

Ex- Post Evaluation Report

ITTO Project PD 440/07 Rev.1 (M,I)

**Improving the Detection and Prevention of Illegal Logging and
Illegality in Shipment and Trade of Wood Products in Guyana**

Prepared for ITTO

by

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LIST OF ACRONYMS

EU	European Union
FPA	Forest Products Association of Guyana
FSC	Forest Stewardship Council
GFC	Guyana Forestry Commission
GIS	Geographic Information System
GOG	Government of Guyana
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organisation
PEFC	Programme for the Endorsement of Forest Certification
PET	Project Evaluation Team
PIT	Project Implementation Team
PSC	Project Submitting Country
REDD	Reducing Emissions from Degradation and Deforestation
TFU	Tropical Forest Update
USA	United States of America
VPA	Voluntary Partnership Agreement
WAN	Wide Area Network

PART I: EXECUTIVE SUMMARY

1. Background Information about the project

The Project arose from the desire of the Government of Guyana (GoG) to address illegal logging and/or other illegal activities that may be occurring in the forestry sector in Guyana.

There were two components to the Project as follows:

- the first component was to develop a remote sensing capability within the Guyana Forestry Commission (GFC)'s Geographical Information Systems (GIS) Unit, to enable the analysis and interpretation of satellite imagery, to assist in determining temporal patterns in forest land use changes. The objective was to design and implement a forest change detection system for recording and updating Guyana's roads and forest disturbance from satellite data, and to verify whether or not these changes related to legitimate forestry activities; and
- the second component was to transform GFC's existing paper-based barcode log tracking system into an electronic-based system through incorporating digital hand-held scanners, linked to a Wide Area Network (WAN), so that data from GFC's barcodes can be accessed during monitoring wood products transshipments, and enable detection of malpractices and other illegal activities associated with wood product flows within the country.

The Project's Executing Agency was the GFC and the international consultant was Poyry Forest Industry of New Zealand. The Project duration period approved by the ITTO was 18 months but the actual duration period was 20 months, with a commencement date of February 2008. The actual total Project cost was US\$754,319.00.

The Project's Development Objective was "to increase the contribution of the forest sector to the national economy by means of higher remittances to the consolidated fund and increased foreign exchange earnings as a result of increased detection and prevention of illegal activities."

The Specific Objective was "to improve the detection and prevention of illegal logging and illegality in shipment and trade of wood products in Guyana."

GFC adopted a two-pronged approach to implementing the Project involving the following:

- first, establishing the necessary technological framework to undertake the tasks necessary to tackle the identified causes of the problem, and thereby achieve the stated Project Objectives; and
- second, providing the necessary training, development and extension to ensure that the new systems are properly implemented by the regulatory agency and as appropriate, by the wood products industry sector.

The Project's expected outputs were:

- Output 1: Creating a dedicated GIS (including satellite image analysis and legality database).
- Output 2: Implementing an electronic Barcode Timber-Tracking system to replace GFC's existing manual tracking system.
- Output 3: Developing and implementing a central monitoring and detections database.
- Output 4: Implementing a wireless Wide-area computer network (WAN) for capturing, sharing and disseminating data between central office and field staff.
- Output 5: Establishing a Legality, Monitoring and Extension Unit within GFC.

2: The Purpose of the Evaluation

The ITTO commissioned the ex-post evaluation to provide a concise diagnosis of the Project, so as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the Project's contribution towards ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future.

3: The Scope of the Evaluation

The Ex-Post Evaluation's scope of work required the consultant to:

- i. assess the extent to which the general objective, the specific objective and the outputs of the project have been achieved;
- ii. assess the relevance of the project to ITTA, 1994 and the ITTO Yokohama Action Plan;
- iii. evaluate the impact and relevance of the project and determine to what extent the project has contributed to improvement in the detection and prevention of illegal logging as well as illegality in shipment and trade of wood products in Guyana resulting in increased contribution of the forest sector to the national economy in the form of higher remittance to government revenue and greater foreign exchange earnings;
- iv. determine the effectiveness of information dissemination of project outputs and assess the overall post project situation in relation to its impact on the efforts to address illegal logging as well as illegal shipment and trade in wood products in Guyana;
- v. define and assess any unexpected event, effect and impact, either harmful or beneficial, and offer explanation for their occurrence;
- vi. analyze and assess the efficiency of project implementation and management, including technical, financial and managerial aspects;
- vii. recommend follow-up action, where appropriate, in order to enhance utilization of the results of the project;
- viii. make an overall assessment of the project's relative success or failure, summarize the key lessons learned; and identify any issues or problems which should be taken into account in the design and implementation of similar projects in future;
- ix. prepare an evaluation report with an executive summary in accordance with the outline provided in the ITTO Manual for Project Monitoring, Review and Evaluation;
- x. prepare an article for possible publication in the ITTO Tropical Forest Update (TFU), in consultation with the editor, containing an overview of the project and summarizing the lessons learned from the evaluation work. Compile twenty or more high-resolution photographs of the project in a CD along with data on each photograph according to the proforma to be provided by ITTO for this purpose. Guidelines for the preparation of articles for ITTO's TFU are enclosed.

In addition to addressing the above, the consultant was expected to conduct the evaluation in such a way as to answer the questions identified in the ex-post evaluation checklist provided in the ITTO Manual for Project Monitoring Review and Evaluation.

The Work Schedule for the consultant involved:

- consultation by correspondence and e-mail with the ITTO Secretariat;
- travel to Georgetown, Guyana to conduct the ex-post evaluation at the office of the Executing Agency, Guyana Forestry Commission (GFC);
- meetings with officials of GFC particularly the Project Coordinator and other available members of the project team for elaboration and finalization of the programme for the assignment, briefing and discussions on project implementation and results and inspection of project sites, tangible outputs and financial accounts and statements. During the course of the assignment, the consultant may hold discussions with any relevant stakeholders involved in, or impacted by, the project;
- submission of draft report to ITTO and the Executing Agency for comments and suggestions;
- submission to ITTO, of the final report, including an executive summary, the draft article for the TFU and twenty or more high-resolution photographs of the project compiled in a CD along with data on each photograph according to the proforma to be provided by ITTO for this purpose; and

- presentation of the report at the Forty-fifth Session of the ITTO Committee on Economic Information and Market Intelligence to be held in Antigua, Guatemala from 14 to 19 November 2011.

4: Conclusions of the Evaluation

Based on the review of the Project's Completion Report, the various Progress Reports, field visit and discussions with individuals involved with the Project's implementation, the consultant concluded that, overall, the Project was executed efficiently. All the activities in the Project document and the Work Plan were undertaken successfully. The allocated resources were used as per the Project's budget and the scheduled activities.

After reviewing all Project documents, visiting the Project sites at Georgetown, Soesdyke and Linden and discussions with the PIT members, relevant GFC staff and representatives of Guyana's wood products industry sector and communities impacted by the Project, the consultant concluded that the Project's Developmental Objective and Specific Objective were achieved. All Project outputs were achieved satisfactorily.

The consultant found that the PIT had disseminated the Project results effectively through:

- several high quality training manuals and procedures;
- presentations at stakeholder meetings and workshops; and
- training of relevant GFC staff, 15 for the GIS unit and some 35 for the wood products tracking system.

