectives.
- iii. To evaluate the impact and relevance of the project, detailing its impact on development and specific objectives as stated in the project document.
- iv. To determine the effectiveness of technology transfer to target groups if applicable.
- v. To assess the overall post-project situation for the project, including the conditions of its intended direct or indirect beneficiaries.
- vi. To define and assess unexpected effects and impacts, either harmful or beneficial, and present the reasons for their occurrences.
- vii. To analyse and assess implementation efficiency, including the technical, financial and managerial aspects.
- viii. To assess the overall sustainability of the project after completion, and include appropriate recommendations to safeguard the continuing of its positive impacts, and enhance utilization of the technologies (if applicable) and other results developed by the project.
- ix. Taking into account the results of the evaluation, make an overall assessment of the project's relative success or failure, to summarize the key lessons learnt; and identify any issues or problems which should be taken into account in designing and implementing similar projects in future.
- x. To assess the overall cost of the project with original budget provisions, and their respective linkage with the overall results.
- xi. To prepare the evaluation report in accordance with the references for the Project Evaluation Report, as contained in the ITTO Manual for Project Monitoring, Review and Evaluation, third edition and the ITTO Manual on Standard Operating Procedures 2009.
- xii. To assess the project's contribution to the relevant ITTA objectives (1994 and 2006) and relevant ITTO Strategic Action Plan.
- xiii. To prepare one or more articles, for possible publication in the ITTO Tropical Forest Update (TFU) magazine, in consultation with the editor, containing an overview of the project and summarizing the lessons learned from the evaluation work. Appropriate photographs should be provided.

Annex 2. ITTO - Consultant agreed timelines

Proposed Work Schedule (2023)

Jan	Dispatch of the following documents supporting for the evaluation work: (i) ITTO Manual for Project Monitoring, Review and Evaluation (ii) Project documents (iii) Technical reports (iv) Project financial statements (audit report) and (v) Project completion reports
Feb/March	Trip to Indonesia. Meeting with the national authority (Ministry of Environment and Forestry), projects' executing agencies/collaborating agencies and former personnel of the project management units for briefing and comprehensive discussions on and analysis of projects implementation and results, as well as outlining the agenda for field visits. Discussions with relevant stakeholders involved in the projects works in Indonesia (the exact dates for visiting Indonesia will be determined in consultation with the Ministry of Environment and Forestry/Executing Agencies).
June	Submission of draft report and its executive summary to ITTO and the Ministry of Environment and Forestry/Executing Agencies
August	Submission of the final report, including an executive summary, and the article for TFU to ITTO.
November	Presentation of the report at the 59th Session of the ITTO

Annex 3 Schedule of ex-post evaluation meeting and field visit in Indonesia

Date	Place/Site	Organization	Remarks
3 March 2023, Friday	Jakarta	Biro KLN, MoEF	P.M.: Entry meeting with Project Representatives: EAs, CA and main stakeholders presided by Dr. Dodi Simandi, Deputy Director for International Cooperation Facilitation, International Cooperation Bureau.
10 March 2023, Friday	Bajawa/ Yogyakarta	Transiting to Yorjakarta	
11 March 2023, Saturday	Yogyakarta	Center for Forest Instrument Standard (BBPSIK)	Met with Dr Dwi Prabowo, Head of BBPSIK and Dr Anto Rimbawanto (BRIN)
12 March 2023 Sunday	Yogyakarta/Kuala Lumpur		Completed the mission

Annex 4. Executing Agency's Views

Executing Agency's Views on ITTO Ex-Post Evaluation	
Project Title: Implementing a DNA timber tracking system in Indonesia Project ID: TFL-PD 037/13 Rev. 2 (M)	
Overall View on the Evaluation:	
<i>(Please insert your overall views on the evaluation report, e.g. structure, methodology and its conclusions)</i>	
Evaluation Report Recommendations*	Response to recommendations (e.g. 'accept', 'partially accept' or 'reject' – please provide a brief explanation)
<i>Recommendation 1</i> Future similar projects should strictly adhere to the existing ITTO Manual on project formulation and ensure full participation of primary beneficiaries to achieve a sound and feasible project design.	Partially accept We support adherence to the ITTO process for managing projects. However in this case it appears that the project assessment has been undertaken against the original proposal and project plan, rather than the revised project plan. A revised LFM was submitted and we received notification from ITTO that a NOL had been issued. We no longer have access to these documents through the ITTO online system, but attach here the revised contract with ITTO, which stipulates the project objectives and deliverables, and against which the LFM was revised. Under the revised project, only the Indonesian and Australian partners were contracted for work. Under the original proposal the World Resources Institute, USA, and Thunen Institute, Germany, were involved in the project but due to funding cuts to the project, due to the ITTO financial impairment, these partners were omitted from the revised project plan. Under the revised plan, all project partners were fully consulted and involved in the planning and execution of project work. In addition, the financial impairment of ITTO during the early establishment of this project significantly affected the operations and timeliness of response of ITTO, and we undertook the project during a period of
	immense change in the organisation, leading to at least a 2 year impact on the project.
<i>Recommendation 2</i> Minor changes to project outputs and activities may be necessary during project implementation, but any realignment that	Partially accept We support adherence to the ITTO process for managing projects. However as noted above for this project, and due to the impact of the

<p>impacts on the approved project's logical framework matrix should be avoided unless scrutinise and endorse by the expert panel.</p>	<p>ITTO financial impairment, a revised contract was established between the ITTO and Australian and Indonesian partners (see attached). A revised LFM was submitted and we received notification from ITTO that a NOL had been issued.</p>
<p>Recommendation 3</p> <p>During project implementation, additional funding opportunities may be pursued through a separate proposal with defined scope, rather than modifying or amending the existing approved project document to avoid complications in implementation, reporting and monitoring the current approved project.</p>	<p>Partially accept</p> <p>We support adherence to the ITTO process for managing projects. Additional and follow on works resulting from the project have separate agreements in place (e.g. ITTO fellowship 'Developing a DNA timber tracking system for Southeast Asian timber' 049/20A).</p>
<p>Recommendation 4</p> <p>The completed DNA databases for wood identification and fingerprinting in timber tracking should be officially deposited with a laboratory representing the collaborating agency in Indonesia. Significant efforts are required to enhance or built on the databases.</p>	<p>Partially accept</p> <p>We support this recommendation. During the project, a significant number of tissue samples were collected and a subset of these were used to develop DNA barcoding loci. Access to these data files was shared, but the data were not formally deposited with the Indonesian partner.</p> <p>As highlighted, significant additional work has been required to produce useable DNA barcoding loci from these data.</p> <p>To address this, the University of Adelaide has funded a PhD student who is also supported by an ITTO fellowship 'Developing a DNA timber tracking system for Southeast Asian timber' (049/20A). The outcome of this work will be DNA barcodes that can distinguish between approximately 137 different Dipterocarpaceae species, and provide geographic origin assignment for <i>Shorea laevis</i>.</p> <p>All DNA barcode and genotype data will be formally deposited with the Indonesian partner as part of our ongoing productive collaboration.</p>

Name, Title and Institution of Respondent:

Andrew Lowe, interim Director, Environment Institute, University of Adelaide

Date: 23rd July 2023

Signature:

