Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: 51493-PG

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR {AMT} MILLION
(US$ 25 MILLION EQUIVALENT)

TO THE

INDEPENDENT STATE OF PAPUA NEW GUINEA

FOR A

PNG PRODUCTIVE PARTNERSHIPS IN AGRICULTURE PROJECT

{PROJECT DATE}

CURRENCY EQUIVALENTS

(Exchange Rate Effective {Date})

Currency Unit	=	
	=	US$1
US$	=	SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ABG	Autonomous Bougainville Government
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AGO	Auditor's General Office
ARB	Autonomous Region of Bougainville
AusAID	Australian Agency for International Development
BPF	Beneficiaries Participation Framework
CAS	Country Assistance Strategy
CB	Cocoa Board
CCIL	Coffee Industry Corporation Limited
CDS	Community Development Scheme
CFO	Chief Financial Officer
CIC	Coffee Industry Corporation
COSA	Committee on Sustainability Assessment
CPB	Cocoa Pod Borer
CPBRCC	Cocoa Pod Borer Response Coordinating Committee
CPF	Compensation Policy Framework
CQI	Coffee Quality Institute
CQPC	Coffee Quality Promotion Committee
CPAR	Country Procurement Assessment Report
CRO	Community Relations Officer
CSTB	Central Supply and Tenders Board
DA	Designated Account
DAL	Department of Agriculture and Livestock
DEC	Department of Environment and Conservation
DNPM	Department of National Planning and Monitoring
DO	Development Objective
DOF	Department of Finance
DOT	Department of Treasury
DOW	Department of Works
DPI	Department of Primary Industries
EA	Environmental Assessment
EC	European Commission

ECP	Enhanced Cooperation Program
EHP	Eastern Highlands Province
EMP	Environmental Management Plan
ENB	East New Britain (Province)
ERR	Economic Rate of Return
ES	Environment Specialist
ESMF	Environmental and Social Management Framework
EU	European Union
FAST	Finance Alliance for Sustainable Trade
FOB	Free On Board
FM	Financial Management
FMR	Financial Management Report
FPDA	Fresh Produce Development Agency
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNI	Gross National Income
GoPNG	Government of Papua New Guinea
GRA	Gazelle Restoration Authority
GBE	Green Bean Equivalent
HRRIIP	Highlands Region Road Improvement Investment Program
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICC	Industry Coordination Committees
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFR	Interim Financial Report
IP	Indigenous Peoples
IPA	Investment Promotion Authority
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
IRR	Financial Rate of Return
ISDS	Integrated Safeguards Data Sheet
LCS	Least-Cost Selection
LDB	Live Database
LLG	Local Level Governments
M&E	Monitoring and Evaluation
MIS	Management Information System
MTDS	Medium-Term Development Strategy
MYOB	Mind Your Own Business Software
NADP	National Agriculture Development Plan
NARI	National Agriculture Research Institute
NCB	National Competitive Bidding
NDAL	National Department of Agriculture and Livestock
NEC	National Executive Council
NGO	Non Government Organization

NRA	National Roads Authority
NYC	New York City
NZAID	New Zealand's International Aid and Development Agency
PAD	Project Appraisal Document
PAH	Polycyclic Aromatic Hydrocarbons
PCN	Project Concept Note
PCU	Project Coordination Unit
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Assessment
PERR	Public Expenditure Review and Rationalization Report
PIC	Pacific Island Countries
PID	Project Information Document
PIM	Project Implementation Manual
PGK	Kina
PMU	Project Management Unit
PNG	Papua New Guinea
PPAP	Productive Partnerships in Agriculture Project
PPT	Project Preparation Team
PSC	Project Steering Committee
QCBS	Quality Cost Based Selection
CQS	Consultants' Qualifications
RIC	Rural Industries Council
RMRP	Roads Maintenance and Rehabilitation Project
RVP	Regional Vice President
SADP	Smallholder Agricultural Development Project
SBD	Standard Bidding Document
SCAN	Sustainable Commodity Assistance Network
SDR	Standard Drawing Right
SOE	Statement of Expenditure
SSSPP	Smallholder Support Services Pilot Program
TA	Technical Assistance
TAC	Technical Appraisal Committee
TOR	Terms of Reference
TSSP	Transport Sector Support Program
VAT	Value-added Tax

Vice President:	James Adams
Country Director:	Kanthan Shankar
Country Manager	Laura Bailey
Sector Manager:	Charles Feinstein
Task Team Leader:	Marianne Grosclaude

PAPUA NEW GUINEA
PNG Productive Partnerships in Agriculture Project

CONTENTS

Page

I N S E R T

D A T A S H E E T

H E R E

AFTER APPROVAL BY THE COUNTRY DIRECTOR

THE DATA SHEET SHOULD BE INSERTED IN THIS SECTION

MANUALLY IN HARD COPY

BEFORE SENDING A FINAL PAD TO THE PRINT SHOP.