In the view of the consultant, the Project has been sustainable and will continue to be so in the future because, the GFC and the sector are continually considering options for building on the Project's outputs and outcomes to develop new activities and create new opportunities.

Discussions with the PIT, GFC staff and several stakeholders in both the private sector and the forest-dependent communities, confirmed that the Project has had a number of positive impacts, and these impacts are likely to continue into the future. The Project impacts, to date, include the following:

- enhancement of the capability and capacity of the GFC's existing GIS Unit in the analysis and interpretation of satellite imagery;
- the capacity to produce high quality maps from satellite imagery for GFC for the management of Guyana's entire forest estate, as well as commercial concessions. High quality maps are also now being produced for other government agencies such as the Defence and Police Forces for national security and law and order maintenance in remote areas, the Guyana Geology and Mines Commission, the Guyana Lands Survey Commission, as well as the private sector, in particular concession holders for the preparation of concession and annual management plans, and the general public;
- the new system has boosted significantly, the GFC's ability to manage effectively the whole of the nation's forest resources, in particular commercial concessions. The GFC is now better able to monitor how companies are implementing their annual management plans including their harvesting activities;
- enabled the GFC to better understand the drivers of deforestation in Guyana, which principally involve agriculture, mining and infrastructure development, thus leading to better government planning and decision making in land use management;
- significantly improved wood products tracking system incorporating the use of barcoding, electronic scanners and Wide Area Networks (WAN), for tracking the trans-shipment of both wood and non-timber forest products;
- more efficient detection of illegal activities, particularly procedural breaches involving misuse of tags and incomplete documentation;
- enabled the GFC to be more proactive in its monitoring activities;
- provided the GFC with the capability for random and surprise monitoring of wood products (logs and sawn timber) flows throughout the country. This has created a strong "deterrence factor" among concessionaires and other producers within the country's forest and wood products industry sector;

- reduced the incidences of log pilfering and wrong species identification;
- improved staff productivity by between 60% and 70%, particularly in the detection of procedural breaches (e.g. wrong completion of forms and other related documentation) and misuse of tags;
- reduced the incidences of corruption through overall improvement in the time taken to process stakeholder permits;
- quicker and easier identification of the legitimate owners of statutory documents such as permits;
- GFC's ability to identify potential areas of illegal encroachment, through its remote sensing capability, was instrumental in the Government of Norway and Guyana implementing the agreed terms of the Memorandum of Cooperation that allows for the provision of funding of \$USD250 million over five years under REDD+;
- the recent exploratory dialogue between the EU and the Government of Guyana to consider negotiating a Voluntary Partnership Agreement (VPA) and subsequent fact finding visit by an EU delegation, was the direct result of the twin outcomes of the ITTO Project i.e. Guyana's capacity to identify and control unauthorized deforestation as well as the country's ability to track timber and non-timber product flows within Guyana;
- complying fully with GFC's statutory requirements has also made it easier for wood products companies to establish their own internal inventory and information management systems, which has resulted in improvements to their own internal practices such as inventories and product recovery, and resulted in increased revenue;
- companies are also using the legality monitoring as the first step towards forest management and chain of custody certification under internationally recognised certifications systems such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC);
- successful implementation of the ITTO Project has encouraged the GFC to collaborate with the wood products sector and other stakeholders to work towards the development and implementation of the Guyana Legality Assurance System; and
- enabled the GFC to assist Amerindian producers and processors to adopt GFC's code of harvesting practices, as well as the tagging system, thus improving the sustainable management of some Amerindian forest lands, and enabling them to detect illegal activities such as poaching of trees.

The main lessons learned were:

- while electronic-based wood products tracking system are more efficient compared with paper-based systems, they can nevertheless be technology intensive and therefore expensive to implement, operate and maintain;
- use of satellite images for detecting "hot spots" of deforestation (rather than just ground checking as was the case previously) is very efficient, although it can be expensive;
- extensive and comprehensive pre-planning and research is necessary for the successful design, formulation and implementation of any project, to ensure all the project elements come together seamlessly; and
- the introduction of any new system requires extensive education and awareness raising among all the stakeholders who would be impacted by the system.

5: Recommendations

5.1: For the ITTO

The Guyana Project is unique, and is an example of successfully combining remote sensing and wireless WAN-enabled electronic wood products tracking system to verify legality through:

- monitoring temporal changes in forest cover to isolate legitimate deforestation associated with commercial wood products harvesting; and
- monitoring trans-shipment and wood flows to uncover procedural breaches such as incorrect documentation and misuse of tags.

The systems also have the ability, through the central database, to provide useful management information such as inventory and accounting data, and thereby assist the GFC to enhance revenue collection from the country's commercial forest resources.

It would be useful for the ITTO to document and publicise the Project's outcomes, including the lessons learned, for the benefit of other ITTO member countries.

5.2: For the Country

The following are recommended for consideration by the GoG and the GFC:

- in the medium to long term, the Government of Guyana and the Guyana Forestry Commission should consider expanding the coverage of the Wide Area Network (now covering 6 main strategic stations) to the other remaining 31 stations, taking into consideration key factors, including cost;
- in the medium term, consideration should be given to exploring the possibility of expanding the functionality of the scanners to include both data collection/entry, as well as legality monitoring;
- the following aspects related to scanners should also be considered :
 - the ability to input data from the field and thereby update the Headquarters database; and
 - Scanners with longer scanning distance.
- given the on-going cost of maintaining and operating the satellite imagery capability for detecting and updating information on temporal land use changes, which also have operational benefits for other government agencies such as the Guyana Defence Force (for national security), the Guyana Police Force (for law enforcement), the Guyana Geology and Mines Commissions (for mineral exploration and extraction licenses) and the Guyana Lands and Surveys Commission (for updating national land use maps), the GoG and the GFC should consider options for assisting the GFC to recover some of its costs;
- for applications deemed to provide "public good" benefits, the GoG should consider subsidising the GFC's costs from the national consolidated revenue/funds; and
- for applications considered to deliver commercial benefits to consuming government agencies, the GoG should consider empowering the GFC to recover its costs fully.

6: Conclusions

The main conclusions from the evaluation are:

- the Project was executed effectively and efficiently by the Executing Agency, the GFC;
- all Project activities were undertaken effectively and efficiently;
- Project resources were expended effectively and efficiently in undertaking all Project tasks and activities as described in the Project Document, the Project Work Plans, and the Project budget was underspent by \$USD3,801.00;
- the Project met its Development and Specific Objectives through achieving all five outputs;
- the Project outputs were disseminated effectively through staff training and awareness-raising workshops for stakeholders including communities impacted by the Project;
- there is sufficient evidence as well as on-going activities post completion of the Project, which indicate that the Project is sustainable now and into the future;

- the Project has created effective and sustainable impacts at the institutional (GFC), national, sectoral (industry) and community (stakeholder) levels; and
- the Project is unique, as it is the first time an ITTO producer member country has successfully combined remote sensing and wood products tracking to address the issue of illegality in its forests and wood products sector, and therefore provides valuable lessons, both positive and negative, for other countries contemplating developing and implementing such systems in the future.

