
Final Terminal Evaluation Report

For

**Remote Sensing and Land-Use Project
(RSLU PNG/02/001)**

30th August, 2006

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List of Acronyms

CI	-	Conservation International
DED	-	German Development Service
DNPM	-	Department of National Planning and Monitoring
EU	-	European Union
GIS	-	Geographic Information System
NEX	-	National Implementing Agency
NGOs	-	Non-Government Organisations
PNG	-	Papua New Guinea
PNGFA	-	Papua New Guinea National Forest Authority
RSLUP	-	Remote Sensing and Land-Use Project
UPNG	-	University of Papua New Guinea
UNDP	-	United Nations Development Program

Table of Contents

Executive Summary	- 1 -
Background	- 2 -
The Project	- 2 -
Project Objectives	- 2 -
Project Financing	- 3 -
Project Management Arrangements	- 3 -
Evaluation Methodology	- 4 -
Project Performance	- 5 -
The Present Social and Economic Environment – the rationale for the project	- 5 -
Evaluation Findings	- 6 -
Technical Issues	- 6 -
Management issues	- 8 -
Monitoring and Reporting	- 8 -
Impact of the Project on Stakeholders	- 9 -
Extent and effectiveness to linkages to and synergies with other related activities, projects and programmes	- 10 -
Sustainability	- 10 -
Conclusions drawn based on the findings and consultations	- 11 -
Recommendations	- 12 -
Attachment One – Persons Consulted	- 13 -
Attachment Two – Project Documentation	- 14 -

Executive Summary

This Evaluation reviews the Land-Use Remote Sensing Project, undertaken by a number of partners including UNDP, UPNG, CI, the German Development Service working with a number of Government Agencies. The project began in November 2002 and is due to be completed by December 2006. It was designed to provide accessible information using remote sensing and other available technology to assist with the development of integrated approaches to land use planning, and at the same time develop capacities in GIS technology within Papua New Guinea.

The Evaluation was conducted primarily through meetings and interviews conducted with key stakeholders during a mission from August 6 to 15, 2006, in accordance with Terms of Reference of August 3, 2006, provided to Mr. Andrew Bond acting as an independent consultant.

The Evaluation has shown that the project has been particularly successful. It has established a Remote Sensing/GIS Research Centre and developed curricula and teaching facilities on remote sensing and GIS at the University of PNG. Student demand is high and over time it can be expected that this will increase the capacity for this type of technology to be used throughout the private and public sector.

It has provided an open access information portal via the internet to a range of data sets previously not in the public domain, and has done this using state of the art interactive GIS technology. It has along the way prepared a Digital Elevation Model and developed innovative techniques to increase the utility of a number of data sets essential to inform all stakeholders of the implications of land-use decisions.

It has worked closely with a number of Provincial Administrations and Government Departments on a range of applications to assist decision makers. In the process it has provided significant tangible products to ensure land-use decision making is coordinated.

While some project outputs have been delayed, and the project required extension, this was caused by some technical issues and a number of minor issues. In summary the project will achieve the outputs envisaged in the Project Document and has done this effectively.

The Evaluation recommends, among other things, that UPNG develop a "succession plan" for the project in the remaining months, so that not only is the momentum maintained but the benefits of the project are expanded.

Background

The following report was prepared during a mission to Port Moresby from August 6th to 15th, 2006. The report presents an evaluation of the Remote Sensing and Land-Use Project (RSLUP) and represents the views and conclusions of the author and not necessarily those of UNDP.

The overall objective of the terminal evaluation was to review the progress towards the project's objectives and outputs, identify strengths and weaknesses in implementation and management of the project, assess the likelihood of the project achieving and delivering its intended outputs (by project completion) and provide recommendations on improving project effectiveness. A possible extension of the project was also considered.

The RSLUP was developed to provide open access for the people of PNG to information about the status of land use in their country and to equip those managing land assets with reliable data on which to base their decisions and activities. Papua New Guinea institutions, including NGOs, government and academia, were to obtain technical data of utility for a range of applications ranging from local land-use planning to University research projects. In addition the project was to create a pool of graduates skilled in GIS data use to carry these skills into the public and private sectors.

The project commenced implementation in March 2003 and the project closing date at inception was December 31, 2004. Following a request from the University of Papua New Guinea (UPNG) in November, 2004, an extension was considered at a Tripartite Project Review Meeting in March 2005 and was subsequently extended by all parties until December 31, 2006.