DO NOT INCLUDE THIS INSTRUCTION PAGE IN THE PAD SENT TO THE PRINT SHOP.

NOTE: The Data Sheet can be found in the "Data Sheet" tab of the PAD section of the Operations Portal. Information in it is updated whenever such information is manually changed in the "Data Sheet" tab at any stage during project preparation/appraisal. Prior to sending the final PAD to the Print Shop, it is best practice to confirm the information in the data sheet before printing it out and inserting it here.

I. STRATEGIC CONTEXT AND RATIONALE

A. Country and sector issues

1. PNG is a resource-rich, low income country of approximately 6.5 million people, with a dual economy. The modern extractive sector draws on substantial reserves of metal ores and hydrocarbons and accounts for 30 percent of GDP, however it generates only a small fraction of employment. Despite strong economic growth since 2005, fuelled by the global commodity boom, half of the population lives below the national poverty line, most of them in rural areas. The pattern of growth based mainly on the extractive industries sector has not been conducive to rural poverty reduction.

2. The majority of the population (86 percent) resides in rural areas and is largely dependent on semi-subsistence agriculture. Agriculture accounts for approximately a third of GDP and the sector is dominated by smallholder farming systems. Coffee and cocoa are the main cash crops, with respectively over 30 percent and 20 percent of the total labor force at national level involved in their production, processing and sale. A high proportion (70 percent and over) of the FOB value of cocoa and coffee beans can be captured by smallholder farmers in particular where they have good access to markets. Cash is increasingly required to meet the costs of education, health and other goods and services and has also become indispensable in many transactions such as bride prices, compensation payments and other social obligations.

3. Coffee production is the backbone of the rural economy in the Highlands, with approximately 90 percent of national exports originating in Western Highlands, Eastern Highlands and Simbu Provinces. The majority of coffee (88 percent) is produced by an estimated 370,000 smallholder producers nationwide. Productivity is low, with yields on average 30-50 percent of their potential. Despite its socio-economic importance, PNG coffee has undergone an overall deterioration in productivity and quality. There is little empirical data available but the reasons behind low productivity have been documented in recent research: the lack of support services to promote improved tree husbandry practices; lack of adequate replanting (most of the trees are over 40 years old and well beyond their optimal production age); constraints to market access that reduce farm-gate prices and reduce smallholders' incentives to invest or to harvest coffee; and law and order issues.

4. PNG is a small coffee producer at international level with exports just falling short of 1 million bags in recent years. Certified coffees represent a growing but still small share of exports (3 percent). Exporters foresee a sustained demand for PNG coffee and consider that markets have the capacity to absorb a doubling of high quality Y Grade and premium smallholder coffee from PNG.

5. The Coffee Industry Corporation (CIC)[1] has formulated a 10-year strategic plan covering the period 2008-2018 which recognizes the need to improve industry coordination and also emphasizes the need to increase returns to smallholder growers to ensure the sustainability of the

[1] The CIC is the statutory body created by GoPNG in 1991 under the Companies Act to regulate the coffee industry. It has a 12-member board with representation of government (Department of Agriculture and Livestock; Treasury; and Commerce and Industry), smallholder growers, plantation owners, processors and exporters. Its head office is in Goroka, Eastern Highlands Province, and it has field officers in all 14 coffee growing Provinces.

sector. To that end, there is increasing consensus within the industry that PNG should build on its competitive advantage in the higher value segments of the market, including coffees differentiated by quality, sustainability certifications and Geographical Indications. The market for these coffees could be more remunerative and are among the fastest growing segments of the global coffee industry. Improving coffee farming-systems by taking advantage of diversification opportunities is also an important part of the strategy to improve coffee growers' livelihoods.