PART II

Project Context

The Project arose from the desire of the Government of Guyana (GoG) to address illegal logging and/or other illegal activities in the forestry sector in Guyana. Although there are no official statistics on the level of illegal logging and/or other illegal activities in the forestry sector in Guyana, anecdotal evidence suggest that while illegality does exist, the proportion of total production of wood products from illegal sources entering the country's domestic and international wood products trade is not as high as has been reported for some other ITTO producer countries, where rates of over 50% have been reported. Nevertheless, illegal activities were occurring and if detection and prevention were not improved, negative impacts could become increasingly significant.

There were two components to the Project as follows:

- the first component was to develop a remote sensing capability within the Guyana Forestry Commission (GFC)'s Geographical Information Systems (GIS) Unit, to enable the analysis and interpretation of satellite imagery, to assist in determining temporal patterns in forest land use changes. The objective was to design and implement a forest change detection system for recording and updating Guyana's roads and forest disturbance from satellite data, and to verify whether or not these changes related to legitimate forestry activities; and
- the second component was to transform GFC's existing paper-based barcode log tracking system into an electronic-based system through incorporating digital hand-held scanners, linked to a Wide Area Network (WAN), so that data from GFC's barcodes can be accessed during monitoring wood products transshipments, and enable detection of malpractices and other illegal activities associated with wood product flows within the country.

The Project Agreement was signed between the ITTO and the Government of Guyana on 7th September 2007.

The Project Steering Committee (PSC) comprised of the following organisations:

- GFC;
- The ITTO;
- The Forest Products Association of Guyana; and
- The donor country, Japan.

The Project Implementation Team (PIT) comprised of the following:

- GFC's Head of Planning;
- GFC's Head of Finance;
- GFC's Deputy Commissioner of Forests and Head of the GIS Unit; and
- A representative from the Forest Products Association of Guyana.

The Project's Executing Agency was the GFC and the international consultant was Poyry Forest Industry of New Zealand. The Project duration period approved by the ITTO was 18 months but the actual duration period was 20 months, with a commencement date of February 2008. The actual total Project cost was US\$754,319.00.

1.1: Project Objectives

1.1.1: Development Objective

The Project's Development Objective was "to increase the contribution of the forest sector to the national economy by means of higher remittances to the consolidated fund and increased foreign exchange earnings as a result of increased detection and prevention of illegal activities."

1.1.2: Specific Objective

The Specific Objective was “to improve the detection and prevention of illegal logging and illegality in shipment and trade of wood products in Guyana.”

1.1.3: Project Goals

The Project’s specific goals were to:

- conduct satellite image analysis to detect logging, mining and road clearing activities;
- to determine legality indicators that will identify whether or not deforestation activities carried out in forest concessions are legal;
- establish an integrated geographic information database for the storage and maintenance of the acquired satellite imagery and GIS layers in order to detect and monitor forest disturbance;
- better allocate resources required for forest law enforcement, and provide training on operating and maintaining the above tools and on handling such datasets; and
- enhance GFC’s existing timber tracking system through incorporating electronic hand held scanners to be used in the field to collect data on logs and lumber, and linking them to the central GFC databases via a wireless WAN network to allow field officers to access real-time data.

1.2: Project Strategy

GFC adopted a two-pronged approach to implementing the Project involving the following:

- first, establishing the necessary technological framework to undertake the tasks necessary to tackle the identified causes of the problem, and thereby achieve the stated Project Objectives; and
- second, providing the necessary training, development and extension to ensure that the new systems are properly implemented by the regulatory agency and as appropriate, by the wood products industry sector.

The implementation strategy involved:

- acquiring and analysing satellite images at medium resolution for the whole country, and high resolution images for certain “hot-spots”. Indicators for identifying and monitoring illegal logging were developed and resulting images and database were integrated into a customized GIS of forest concessions. An integrated barcode tracking system was developed to provide data for a central legality and tracking database;
- establishing a legality monitoring and extension unit within GFC with overall responsibility for directing GFC’s legality-related activities which included maintaining the databases and providing extension services in areas of law compliance to the wood products industry sector as appropriate; and
- developing capacity, skills and expertise through training appropriate central office and regional office staff in operating monitoring tools (updating information and checking indicators), information handling (GIS and image analysis, data collection, database management).

1.3: Expected outputs

The Project’s expected outputs were:

- Output 1: Creating a dedicated GIS (including satellite image analysis and legality database).
- Output 2: Implementing an electronic Barcode Timber-Tracking system to replace GFC’s existing manual tracking system.
- Output 3: Developing and implementing a central monitoring and detections database.
- Output 4: Implementing a wireless Wide-area computer network (WAN) for capturing, sharing and disseminating data between central office and field staff.

- Output 5: Establishing a Legality, Monitoring and Extension Unit within GFC.

1.4: Target Beneficiaries Involvement

The main target beneficiaries of the Project were:

- local communities who are often the victims of illegal logging and other illegal activities in the forestry sector through the misuse of tags and documents issued to communities, as well as poaching of logs by unscrupulous loggers. Also illegal and unregulated logging activities have negative environmental impacts particularly on soil and water resources;
- legitimate operators who would receive a fair price for their products instead of being in unfair competition with cheaper illegal produce;
- exporters through market access opportunities in those markets requiring legal assurance that may currently be closed to them; and
- the national government of Guyana from an increase in the royalties and acreage fees avoided through illegal logging activity.

1.5: Project Inputs

The project inputs and sources were as follows:

ITEM	AMOUNT\$USD
ITTO's contribution	516,575.00
GoG's monetary and in-kind contribution	184,019.00
Total Approved Budget	758,120.00
Actual Project Cost	754,319.00

1.6: The ITTO/ITTA Context

The Project's Development Objective to "increase the contribution of the forest sector to the national economy by means of higher remittances to consolidated fund and increased foreign exchange earnings as a result of increased detection and prevention of illegal activities", was fully consistent with the objectives of the International Tropical Timber Agreement (ITTA) 1994. Similarly, the Project's Specific Objective "to improve the detection and prevention of illegal logging and illegality in shipment and trade of wood products in Guyana" was fully consistent with the objectives of the ITTA 1994.

Specifically, the Project's Development and Specific Objectives related to the following ITTA 1994 objectives:

- (c) To contribute to the process of sustainable development.
- (d) To enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000.
- (e) To promote the expansion and diversification of international trade in tropical timber from sustainable sources by improving the structural conditions in international markets, by taking into account, on the one hand, a long-term increase in consumption and continuity of supplies, and, on the other, prices which reflect the costs of sustainable forest management and which are remunerative and equitable for members, and the improvement of market access.
- (h) To improve market intelligence with a view to ensuring greater transparency in the international timber market, including the gathering, compilation, and dissemination of trade related data, including data related to species being traded.
- (k) To improve marketing and distribution of tropical timber exports from sustainably managed sources.

In terms of ITTO's structure, the Project was related to ITTO's Committee on Economic Information and Market Intelligence and the Committee on Committee on Reforestation and Forest Management.

The Committee on Economic Information and Market Intelligence is primarily concerned with:

- improving market conditions and transparency to support and promote the international flow of tropical timber from sustainably managed and legally harvested sources; and
- up-to-date, accurate and comprehensive timber trade statistics as well as market information and analysis vital for the expansion and diversification of this trade.