The Project

Project Objectives

From the outset it has to be said that there are considerable variations between the description of objectives and outputs within the various documents (refer Attachment Two) provided for the evaluation. The TOR for the evaluation indicates an overall goal being that the RSLUP is envisaged to contribute to the improvement of land use management in PNG by acquiring, analysing, and distribution of current satellite imagery and data for PNG to open access by academic, institutions, government departments, NGOs, private sector and the general public as a planning tool to promote national sustainable development.

The TOR go on to state four specific objectives in order to achieve the overall goal focusing on the following:

1. A data set of satellite imagery for the whole of PNG.
2. Awareness and information materials detailing the state of land-use in PNG and its transformation over space and time.

3. Interactive GIS planning tools
4. A UPNG GIS teaching centre for undergraduate and postgraduate students.

Arguably these objectives should be considered as outputs or activities and while much of the content is similar they are inconsistent with the Project Framework which does not list objectives but rather outputs. The only project document that indicates objectives is the Terminal Report Form completed in early 2005. These objectives are:

- § The development of the UPNG Remote Sensing Centre, the creation of new PNG data sets and the provision of targeted research
- § Improvement in access to GIS data and mapping facilities in PNG
- § The development of teaching capacity within UPNG
- § Assistance to provincial planning departments

Despite the differences in documentation the activities and outputs are generally the same though aggregated in different ways. This may indeed be as a result of the project adapting and becoming more focussed as different activities were being implemented.

Project Financing

The RSLUP is presently financed by the UNDP, European Union (EU), Conservation International (CI) and supported by the University of PNG (UPNG) with respect to staff and office accommodation and various associated running costs. The German Development Agency (DED) initially assisted with salary support for a Natural Resources Leader in UNDP and a Project Team Leader at UPNG.

Table One – Approximate Donor Support (as at August 2006)
USD

Donor	Committed	Remaining
UNDP	602,012	75,000
EU	150,000	40,000
CI	85,000	55,000
DED ¹	474,500	0
Total	1,311,512	180,000

Project Management Arrangements

Overall coordination of the project, monitoring and evaluation of activities and outputs is the responsibility of UNDP. The UPNG is the National Implementing Agency (NEX) and provides a Project Director (professor Lance Hill, Dean of Science and Professor of Biology) who with the Project Manager and the Bursar of UPNG are responsible for the projects financial management.

¹ In-kind contribution.

A project Oversight Committee operates to ensure the success of the project with representatives of each participating institution including:

- § University of PNG
- § Department of National Planning and Monitoring
- § Conservation International
- § National Mapping Bureau
- § German Development Service
- § UNDP

As well there are two individual rather than institutional members.

To coordinate activities and monitor the project, the executing parties were to meet informally on a weekly basis and formal meetings to assess the on-going activities and adherence to the work plan were meant to be held on a bi-monthly basis.

Evaluation Methodology

The primary purpose of the evaluation was to improve the project performance. The evaluation methodology involved:

- § A review of all project documentation and related written material of the project context.
- § Discussion with relevant PNG Government authorities.
- § Discussions (including email) with independent observers of the project activities.
- § Visits to the project site and interviews with key implementing and executing agency personal, project funding agencies including relevant staff of UPNG, DED², EU, CI and UNDP
- § A presentation of the draft report for input from all stakeholders held on August 15 at UPNG.

It had been intended that the evaluation team would comprise an independent team leader (international) who would be joined and assisted by one representative of the executing agency (UPNG), representatives from the project co-funding agencies (one each from EU, CI PNG, UNDP and DED), and one representative of the Department of National Planning and Monitoring. Unfortunately prior commitments precluded the team from operating as such, but the draft report was presented by the team leader and discussed at a meeting on August 15 at UPNG.

² This was not possible as DED have ceased country operations.

Project Performance

The Present Social and Economic Environment – the rationale for the project

The project rationale was based quite rightly on the recognition of a number of issues. While a number of technically proficient land based assessments using GIS and other computer methods are in place in PNG, their utility has suffered from a lack of access and their outputs have been difficult to understand by those who are not technically trained. As a result the opportunity for these land-coverage assessments to develop an integrated land-use planning capacity had not been taken up.

Much of the power of remote sensing lies in the fact that much of the outputs are visual in nature and provide a mechanism by which decision makers can readily deduce the issues at hand. The pressures of increasing populations on land, the intensification of agriculture, the impacts of fire on vegetation change, and the implications of urban sprawl are examples of areas in which planning is vital, yet currently impeded. In the forestry sector, decisions on forest use have major implications for globally significant biodiversity. These decisions are being made with respect to allocations of the remaining harvestable resource without a clear, but vital understanding of the resource and the implications of these decisions.