6. Approximately 20 percent of PNG's rural population is engaged in cocoa production, processing and sale. In 2008, PNG exported 51,000 metric tons of cocoa beans. There is strong and sustained demand for PNG cocoa as documented by extensive market analysis done by the Cocoa Board[2] and exporters. Europe and the USA represent 52 percent of the market for PNG cocoa beans, with PNG cocoa benefiting from a fine flavor status which brings a premium in NYC exchange (over US$ 200 per ton over Ivorian beans). PNG is also benefiting from its proximity to Asian grinders and their demand for well fermented and good physical quality cocoa beans (Singapore, Thailand, Malaysia and Indonesia buy 46 percent of PNG cocoa). Exporters unanimously consider that the issue is the capacity of PNG to respond to market demand for sustained quantity and quality of cocoa production.

7. Two Provinces (East New Britain and the Autonomous Region of Bougainville) produce 70 percent of total cocoa exports[3]. About 85 percent of PNG cocoa is produced on small holdings by an estimated 150,000 families with a low average yield of 300 kg per hectare. In addition to low productivity, quality management is another area for improvement in particular in the Autonomous Region of Bougainville (ARB). In the immediate short-term however, the greatest threat both to the productivity and quality of PNG cocoa arises from the cocoa pod borer (CPB)[4]. Cocoa is the largest single source of income in East New Britain Province and the Autonomous Region of Bougainville and the arrival of the CPB threatens to devastate their economy. While technical solutions are available for CPB control, their adoption will require a substantial scaling-up of farmer support services and on-farm investments. Some diversification of cocoa-based farming systems will also be necessary to restore rural livelihoods in affected areas.

8. Both for coffee and cocoa production, smallholder farmers are faced with similar constraints and significant market failures that impede their performance and their ability to respond to market signals. They are disadvantaged by significant diseconomies of scale resulting in high transaction costs and limited market access. Following the collapse of publicly funded extension services, smallholder farmers have little access to information, new technologies and improved planting material. Because of information asymmetries, few farmers have knowledge about quality or standards requirements for higher remuneration or other market opportunities. Finally, the location of many smallholder farmers means that they lack access to roads and the necessary infrastructure for coffee and cocoa processing. Their remoteness also increases the costs of interventions to support producers. Finding suitable forms of collective action to overcome these

[2] The Cocoa Board is the statutory body responsible for the regulation of the Cocoa Industry and governed by the Cocoa Act 1995. Similar to the CIC, it has a board with representation of government Departments, growers, processors and exporters. It has a head office in Rabaul, East New Britain Province, and field officers in all 14 cocoa growing Provinces.

[3] In 2007-08, another 12 percent came from East Sepik Province and 8 percent from Madang Province.

[4] *Conopomorpha cramerella*

disadvantages requires considerable efforts. A history of failed attempts at various forms of cooperatives or joint interest groups in PNG attests to the associated risks. These risks also make it difficult for commercial banks to provide services to smallholder farmers and their organizations.

9. Agribusiness enterprises and traders are critical for communicating market demand to producers and establishing value chains that effectively link them to the market. However, building long-term relationships with smallholder farmers involves considerable transaction costs on the part of the agribusiness. These include: identifying producers; reaching them in difficult access areas; establishing farmer groups; and introducing good agricultural practices. The public sector plays a critical role in strengthening smallholder competitiveness through support for better technology transfer and improved organization. In addition, there is a need for critical infrastructure where supply chains have been broken due to deteriorating roads that no longer permit farmers to cost-effectively bring their products to market. However, weak capacity to deliver services and limited outreach in rural areas severely limits public intervention. Strengthening public institutions is an important step, but will not be sufficient to reach the majority of farmers or to reach them consistently.

10. Since relationships along the supply chains are defined primarily by exporters/processors, improving both the productivity and quality of smallholder cocoa and coffee production and addressing dire threats such as the cocoa pod borer require the active involvement of these commercial operators. Dozens of processors and exporters have been effectively delivering producer support and so are natural partners to reach producers cost-effectively. Fostering a scaling-up of those market-oriented interventions is expected to partly offset the limited outreach of public institutions. This entails selective public funding (with clear eligibility and selection criteria) to offset some of the investment risks and stimulate the expansion of regular and ongoing linkages between private enterprises and smallholder farmers.

B. Rationale for Bank involvement

11. The GoPNG's Medium-Term Development Strategy (MTDS) 2005-2010 places agriculture at the center of the government's export-driven growth strategy, recognizing the need to develop the non-mineral economy. Government's renewed commitment to agricultural development has been demonstrated through the National Executive Council (NEC)'s decision to prepare a National Agriculture Development Plan (NADP) for the period 2007-2016, which was completed by the National Department of Agriculture and Livestock (DAL) and endorsed by NEC in 2007. Another NEC decision in 2007 further committed funding to the NADP over a ten year period. The NADP also seeks to leverage donor and private sector funding to achieve its goals and targets. The Plan recognizes the limitations imposed by a dearth of public goods in the areas of infrastructure, institutional capacity, access to information and access to finance services.