The Committee on Reforestation and Forest Management is concerned primarily with the sustainable management of the natural forest resource base for tropical timber.

The Project's objectives also met the goals and objectives of the Committee on Economic Information and Market Intelligence and the Committee on Reforestation and Forest Management in ITTO's Yokohama Action Plan, 2002 to 2006.

One of the major focuses of ITTO and its members during the term of this Action Plan was accelerating progress towards the fulfillment of ITTO Objective 2000, which required, *inter alia*, shifting focus from the development of national forest policies and legislation toward implementation on the ground, especially at the forest management unit level. This included, for example, supporting efforts to strengthen forest law enforcement; more training and capacity building; wider application of reduced impact logging (RIL), and strengthening timber tracking to improve the accuracy and transparency of information on timber products and trade.

Specifically the goals and actions of the Committee on Economic Information and Market Intelligence which were relevant to the Project's goals and objectives were:

- Goals 1 and 2: "Improve transparency of international timber market" and "Promote tropical timber from sustainably managed sources" respectively, and
- Actions 2 and 3: "Provide a forum for discussion on non-discriminatory trade, subsidies for competing products, shortcomings in enforcement of forest law and regulation, and other factors that may affect the marketability and access of tropical timber products" and "Where feasible and in cooperation with relevant organizations, fill key data gaps through regular assessments and special studies, including the collection and analysis of information on forest law enforcement, sustainable timber harvesting, illegal trade, secondary products, substitution, plantation timber, and certified products" respectively.

The goal and actions of the Committee on Reforestation and Forest Management which were relevant to the Project's key objectives were:

- Goal 1: "Support activities to secure the tropical timber resource base."
- Action 1: "Support the effective enforcement of forest laws and regulations that ensure sustainable forest management and secure the production base."
- Action 7: "Identify shortcomings in enforcement of forest laws and regulations, and overcome them."

2: Evaluation Scope and Focus

The ITTO commissioned the ex-post evaluation to provide a concise diagnosis of the Project, so as to point out the successful and unsuccessful outcomes, the reasons for successes and failures, and the Project's contribution towards ITTO's Objective 2000, and to draw lessons that can be used to improve similar projects in the future.

The Ex-Post Evaluation's scope of work required the consultant to:

- assess the extent to which the general objective, the specific objective and the outputs of the project have been achieved;
- assess the relevance of the project to ITTA, 1994 and the ITTO Yokohama Action Plan;
- evaluate the impact and relevance of the project and determine to what extent the project has contributed to improvement in the detection and prevention of illegal logging as well as illegality in shipment and trade of wood products in Guyana resulting in increased contribution of the forest sector to the national economy in the form of higher remittance to government revenue and greater foreign exchange earnings;

- iv. determine the effectiveness of information dissemination of project outputs and assess the overall post project situation in relation to its impact on the efforts to address illegal logging as well as illegal shipment and trade in wood products in Guyana;
- v. define and assess any unexpected event, effect and impact, either harmful or beneficial, and offer explanation for their occurrence;
- vi. analyze and assess the efficiency of project implementation and management, including technical, financial and managerial aspects;
- vii. recommend follow-up action, where appropriate, in order to enhance utilization of the results of the project;
- viii. make an overall assessment of the project's relative success or failure, summarize the key lessons learned; and identify any issues or problems which should be taken into account in the design and implementation of similar projects in future;
- ix. prepare an evaluation report with an executive summary in accordance with the outline provided in the ITTO Manual for Project Monitoring, Review and Evaluation;
- x. prepare an article for possible publication in the ITTO Tropical Forest Update (TFU), in consultation with the editor, containing an overview of the project and summarizing the lessons learned from the evaluation work. Compile twenty or more high-resolution photographs of the project in a CD along with data on each photograph according to the proforma to be provided by ITTO for this purpose. Guidelines for the preparation of articles for ITTO's TFU are enclosed.

In addition to addressing the above, the consultant was expected to conduct the evaluation in such a way as to answer the questions identified in the ex-post evaluation checklist provided in the ITTO Manual for Project Monitoring Review and Evaluation.

The Work Schedule for the consultant involved:

- consultation by correspondence and e-mail with the ITTO Secretariat;
- travel to Georgetown, Guyana to conduct the ex-post evaluation at the office of the Executing Agency, Guyana Forestry Commission (GFC);
- meetings with officials of GFC particularly the Project Coordinator and other available members of the project team for elaboration and finalization of the programme for the assignment, briefing and discussions on project implementation and results and inspection of project sites, tangible outputs and financial accounts and statements. During the course of the assignment, the consultant may hold discussions with any relevant stakeholders involved in, or impacted by, the project;
- submission of draft report to ITTO and the Executing Agency for comments and suggestions;
- submission to ITTO, of the final report, including an executive summary, the draft article for the TFU and twenty or more high-resolution photographs of the project compiled in a CD along with data on each photograph according to the proforma to be provided by ITTO for this purpose; and
- presentation of the report at the Forty-fifth Session of the ITTO Committee on Economic Information and Market Intelligence to be held in Antigua, Guatemala from 14 to 19 November 2011.

3: Evaluation Methodology

The evaluation methodology employed by the consultant involved:

- a review of the:
 - Project document;
 - Project progress reports;
 - Progress reports by the international consultant;

- Minutes of the Project Steering Committee's meetings; and
- the Project Completion Report.
- interviews and discussions with the PIT including relevant officials and staff at the GFC;
- interviews and discussions with representatives of Guyana's wood products industry sector and communities impacted by the Project; and
- field visit to Soesdyke and Linden stations to test and observe the use of the electronic hand held scanners and the WAN.



GFC Legality, Monitoring and Extension Unit Staff using a handheld scanner to check the legal status of sawn timber at the Linden Checking Station during the evaluation field trip.

The consultant visited Georgetown, Guyana, from 8th to 15th August 2010. The actual duration of the evaluation was six days.

Although the WAN covers six locations in Buckhall, Georgetown, Parika, Canjie, Linden and Soesdyke, the consultant was only able to visit the sites at Georgetown, Soesdyke and Linden due to time constraints. The PIT informed the consultant that the three sites visited accurately represented the outputs achieved, and also had the full suite of hardware and installed software, as well as all the critical elements and components of the WAN.

4: Findings and Lessons Learned

4.1: Efficiency

Efficiency relates to an assessment of:

- how the Project inputs were used and the Project activities in the Work Plan were undertaken in producing the project outputs in a cost-effective manner; and
- the quality of the outputs produced.

Based on the review of the Project's Completion Report, the various Progress Reports, field visit and discussions with individuals involved with the Project's implementation, the consultant concluded that, overall, the Project was executed efficiently. All the activities in the Project document and the Work Plan were undertaken successfully. The allocated resources were used as per the Project's budget and the scheduled activities.

Considering the total budget and the activities undertaken, it is the consultant's view that this has indeed been a very cost-effective and value for money Project.