Much of the time, those stakeholders that are most affected by these decisions are not able to extract the information from the agencies with the statutory responsibilities for land use decisions. In many cases this is indicative of a lack of capacity as much as a lack of will to do so, given that data are dispersed or in a format that restricts cheap and efficient promulgation.

In the context of PNG, the recent Organic law advocates decentralization and community participation in decision making to local level governments. In effect this results in increasing the powers of local government to make decisions on natural resources. Natural resources in PNG are important and integral to the lives of 85% of the population who live in rural communities, as a source of subsistence, income and shelter. To effect the Governments' own development strategies and the Millennium Development Goals which underpin them, both the national and local level governments need information to enable them to make decisions on the needs of their constituents and the attributes of the areas involved. This review has formed the opinion that the focus of the project by addressing capacity building and open access to information in a usable form in the above context seems very appropriate.

Evaluation Findings

The evaluation found that the overall objectives have been achieved and have been met by the activities carried out to date (Refer Table Two) or will be completed by project end. The Results Framework and the underpinning planning were in the main successful albeit initially too ambitious in the time frame for completing a number of activities. As a result, the project was extended. In the main this was associated with technical issues and a number of management issues. These resulted in a doubling of the timeframe of the project. Set out below is a discussion of a number of these issues and an evaluation of the impact of the project on stakeholders and the extent and effectiveness to linkages to and synergies with other related activities, projects and programmes.

Technical Issues

The establishment of the portal was achieved in a remarkably short time period and was due to unprecedented effort and overtime by the project staff. There are very few countries in the world that have such a GIS portal available and open to all, and comments from technical specialists indicate that the methodology deployed was both innovative and sound. An internet portal in PNG does have problems with internet access speed and while international access is unimpaired this is an issue within PNG. The speed for PNG internet access went down from that at the start of project implementation. While the present speed is acceptable to a persistent user it is not satisfactory. Nonetheless, the University is providing very successful access in the GIS laboratory and the World Bank Public Information Centre has 10 free workstations operating at effective broadband speeds.

In a general sense the telecommunications infrastructure in PNG is a major constraint to development. While there are technological solutions much evident in many rapidly developing countries these have yet to be implemented in PNG. Obviously this is a major problem, but beyond the capacity of the project to solve.

The forest cover assessment underestimated the time to address a number of technical difficulties associated with satellite imagery in PNG, where the terrain produces a large amount of shading difficult to automate interpretation. Adequate information on base-line forest cover was initially difficult and was only resolved by some innovative techniques developed by the project itself. The ability to link raster and vector information also produced a significant challenge. These issues were resolved and in terms of the forest cover assessment are on-going but will be resolved by project end.

The development of the teaching capacity in UPNG was a challenge. Courses were designed and delivered relatively early in the life of the project but until the establishment of a full time lecturer, put a strain on the project moving forward on other project activities in the time-frame envisaged in the Results Framework, however, the difficulty in engaging a suitable and enthusiastic person could not be envisaged in the Results Framework. Fortunately this has been effectively resolved and the existing lecturer is a significant resource underpinning the long term sustainability of this capacity building initiative.

Table Two – Summary of the Project Status

HS = Highly Satisfactory; S = Satisfactory; US=Unsatisfactory

Objective	Outputs	Present Status	Evaluation
The development of the UPNG Remote Sensing Centre, the creation of new PNG data sets and the provision of targeted research.	§ A remote Sensing Centre at UPNG able to deliver services to the PNG community	§ Complete - facility is established and operating well and has responded to a number of information requests and other projects - is delivering services to the community	HS
	§ A satellite coverage data base containing information on land use § Targeted applied research into land -use change and forest dynamics	§ On-going – forest dynamics due for completion by project end.	S
Improvement in access to GIS data and mapping facilities in PNG.	§ An online mapping portal providing satellite imagery and cadastral data to PNG society.	§ Complete – but issues of access due to the speed of internet connection in PNG § On-Going – the portal will need to be regularly upgraded as additional/improved datasets are developed. § PNGFA and DEC are increasingly seeking the Centres support with a PNGFA officer trained § Department of Agriculture and Livestock have established a PNGRIS upgrade with project support § Various commercial and other entities have sought and received project assistance. § DEFC has made extensive use of the data and modelling capability in a major provincial services funding submission presently being considered by NEC (Cabinet)	HS
The development of teaching capacity within UPNG.	§ Provision of courses in GIS/Remote sensing § Provision of scholarships to students to undertake honours/masters level in GIS/Remote Sensing applications to biology/ecology	§ Complete – lecturer engaged and a four level course program in place with very high student demand and establishment of GIS laboratory. § On-Going - Scholarships provided and candidates competitively selected	HS
Assistance to provincial planning departments	§ Provision of training and data services to Provincial Governments	§ On-Going- successful provision of training and data services to Eastern Highlands, Bougainville, East New Britain Provinces	S