12. The NADP highlights the role of the private sector in agricultural development, and indeed the private sector has stepped in and is a primary provider of inputs, marketing, sustainability certification and quality control services to smallholders. However, these efforts are currently

limited by their perception of risks in expanding investments to farmers and by their own financial capacity. The project would bridge that risk and facilitate the private firms that already offer services to thousands of farmers to substantially expand those services. PPAP investments would not only leverage a considerable expansion in those services (at least a 300-400 percent increase in the number of farmers covered) and market linkages but also focus on improving the competitive and organizational capacity of farmers as well as the transparency of the information and supply chain links in the sector. Finally, where deteriorated infrastructure creates bottlenecks, complementary investments in transport infrastructure would open up market access and improve the livelihoods of rural households.

13. The Bank has extensive experience working on value-chains and developing public-private partnerships in the agriculture sector and is uniquely placed to guide this process and incorporate lessons learned in other countries. During the preparation of the proposed project, the Bank has worked with the Cocoa Board and other stakeholders on further developments of the national cocoa industry strategy and, through its partnership with Mars Inc., has provided technical expertise to the Cocoa Board. Similarly, the Bank has drawn from global expertise to work with the CIC on a program to make the Coffee Industry Strategic Plan operational. Providing targeted capacity building to the relevant public institutions is an important part of PPAP. They will need to upgrade their ability to provide vital public goods such as timely market and sector information that are now essentially absent.

14. The proposed PPAP would provide, over several years, the predictable and continued support that is required to implement some of the structural changes necessary to improve the performance and sustainability of PNG coffee and cocoa value-chains, as well as increasing their contribution to rural livelihoods. As such, it would complement support provided by Government through annual programs such as the rehabilitation of larger plantations, which is carried out by the National Department of Agriculture and Livestock.

15. The proposed project would complement the efforts of other development partners involved in the agriculture sector including the Australian Agency for International Development (AusAID), the Australian Center for International Agricultural Research (ACIAR) and the European Union (EU), which have been focusing on agricultural research and New Zealand's International Aid and Development Agency (NZAID), which is supporting institutional strengthening of the Fresh Produce Development Agency (FPDA).

C. Higher level objectives to which the project contributes

16. The objectives of the MTDS are to promote export-driven growth, rural development, poverty reduction and empowerment through human resource development. The proposed project would contribute to the implementation of the MTDS by: (i) supporting interventions that foster the growth and increase the sustainability of two major agricultural export industries, coffee and cocoa; (ii) enhancing smallholder incomes in coffee- and cocoa-producing areas; and (iii) rehabilitating critical market access infrastructure in the project area.

17. The overarching goal of the World Bank Country Assistance Strategy (CAS) for the period 2008-2011 is to support inclusive growth in PNG. The proposed project would directly

contribute to the second pillar of the CAS that focuses on improving livelihoods especially for the rural poor by putting in place the conditions for a more diversified, sustainable growth path in the future.

II. PROJECT DESCRIPTION

A. Lending instrument

18. Total project costs are estimated at US$ 46.3 million. The project would be financed by an IDA Specific Investment Credit equivalent to US$25 million and co-financing by an IFAD Loan for an amount of US$ 14 million. Additional financing includes: the GoPNG (US$ 1.5 million), and contributions from the private sector including smallholder farmers (US$ 5.8 million).

B. Project development objective and key indicators

19. The development objective of the proposed project would be to improve the livelihoods of smallholder cocoa and coffee producers through the improvement of the performance and the sustainability of value chains in cocoa- and coffee-producing areas. This would be achieved through strengthening industry coordination and institutions, facilitating linkages between smallholder farmers and agribusiness for the provision of market access, technologies and services, and through the provision of critical market access infrastructure.

20. Key outcomes would be that: (i) smallholder farmers adopt efficient, market responsive and sustainable production practices leading to an improvement in their income; (ii) demand-driven productive partnerships are scaled-up and sustained; and (iii) key infrastructure bottlenecks in the targeted value chains are addressed.