The Project duration approved by the ITTO was 18 months. The Project was completed within schedule and under budget. At the completion of the Project, the Cash flow Statement showed a budget underspent of some \$USD3, 801.00. The GFC requested and received approval from the ITTO to use the remaining funds for additional training of the staff in the Legality Monitoring and Extension Unit, established within GFC as part of the Project's outputs.



Satellite Dish at the Soesdyke Checking Station for accessing data from the central database at Georgetown.

4.2: Effectiveness

Effectiveness relates to an assessment of the project's achievements i.e. the outputs, and how the outputs contributed to the Specific and Development Objectives.

After reviewing all Project documents, visiting the Project sites at Georgetown, Soesdyke and Linden and discussions with the PIT members, relevant GFC staff and representatives of Guyana's wood products industry sector and communities impacted by the Project, the consultant concluded that the Project's Developmental Objective and Specific Objective were achieved. All Project outputs were achieved satisfactorily.

In summary, the consultant considers that the Project has achieved its Specific and Developmental Objectives through:

- creating a dedicated GIS (including satellite image analysis and legality database) and developing capability within GFC's existing GIS Unit for the analysis and interpretation of satellite images for determining temporal changes in forest land use, as the basis for determining whether or not illegal (i.e. unauthorised) activities were occurring on State Forest Concessions and both private and Amerindian lands;
- implementing a new wood products tracking system to replace the existing paper-based, manual system involving incorporating electronic hand held scanners and barcodes;
- developing and implementing a central monitoring and detection database at GFC headquarters in Georgetown,
- implementing a wireless Wide-area computer network (WAN) for capturing, sharing and disseminating data between central office and field staff; and
- establishing a Legality, Monitoring and Extension Unit within GFC.



Wireless satellite receiving dish for the WAN at GFC Headquarters

The consultant also reviewed with the PIT the indicators of success for both the Development and Specific Objectives in the Logical Framework table contained in the Project Document. The Development Objective indicators were that successful completion of the Project would achieve the following:

- contribution of the forest sector to Guyana Government's consolidated funds would show 10% increase by 2008;
- value of wood-based forest products exports would reach \$USD55million by 2008;
- the sector would have accessed additional five international markets requiring legal assurance in order to purchase wood from Guyana by 2008.

In relation to the Specific Objectives, the indicators of success were:

- detection of illegal activities would increase by 30% by 2007;
- reports of illegal activities would be down by 50% by 2009;
- incidence of undetected illegal logging would be down to below 5% by 2008; and
- 5 concessions with have legal assurance certificates by 2008.

The Project was completed in 2009. The consultant therefore used 2009 as the base year for assessing whether or not the targets had been achieved. An important factor in assessing the indicators was the 2008-2009 Global Financial Crises, which resulted in across the board reductions in tropical wood products consumption in all the major consuming developed countries i.e. North America, the EU and Japan.

Similar to many tropical timber producers, Guyana's wood exports fell but the fall in exports was countered by an increase in domestic consumption due to a building and construction boom which increased domestic consumption by some 30% during 2009 and 2010. Nevertheless, information provided by the PIT indicated that between 2009 and 2010, total wood products production (including fuel wood and plywood) increased from 408,300 cubic metres to 463,100 cubic metres, an increase of some 13.42%. For the same period, exports increased from 131,000 cubic metres to 171,500 cubic metres, an increase of some 31%. The production and export figures would have been higher except that during the period under review, the main plywood manufacturer, Barama, was unable to produce plywood for nearly 12 months due to a damaged boiler. Guyana was therefore a net importer of plywood during this period.

Between 2009 and 2010, the total value of wood products exports increased from \$USD45.5 million to \$USD49.1million, representing a percentage increase of some 8%. Exports to North America and Europe, the two major markets requiring assurance of the legal sources of wood products exports, increased significantly between 2009 and 2010. For dressed lumber, exports to North America increased from \$USD526,057 to \$1,417,286 (an increase of some 169%). For Europe, the increase was from \$USD47,647 to \$USD210,755 (342%).

For undressed timber the increase to North America between 2009 and 2010 was from \$USD1,010,410 to \$USD1,369,154 (an increase of some 35.5%). The equivalent figures for Europe were an increase from \$USD4,057,787 to \$USD7,301,328 (nearly 80%).

Overall, between 2009 and 2010, the value of royalties and license fees (particularly sawmill licenses) increased from 10% to 12%. Employment in the sector also increased significantly. The combined effects of increased domestic consumption of wood products, increased royalties and license fees and increase in the number of employees paying taxes from the sector as a result of increased employment, boosted the sector's contribution to Guyana's GDP and consolidated revenue.

Wood product exports to North America, particularly the USA, and the EU increased significantly post completion of the Project, because the GFC's ability to track wood products enabled the major exporters to meet the requirements of the USA's Lacey Act the EU's FLEGT.

In relation to the Specific Objective, the PIT reported that between 2009 and 2011, detection of illegal activities (defined to include misuse of tags, illegal harvesting and poaching of logs), increased by some 30%. However, the majority of the detections related to procedural breaches i.e. incomplete documentation. Harvesting without a license or outside legal boundaries was under 1%. This information was confirmed through discussions and interviews with GFC field staff.

Prior to the Project, GFC had 21 field stations. This has now increased to 37 stations (a 76% increase), thus enabling the GFC to better monitor and detect illegal activities.

Although no company has yet achieved legality assurance, the GFC in collaboration with the Guyana Forest Products Development and Marketing Council, has developed draft assurance standard, as a first step towards the implementation of a national Legality Assurance Scheme for the sector.

4.3: Effectiveness by Outputs

4.3.1: Details of Outputs Achieved by the Project

4.3.1.1: Output 1: Dedicated GIS (including satellite image analysis and legality database)

Under Output 1, GFC acquired, processed and analysed medium resolution satellite images. This formed the base layer for conducting more in-depth analyses, at high resolution, of identified “hot spots”. GFC also purchased GIS and satellite imagery processing software for implementing the activities under Output 1. The acquired software is currently being used for remote sensing activities and map generation at the GFC.

GFC also procured a server and installed a Dedicated GIS. Additionally, a number of illegality indicators were developed to assist GFC in determining if forest clearance detected from satellite images was legal or not. A prototype decision support flowchart (decision tree), to aid image analyses and interpretation, was also developed. To verify changes detected by GFC’s operators during Phase 1, an aerial inspection was conducted as well as ground truthing.

A legality database for the GIS system was also developed and integrated within it a custom written programme (accompanied by toolbar) for change detection. The dedicated GIS developed, integrate both medium and high resolution data for forest concessions, and were linked to the change detection system for legality monitoring. All hardware and software identified in the Project document were procured and installed.

4.3.1.2: Output 2: Barcode Timber Tracking system

Under Output 2, GFC completed a review of its existing timber tracking system and developed barcoding timber tracking procedures. GFC also purchased all the necessary equipment, as detailed in the Project document, for bar code scanning.

The Barcode Timber Tracking system was tested at both the GFC head office and at the forest stations, which indicated the installed WAN, was fully operational and functioning well. The system documentation was also successfully field tested at both forest stations and forest concessions. Test monitoring was also conducted both at the GFC’s Head office and at the stations linked to the WAN. Training sessions were held for GFC forest monitoring officers to introduce them to the new system, and also ensure they understood the new reporting features under the new system.