Management issues

The management structure of the project was modified as the project was implemented. The initial project staff was to include the following positions:

- § Natural Resources Advisor based in the office of UNDP in Port Moresby and variously designated as Project Coordinator
- § Project Manager
- § Lecturer/Senior lecturer in GIS and Remote Sensing
- § Geographic Information systems Officer
- § Administration Assistant
- § GIS and Web Specialist (International Temporary Position)

TOR for these various positions was indicated in the original project document. At this point in time there is no natural resources advisor in the UNDP office. The Natural Resources Advisor within UNDP funded by DED was filled well after project implementation. The evaluation has not been able to determine any outputs from this position in relation to the project. In an operational sense a staff member in the UNDP office is now designated by UNDP as the focal point for the project and is the main point of contact for the project within UNDP.

From discussions the overall UNDP coordination role with project staffing has not been as responsive as would be desired. The six months taken to confirm the extension of the project and to re-establish the employment of the Project Manager from voluntary staff paid by DED to UPNG staff funded by UNDP, put considerable unwarranted stress on the project management. While it seems the project has accommodated these constraints and the quality of the outputs has not been diminished this did effect the timing of their delivery and was a part of the reason for extension.

The project has a Project Oversight Committee with the Convenor being the Project Director. It is noteworthy that this Oversight Committee has met very infrequently and not bi-monthly as originally proposed. More efficient use of the Committee could have potentially been a very effective mechanism for resolving a number of the difficulties above, but only if its resolutions could be actioned by UNDP in a timely fashion.

Monitoring and Reporting

Project Management has prepared quarterly management reports which summarize project developments and are formatted by component to give detail of project progress. These reports have provided a sound record of project progress and issues. As well, financial reports have been provided to all donors on a quarterly basis. The project has been audited twice with no major issues being raised.

Records provided to the evaluation indicate that this was a one-way process. Except for regularly correspondence acknowledging the reports from the DNPM there seems to have

been no acknowledgement of the reports, their content or the issues raised by UNDP. This highlights a need for greater UNDP responsiveness. Nonetheless, EU has kept close contact with the project.

Impact of the Project on Stakeholders

From the EU perspective the project has been a resounding success and besides a number of issues with respect to UNDP management of the project (delays and convening the Oversight Committee) believe that the project has been remarkable in achieving what it has. To quote "the most successful project in PNG over the last five years at this level of funding".

In contrast CI stated that there had been some issues associated with the provision of data and through them a number of NGOs had expressed similar difficulties, though why they were seeking access to the project through CI is not clear. While all the data sets prescribed in the project agreement with CI were completed in a timely manner it would seem there is a different expectation of the project. The evaluation was given to understand that the web portal had not been updated for some time. This is substantially correct since the portal was first established. However, the Evaluation found that the last update was in April 2006 and notes that there are a number of developments nearing completion including the forest cover assessment.

The three provincial governments who have been trained and/or assisted by the project, view the project as having immense utility in their present and more importantly in their future planning initiatives. Similar views have been expressed by the Department of Agriculture who are undertaking a parallel project upgrading the PNGRIS database. The project has provided significant assistance to this exercise using the RSLUP Digital Elevation Model and satellite imagery.

The project has had a number of engagements with the PNGFA. Initially these were at the request of the Chief Secretary to assist the Independent Review Team who were tasked to review on-going logging operations in the country. More recently one PNGFA staff member has been trained on the system and the Forest Authority is seeking assistance from the project for further assessments of forest cover. The forest cover analysis will be critical to future cooperation with the PNGFA. Indeed it is a timely synergy.

The Department of Planning and Monitoring have indicated in correspondence, and at the final meeting, that the project has been extremely useful and provided a number of benefits to their efforts.

The University is unequivocal in indicating that the project has been highly successful. A sound teaching and research centre has been established and is working effectively. The additional UNDP support to provide additional computer facilities was both very much appreciated and responsive to furthering the projects objectives. The teaching staff associated with the project have been effectively integrated to the appropriate faculty and student demand response to the courses has been very positive. An initial assessment of the

first level of the Remote sensing/GIS course by the University's training evaluation unit has confirmed this to indeed be the case.