21. The key indicators at the Project Development Objective (PDO) level would be:

(a) The number of smallholder farmers adopting improved farming practices;
(b) The number and coverage of productive partnerships successfully implemented and/or scaled up and likely to be sustained;
(c) The share of the export price including quality premium received by smallholder farmers in the project area; and
(d) The net incomes of smallholder cocoa and coffee growing households in the project areas.

22. Intermediate outcome indicators would include:

(a) The establishment of effective, relevant, and representative industry coordination committees contributing to improved sector policy;
(b) The establishment of operating and sustainable information management systems in CIC and the Cocoa Board;
(c) The number of hectares replanted or rejuvenated with improved planting material;
(d) The share of total coffees exported by PNG that are differentiated;

(e) The increase in average smallholder coffee yields in project areas;
(f) Losses due to CPB infestation substantially reduced in project areas;
(g) The increase in average smallholder cocoa yields in project areas;
(h) The average dried cocoa moisture content is reduced in ARB;
(i) The increase in women's access to information on improved farming practices, processing and marketing leading to increased income; and
(j) The number of kilometers of rural roads and other access ways rehabilitated and maintained as per the maintenance agreements established under the project.

C. Project components

23. The project would include three components: (a) Institutional Strengthening and Industry Coordination; (b) Productive Partnerships; and (c) Market Access Infrastructure. The project would be implemented over a six year period. A detailed description is given in Annex 4.

24. **Component 1: Institutional Strengthening and Industry Coordination** (total estimated cost US$ 9.6 million, estimated IDA contribution US$ 5.7 million). The specific objective of this component would be to improve the performance of sector institutions and to enhance industry coordination in the coffee and cocoa sectors. Existing stakeholder platforms for industry coordination would be consolidated to address short- and long-term issues such as sector governance, skills development in the industry, improvement in extension services, industry strategy on threats to quality and quality promotion, information within the industry, market development and crop diversification. This component would have four sub-components as follows:

Sub-component A: Industry coordination & policy development: This sub-component would build the capacity of industry coordination committees (ICC) to support sector dialogue and policy development in the cocoa and coffee subsectors.

Sub-component B: Communication and information management systems. The project would strengthen the information management systems necessary to inform policy development and stakeholders' decisions in the coffee and cocoa industries.

Sub-component C: Quality and sustainability management: This sub-component would strengthen quality promotion in the coffee and the cocoa industries and promote, where appropriate, the adoption of certified sustainability practices (such as Organic, Fair Trade, Rainforest Alliance, Utz, and quality certification schemes);

Sub-component D: Project management and monitoring and evaluation (M&E). This sub-component would support all project management and M&E functions in the Project Management Units (PMUs) respectively located in the Cocoa Board and the CIC, as well as a small Project Coordinating Unit (PCU) in DAL. It would also finance the related Technical Assistance (TA) and the operations of the Technical Appraisal Committee (TAC) under Component 2.

25. **Component 2: Productive Partnerships (**total estimated cost US$ 20.1 million, estimated IDA contribution US$ 9.2 million). The specific objective of this component would be to increase the integration of smallholder producers in performing and remunerative value chains, by developing and implementing productive alliances between smallholders and the private sector aiming at improving market linkages in the project areas.

26. Those partnerships would be demand-driven and consistent with the specific priorities identified in each subsector. During project preparation, these strategic priorities have been identified as follows:

(a) In the cocoa sector, activities which support CPB management such as training on good farming practices; the production of improved planting material (nurseries and budwood gardens) to increase their availability for replanting; the promotion of and support for rotational replanting and cocoa garden rejuvenation; market-driven diversification of cocoa-farming system; and management of quality through the adoption of more efficient and environmentally-friendly post-harvest and processing technology;
(b) In the coffee sector, activities which support the adoption of sustainability practices and the expansion of the production of differentiated coffees; training on good farming practices; the production of improved planting material to increase their availability for replanting; replanting and coffee garden rejuvenation programs; market-driven diversification of coffee-farming systems; and management of quality through the adoption of more efficient and environmentally-friendly post-harvest and processing technology.

27. Project funding would be channeled through partnerships with legal entities in the private sector and civil society, which have already been successfully engaged with smallholders to increase output, productivity, quality and sustainability and which are interested in scaling up those activities. Those partnerships would be result-oriented, and expected results and cost-sharing arrangements would be specified in the partnership agreements. The project would provide assistance for the development of those partnership proposals, as needed, through contracted local service providers. The detailed guidelines on cost sharing arrangements and the rules for the implementation of this component (e.g. eligibility criteria, selection process, evaluation process, etc) are described in the PIM and summarized in Annex 4 and Annex 6.