One of the HP Digital Plotters purchased and installed at the GIS Unit for producing digitised maps.

4.3.1.3: Output 3: Central monitoring and detections database

Under Output 3, a central server was established and all equipment installed for the database system. The Database was tested to ensure it was functioning effectively. These systems were all connected to the WAN. File and data transfer were enabled and testing and trial run were conducted. The system is now generating all the necessary management reports, as well as providing the information required for the effective management of concessions and monitoring of wood product flows. The new system is fully integrated into GFC's existing database which was used for recording production and export data, as the old database contains historic information still useful to the GFC.

4.3.1.4: Output 4: Wide-area computer network (WAN) and report dissemination procedure

Under Output 4, a Wide Area Network was implemented, and procedures developed for using the network. In addition, all the key personnel required for operating the system were identified. Testing of the WAN, including field tests was done, to ensure secure data transfer was successful. Training has been done at the GFC Head Office on the WAN, database management and GIS and satellite imagery analyses.

4.3.1.5: Output 5: Legality Monitoring Extension Unit

Under Output 5, GFC has established a Legality Monitoring and Extension Unit. The Unit currently has 13 officers. GFC has developed Terms of Reference for the Unit, and completed training sessions and workshops for GFC staff and stakeholders.



GFC's new Legality Monitoring and Extension Unit

4.4: Dissemination of Results

The consultant found that the PIT had disseminated the Project results effectively through:

- several high quality training manuals and procedures;
- presentations at stakeholder meetings and workshops; and
- training of relevant GFC staff, 15 for the GIS unit and some 35 for the wood products tracking system.

GFC has a dedicated Management Information System Unit, whose responsibility, among others, is to provide on-going training for both existing and new staff in the use of the electronic scanners. The Unit also provides all the technical support required for the continual updating of the central database as well as on-going maintenance and upgrading of hardware and software.



Some of the Staff of GFC's new Legality, Monitoring and Extension Unit

4.5: Project Sustainability

Project Sustainability assesses the extent to which the Project Submitting Country (PSC) continues to maintain and use the facilities and other infrastructure from an ITTO-funded project in on-going activities, which continue to further the Project's Specific and Development Objectives, and therefore create broader and enduring impacts after the ITTO-funded project has been completed officially, and funding has ceased.

In the view of the consultant, the Project has been sustainable and will continue to be so in the future because, the GFC and the sector are continually considering options for building on the Project's outputs and outcomes to develop new activities and create new opportunities, some of which could have commercial benefits including the following:

- GFC is using its newly acquired capability in satellite imagery digitisation, analysis and interpretation to provide on-going "public good" and commercial services to both government agencies (such as the Guyana Defence and Police Forces, Guyana Geology and Mines Commission, Guyana Lands and Survey Commission), the private sector in particular the wood products industry sector and the general public including the education sector (secondary schools and the University of Guyana);
- the wood products industry sector, in addition to realising the benefits of the new wood products tracking system as a marketing tool to access new markets which demand legal wood products, have also realised the potential of the new wood products tracking system for further improving their own internal procedures and processes. Some of them are now implementing their tracking systems as

tools for improving their own internal procedures and practices, in addition to meeting their statutory requirements to the GFC;

- the wood products industry sector and the GFC are examining the option of working together to create a generic wood products tracking software that can be used by companies within the sector, so that consistent reporting information can be produced for the GFC. Development of the software could create a commercial opportunity for the GFC and the sector to generate new revenue sources, which can be used to support beneficial activities such as new product development and marketing;
- the GFC and the Guyana Forest Products Development and Marketing Council are building on the success and benefits from the ITTO Project to develop and implement a Guyana Legality Assurance System;
- the incentive for Guyana and the GFC to participate in international initiatives such as the European Union's Voluntary Partnership Program (VPA) and Reducing Emissions from Degradation and Deforestation (REDD+), which have the potential to bring additional revenue to nation's consolidated revenue and also the GFC, and which require Guyana to continue to minimise unauthorised deforestation and verification of the legality of wood products, will ensure the GFC continues to maintain its GIS capability and the wood products tracking system, and to continually improve and update them;
- GFC continues to provide on-going training for the staff in the GIS Unit and the Legality, Monitoring and Extension Unit; and
- GFC has included the running costs for the new systems in its annual budgets.

4.6: Impact and Effects

Discussions with the PIT, GFC staff and several stakeholders in both the private sector and the forest-dependent communities, confirmed that the Project has had a number of positive impacts, and these impacts are likely to continue into the future. The Project impacts, to date, include the following:

- although the GFC had a GIS Unit prior to the Project, the Unit did not have the capability and capacity for analysing and interpreting satellite imagery. In addition, the Unit was using out-dated equipment and software (ArcGIS 3.2). The ITTO Project introduced ArcGIS 9.2 and now staff are using ArcGIS10. Through the Project, the GIS Unit staff, for the first time, learnt how to digitize and produce maps from satellite imagery;
- the GIS Unit also now has the capacity and capability for producing high quality maps from satellite imagery for GFC for the management of Guyana's entire forest estate, as well as commercial concessions. High quality maps are also now being produced for other government agencies such as the Defence and Police Forces for national security and law and order maintenance in remote areas, the Guyana Geology and Mines Commission, the Guyana Lands Survey Commission, as well as the private sector, in particular concession holders for the preparation of concession and annual management plans, and the general public;
- with the installation of ArcGIS 9.2 and purchase of its associated license, the GIS Unit now has the opportunity to automatically upgrade its GIS software. This has created the opportunity for the staff to also continually update their skills and capability in new GIS technology and software;
- the new system has boosted significantly, the GFC's ability to manage effectively the whole of the nation's forest resources, in particular commercial concessions. The GFC is now better able to monitor how companies are implementing their annual management plans including their harvesting activities. Additionally, the trade of legal timber products is also now further supported with the implementation of the systems under this project.
- it has also enable the GFC to better understand the drivers of deforestation in Guyana, which principally involve agriculture, mining and infrastructure development. This is leading to better government planning and decision making in land use management;

- Guyana now has significantly improved wood products tracking system incorporating the use of barcoding, electronic scanners and Wide Area Networks (WAN), for tracking the trans-shipment of both wood and non-timber forest products. Prior to the Project, Guyana had a barcoding-based wood products tracking system. Without electronic scanners and the WAN, tracking was done by field officers phoning the GFC Head Office in Georgetown to verify the authenticity of tags on products being inspected. This manual process was slow and inefficient, and was also prone to errors such as the misuse of tags (for example, using the same tag on multiple produce and legitimate owners of tags selling and/or giving them to illegitimate operators). With the introduction of electronic scanners and the WAN, GFC staff are able to verify in real time the authenticity of tags. Information captured on the tags include: the name of the concessionaire or the legitimate owner of the tags; the concession permit number; the status of the tags i.e. whether used or unused; species type; and the year of issue. Wood products tracked include: logs; piles; posts; lumber; firewood; charcoal; and spars;
- the new system has led to a more efficient detection of illegal activities, particularly procedural breaches involving misuse of tags and incomplete documentation;
- the new system has also enabled the GFC to be more proactive in its monitoring activities. Prior to the Project, monitoring was more reactive. Now, the GFC is able to plan forward its monitoring activities, which has resulted in considerable efficiencies and increased productivity within the newly established Legality Monitoring and Extension Unit;