The DEFP have stated that the projects assistance with developing the capacity to cost service delivery at the provincial level was highly successful. Indeed the ability to use visual imagery was a major factor and the utility to use this in the various reporting mechanisms to Cabinet and other parts of government was invaluable.

The views of DED were not ascertained for the evaluation as their program no longer exists in the country.

In general the views of all stakeholders contacted by this evaluation was extremely positive, more so than what would be expected from such a modest project.

Extent and effectiveness to linkages to and synergies with other related activities, projects and programmes

The project has established a remarkable partnership with Government, an international NGO, a major development agency, PNG's premier academic institution and a number of local governments. This is something of a feat in itself.

Notwithstanding the above, this is a relatively small project, initially developing a state of the art facility and at the same time attempting to maintain an outreach to the widest range of stakeholders. Within this context the project has been remarkably successful, but it should not be seen as being able to have reacted to every organisation all at the same time. It has been remarkable that it has maintained focus and delivered the outputs stated in the project document. It has done this by carefully managing limited resources, technical competence and hard work. An example is not attempting to deploy assistance to all provinces all at once. This reflects a very good appreciation of the realities external to Port Moresby. It would be ineffective to attempt to engage where data facilities cannot be secured or maintained and are unrelated to the provincial planning initiatives.

The project has now developed something of a critical mass of partnerships and engagement with stakeholders. It is timely to consider the longer term need for these impacts to be expanded and to maintain the momentum.

Sustainability

It should be appreciated that the University has a significant underlying financial problem with operating budgets having been successively reduced in real terms in the last five years. As well, the lack of maintenance of the existing infrastructure is a major concern. Despite this, the sustainability of the teaching courses is assured in the medium term given the appreciation and support of the project within the current administration. This is likely not the case for the research facility, unless the facility attempts to engage commercially with all potential stakeholders, on a funding partnership basis or in response to the targeted research and data needs of other funded projects and programs. Indeed the opportunity should be taken to apply these approaches in combination and possibly with further direct donor support.

The project has likely been successful due to the commitment and capacity of the Project Manager and without this individual or another of similar capacities will likely lose momentum and capability. This will have a marked influence on sustainability.

Nonetheless, the data sets and the associated data management techniques will remain accessible to all the stakeholders.

Conclusions drawn based on the findings and consultations

In general the project should be seen as highly satisfactory. The project has but a short period of implementation left, notwithstanding that the funding for the lecturer and GIS officer will be maintained for a further two years and that the web hosting service has been contracted for a similar period of time. At the technical level the outputs are particularly significant.

Recommendations

The project has less than four months to run and attempting any substantive changes to the implementation plan, even if needed, would not be particularly productive.

Nonetheless a relatively minor recommendation is made. This is that the Project Oversight Committee be programmed to meet to assist with the finalisation of the project. As well, UNDP and Project Management need to meet and agree on the actions required to finalise the project.

More importantly the major conclusion of the evaluation is that the Remote Sensing Centre and the related activities need to be expanded. The project has proven the utility of the products that can be produced. It has demonstrated that the approach works in the PNG context. To this end it is recommended that the project and partners with the assistance of the Oversight Committee work on a Succession Plan. Such a process was envisaged at the last meeting in April 2005 and was reflected in the Committees' decision to seek an evaluation at that time.

This plan would focus on:

- Expanding the collaboration with Government agencies particularly the PNGFA and DEC in a staged manner
- Expanding the collaboration with local level governments
- Increasing the utility /access of GIS information through the "Geobook" concept currently being developed by the project
- Developing a program of priority activities in collaboration with the needs and capabilities of all stakeholders. The program would then be composed of a number of activities where financing for each activity could be sought for continuation of the project. The program would need to be linked to wider programs being developed.

Attachment One – Persons Consulted

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Attachment Two – Project Documentation

1. "Project Document" – inclusive of: Situational analysis, Strategy, Results Framework, Management Arrangements, Legal Context, Budget and Attachments (Project Results and resources framework, Risks, Work Plan, TOR for Project Staff, MOU between DED and UPNG, MOU between UNDP and UPNG, Letter of Stabex Funding Approval., MOU between CI and UPNG, and, Spatial Projects in PNG AusAID report).
2. Project Mangement reports – inclusive of:
Terminal Report Form/RSC Annual Report 2004
Minutes of Tripartite Project Review, 10 March, 2005.
Half-Yearly reports and Quarterly reports
3. Audit reports and Management Letters December 2004 and April, 2006.
4. Various correspondences on file.