Wood Products Industry and Community Representatives attending a meeting at GFC during the Project Evaluation

- the new system has provided the GFC with the capability for random and surprise monitoring of wood products (logs and sawn timber) flows throughout the country. This has created a strong “deterrence factor” among concessionaires and other producers within the country’s forest and wood products industry sector. The knowledge that the GFC now has the system to detect “illegal activities” has

created the incentive for operators to ensure their activities are legal and meet the statutory requirements of the GFC and the forest laws of Guyana. Field visits during the evaluation suggested awareness of the new system was very high among concession holders and the large scale processors but less among small producers and community groups. It would be useful for the GoG and the GFC to consider developing and implementing a nation-wide educational and awareness-creation program to further promote the system;

- the ability to track timber has also had the added benefit of reducing log pilfering and wrong species identification. According to some of the wood products industry sector representatives interviewed, there has been a noted decrease in the incidences of log pilfering following the Project. Similarly species misidentification was a noted problem, and in some cases, resulted in revenue loss to the companies as they paid higher stumpage fees for species that should have attracted lower fees. Stumpage fees are based on species, with the premium species such as Greenheart and Purpleheart attracting higher stumpage fees than the Lesser used species (LUS);
- according to some of the GFC Legality Monitoring and Extension Unit staff interviewed at both Head Office and the stations, the new system has improved staff productivity by between 60% and 70%, particularly in the detection of procedural breaches (e.g. wrong completion of forms and other related documentation) and misuse of tags. Staff reported that the new system had enabled them to uncover more product trans-shipment breaches, particularly incorrect documentation and record keeping. Detection rates post-implementation of the new system, are estimated at 90% or more. Prior to the new system, not all of the procedural breaches could be detected due to the slowness, inefficiency and tedium of the paper-based, manual system. The improvement in productivity has had a number of flow-on positive impacts including the following:
 - staff now have more interaction time with stakeholders and are therefore able to spend time with them educating them on the causes of procedural breaches and thus helping them to correct them;
 - reduction in the incidences of corruption. The GFC noted that there is overall improvement in the time taken to process stakeholder permits, which previous to the ITTO Project would have taken longer periods. This has led to the reduction of likely incidences of corruption as there is no longer an incentive to induce staff to fast-track related administrative processes;
 - quicker and easier identification of the legitimate owners of statutory documents such as permits, obviates the need to expend valuable staff on elaborate paper-based procedures to establish the *bona fides* of operators and concessionaires collecting documents from GFC offices; and
 - quicker and easier verification of whether or not past statutory breaches by operators and concessionaires have been rectified. New permit approvals cannot proceed until all recorded previous breaches (operational and procedural) have been verified as duly addressed.
- in addition to producing high quality maps for the management of State forests and commercial concessions, GFC's remote sensing capability is also been used to assess deforestation and to determine the carbon stocks in Guyana's forests, and is helping Guyana to access other funding such as those under REDD+. For example, the ability to produce digitized maps from remote sensing, which has helped to identify potential areas of illegal encroachment and to take action to curb deforestation, was instrumental in the Government of Norway commencing negotiations with Guyana to implement the agreed terms of the Memorandum of Cooperation that allows for the provision of funding of \$USD250 million over five years under REDD+. Similarly, the recent exploratory dialogue between by the EU and the Government of Guyana to consider negotiating a Voluntary Partnership Agreement (VPA) and subsequent fact finding visit to Guyana by an EU delegation, was the direct result of the twin outcomes of the ITTO Project i.e. Guyana's capacity to identify and control unauthorized deforestation as well as the country's ability to track timber and non-timber product flows within Guyana;
- the need to comply fully with GFC's statutory requirements has also made it easier for wood products companies to establish their own internal inventory and information management systems. The ability to

produce management information from these systems is helping some of the companies to improve their own internal practices such as inventories and product recovery, which is resulting in improved efficiencies and increased revenue;

- companies are also using the legality monitoring as the first step towards forest management and chain of custody certification under internationally recognised certifications systems such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC);
- successful implementation of the ITTO Project has encouraged the GFC to collaborate with the wood products sector and other stakeholders to work towards the development and implementation of the Guyana Legality Assurance System. A draft Standard, incorporating the requirements for the Guyana Legality Assurance System, has been developed. The draft Standard has been reviewed by Efeca (<http://www.efeca.com>) a company which provides expert consulting support on all aspects of natural resource economics, climate change and environmental resources, to determine whether the requirements of the Guyana Legality Assurance System meet international legality assurance principles and objectives. The partners are still developing the accreditation protocols but already, 17 persons have trained to become independent auditors, and are awaiting completion of the accreditation protocol so they can become accredited as auditors under the Guyana Legality Assurance System;
- although the GFC does not have statutory control over indigenous (Amerindian land), GFC has statutory authority to monitor wood products being transported from Amerindian land to licensed processing facilities. The new system has resulted in an MOU with some Indigenous Village Councils allowing the GFC to undertake monitoring activities on Amerindian lands where major wood harvesting occurs. This has enabled the GFC to assist Amerindian producers and processors to adopt GFC's code of harvesting practices, as well as the tagging system. Overall, it is improving the sustainable management of some Amerindian forest lands, and enabling them to detect illegal activities such as poaching of trees.

5: Lessons Learned

The following were some of the key lessons learned from implementing the ITTO Project that emerged from the evaluation:

- while electronic-based wood products tracking system are more efficient compared with paper-based systems, they can nevertheless be technology-intensive and therefore expensive to implement, operate and maintain. In addition, with technology being updated continually, both hardware and software need to be upgraded continually. Staff also require continual and on-going training to update their skills in the operation of new hardware and the use of new software. It is important that other ITTO member countries contemplating deploying such systems are fully aware of the potential cost implications, and to make adequate provisions for these on-going expenditures. The inability to fully update and maintain such systems in keeping with newer hardware and software, would result in sub-optimal performance and limit the ability of implementing countries to derive maximum benefits including operational efficiency from them. Prohibitive on-going maintenance and operational costs, if not identified and accounted for as part of the initial project design and implementation budgeting, could seriously affect the on-going sustainability of a Project, post-completion and cessation of ITTO funding;
- use of satellite images for detecting "hot spots" of deforestation (rather than just ground checking as was the case previously) is very efficient, although it can be expensive;
- extensive and comprehensive pre-planning and research is necessary for the successful design, formulation and implementation of any project, to ensure all the project elements come together seamlessly. For example, the absence of full information during the project design and formulation on the availability of high quality satellite imagery for Guyana resulted in some delays with the implementation of some of the activities under Output 1. It was until the Project commenced that the GFC had complete information of the full impacts, including costs implications, of factors such as cloud cover and resolution, on the quality of images, as well as their availability;



Some of GFC's GIS Unit Staff and some of the new electronic digitisers purchased from the ITTO Project

- **GFC's GIS staff reported that the timeframe for the Project's implementation created some challenges in allocating work time to transition to the new methods and system whilst at the same time continuing with routine activities. While they believe the quality of the outputs they achieved were high given the time period they had to complete all the necessary tasks, more time would have been beneficial to the project. Future project design, formulation and budgeting should therefore take these issues into consideration;**
- introduction of any new system requires extensive education and awareness raising among all the stakeholders who would be impacted by the system. While awareness of the system is reasonably high among the larger companies within the wood products industry sector, the level of awareness among small producers and the Amerindian communities is less. Future project budgets should incorporate sufficient allocation for public education and awareness raising activities among the key stakeholders including forest-dependent community groups;

6: Recommendations

6.1: For the ITTO

In the consultant's experience, the Guyana Project is unique. It is an example of successfully combining remote sensing and wireless WAN-enabled electronic wood products tracking system to verify legality through:

- monitoring temporal changes in forest cover to isolate legitimate deforestation associated with commercial wood products harvesting; and
- monitoring trans-shipment and wood flows to uncover procedural breaches such as incorrect documentation and misuse of tags.

The systems also have the ability, through the central database, to provide useful management information such as inventory and accounting data, and thereby assist the GFC to enhance revenue collection from the country's commercial forest resources.

It would be useful for the ITTO to document and publicise the Project's outcomes, including the lessons learned, for the benefit of other ITTO member countries.

6.2: For the Country

The ITTO Project was effectively implemented as a pilot to determine the logistical feasibility as well as the operational effectiveness of an electronic wood products tracking system. Nearly two years have elapsed since completion of the Project. Feedback from several GFC staff indicated very strong support for retaining and continually improving the system in order to fully realize its benefits for the sector and recommended the following:

- in the medium to long term, the Government of Guyana and the Guyana Forestry Commission should consider expanding the coverage of the Wide Area Network (now covering 6 main strategic stations) to the other remaining 31 stations, taking into consideration key factors, including cost;
- in the medium term, the GFC should consider exploring the possibility of expanding the functionality of the scanners to include both data collection/entry, as well as legality monitoring. Additionally, the following aspects related to scanners should be considered :
 - the ability to input data from the field and thereby update the Headquarters database. An important piece of information field officers are able to obtain from using the electronic scanners is to verify the status of tags i.e. whether the tag has been used previously or not. A field reading indicating an "unused" status for a tag does not necessarily mean a misuse of the tag had occurred;
 - expansion of the WAN to additional field stations whereby real time data capture and processing can be done. This will allow for tag information to be instantaneously updated when used, and accessed in real time;
 - more weather- tolerant scanners; and
 - scanners with longer scanning distance.
- given the on-going cost of maintaining and operating the satellite imagery capability for detecting and updating information on temporal land use changes, which also have operational benefits for other government agencies such as the Guyana Defence Force (for national security), the Guyana Police Force (for law enforcement), the Guyana Geology and Mines Commission (for mineral exploration and extraction licenses) and the Guyana Lands and Surveys Commission (for updating national land use maps), the GoG and the GFC should consider options for assisting the GFC to recover some of its costs. For example, for applications deemed to provide "public good" benefits, the GoG could subsidise the GFC's costs from the national consolidated revenue/funds. For applications considered to deliver commercial benefits to consuming government agencies, the GoG could empower the GFC to recover its costs fully by charging these agencies for the cost of acquiring the satellite images including the cost of interpretation, digitization and production of maps.

7: Conclusions

The main conclusions from the evaluation are:

- the Project was executed effectively and efficiently by the Executing Agency, the GFC;
- all Project activities were undertaken effectively and efficiently;
- Project resources were expended effectively and efficiently in undertaking all Project tasks and activities as described in the Project Document, the Project Work Plans, and the Project budget was underspent by \$USD3,801.00;
- the Project met its Development and Specific Objectives through achieving all five outputs;

- the Project outputs were disseminated effectively through staff training and awareness-raising workshops for stakeholders including communities impacted by the Project;
- there is sufficient evidence as well as on-going activities post completion of the Project, which indicate that the Project is sustainable now and into the future;
- the Project has created effective and sustainable impacts at the institutional (GFC), national, sectoral (industry) and community (stakeholder) levels; and
- the Project is unique, as it is the first time an ITTO producer member country has successfully combined remote sensing and wood products tracking to address the issue of illegality in its forests and wood products sector, and therefore provides valuable lessons, both positive and negative, for other countries contemplating developing and implementing such systems in the future.

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APPENDICES

ITINERARY FOR THE EX-POST EVALUATION OF PD 440/07 REV.1 (M.I), 8TH TO 15TH AUGUST, 2011**CONSULTANT:****DR KWAME ASUMADU**

<u>DATE</u>	<u>ACTIVITY</u>
Monday, 8th August	Travel to Guyana
Tuesday, 9th August	Arrive in Georgetown, Guyana, Meeting with GFC to finalise the Program for the Evaluation
Wednesday, 10th August	Meeting with the PIT and discussions with GFC staff
Thursday, 11th August	Field visit to Soesdyke and Linden
Friday, 12th August	Meeting with Private Sector and Community Stakeholders
Saturday, 13th August	Report Preparation and Closing Meeting with the PIT
Sunday, 14th August	Report Preparation
Sunday, 15th August	Depart Guyana

LIST OF GFC STAFF INTERVIEWED DURING THE EVALUATION

<u>NAME</u>	<u>ORGANISATION</u>
Amelia Calistro	GIS Unit, GFC
Chevanna Singh	Head, MIS Department
Colleen Griffiths	GIS Unit, GFC
Edward Goberdhan	Head of Finance, GFC
Garam Manoo	Legality Monitoring Officer, GFC
Gordon Lorrimer	Linden Station
Jadesh Singh	Head, Forest Management Division
James Singh	Commissioner of Forests, GFC
Kevindra Tularam	Environmental Monitoring Officer, GFC
Pradeepa Bholanath	Head of Planning, GFC
Rohanie Roopnarine	GIS Unit, GFC
Tasrif Khan	Head, Forest Monitoring Division
Valarie Roberts	GIS Unit, GFC
Natasha Glasgow	Soesdyke Station
Alana Trotman	Soesdyke Station
Ulric Tailor	Soesdyke Station

**MEETING HELD WITH REPRESENTATIVES OF PRIVATE SECTOR AND COMMUNITY STAKEHOLDERS,
12TH AUGUST, 2011, GFC OFFICE, KINGSTON, GEORGETOWN**

<u>NAME</u>	<u>ORGANISATION</u>
Edward Goberdhan	Head of Finance, GFC
Justin Habibullah	Willems Timber & Trading Co Ltd
Kwame Asumadu	Asumadu Pty Ltd, Australia
Laura T Singh	FPDMC
Leora Richie	Taamoy Community
Pera Penaay	Taamoy Community
Rajnarine Singh	FPDMC
Rommel Niamatali	Variety Woods & Greenheart Ltd
Theresa Madray	FPDMC

WRAP-UP MEETING HELD AT THE GRAND COASTAL HOTEL, EAST COAST, 13TH AUGUST, 2011

<u>NAME</u>	<u>ORGANISATION</u>
Edward Goberdhan	Head of Finance, GFC
Kwame Asumadu	Asumadu Pty Ltd, Australia
Pradeepa Bholanath	Head of Planning, GFC