28. This component would have two subcomponents:

Sub-component A: Productive partnerships in the cocoa growing areas. This component would finance result-oriented partnerships in cocoa-growing areas to increase smallholder cocoa productivity, quality and sustainability and improve cocoa-faming systems. Its implementation would be under the responsibility of the PMU within the Cocoa Board with support from a Technical Appraisal Committee (TAC).

Sub-component B: Productive partnerships in coffee growing areas. This sub-component would finance result-oriented partnerships in coffee-growing areas to increase smallholder coffee productivity, quality and sustainability and improve coffee-farming

systems. Its implementation would be under the responsibility of the PMU within the CIC with support from the TAC.

29. **Component 3: Market Access Infrastructure** (total estimated cost US$ 16.6 million, including US$10.1 million from IDA). The specific objective of this component would be to improve smallholder market access in targeted areas under the project. This component would have two sub-components as follows:

Sub-component A: Preparation of market access infrastructure investments. This sub-component would finance the identification and selection of priority investments in support of Component 2 partnerships.

Sub-component B: Market access infrastructure development. This sub-component would finance the related investments in infrastructure rehabilitation and maintenance.

30. **Geographical coverage.** The project would initially be implemented in East New Britain Province, the Autonomous Region of Bougainville, Eastern Highlands Province, Western Highlands Province, Jiwaka Province and Simbu Province. Most producers and the major stakeholders in the public and the private sectors are all located in those Provinces. Rural household dependency on coffee and cocoa income for their livelihoods is also high in those Provinces. A first review of possible expansion to new Provinces would be conducted during Project Year 2 (PY2), and a second during PY4. Component 1 activities would, by nature, provide benefits at the national level.

31. **Targeting**. The project would employ a combination of targeting and monitoring strategies aimed at ensuring an equitable distribution of project benefits. Overall, the project would adopt an inclusive targeting approach based around the development of demand-driven partnerships between the private and associative sectors with smallholders. Principal targeting mechanisms would include geographical and commodity based targeting, enabling and empowering approaches, and procedural measures to promote the involvement of disadvantaged households and the inclusion of remote communities.

32. Additional support would be provided under Component 2 to ensure that groups with lower capacity are able to engage in project activities. Specific consideration would be given to partnerships with smallholder farmers in less favored areas (such as more remote areas in the Highlands, or areas hit by CPB and exclusively dependent on cocoa) and partnerships which mobilize vulnerable groups (such as women and young farmers). There would be a particular emphasis on women's participation in developing the targeting systems. Gender balance would be considered in all activities, for example the provision of training to both men and women, or employment opportunities at the ward level through the establishment and management of nurseries and budwood gardens. The M&E system would monitor targeting of those groups under the project.

D. Lessons learned and reflected in the project design

33. The preparation of the proposed project benefited from the experience of previous World Bank projects in PNG (particularly in the oil palm sector[5] and in road maintenance[6]) and from that of other agriculture projects in PNG. The design of the project also considered lessons learned in other countries with the implementation of public-private partnerships (or productive alliances) in the agriculture sector[7].

34. *Project management*. The most important lesson from development projects in PNG, particularly in the agricultural sector, is that the capacity and integrity of the institutions involved in implementation is a critical factor in the ability of the project to achieve the desired impacts on a sustainable basis. The weak performance of public sector institutions, government's limited budgets for operational costs other than salaries in sector institutions, and government's inability to make timely and adequate appropriation of counterpart funding have also been recurrent issues:

(a) Decentralized project management: The recent Smallholder Support Services Pilot Program (SSSPP) funded by the ADB has demonstrated a successful model with project management functions devolved to the provincial level, close to field level, and the use of output contracts with clear definitions of tasks and deliverables for contractors and service providers. Other successful programs have also used decentralized management units, such as the Gazelle Restoration Authority (GRA), or the AusAID-funded PNG Community Development Scheme (CDS).
(b) Use of management agents. The GRA is widely recognized as an effective project implementing structure. Key factors of success included efficient management systems, sound human resources management, hiring of staff based on merit, and solid performance assessment systems. In the agriculture sector, the experience of the SSSPP, or that of the World Bank in the oil palm sector, both point to the merits of contractual systems to outsource management functions or the delivery of key services given the severe constraints affecting public institutions.

35. *Productive partnerships*. Recent reviews of projects involving public-private partnerships in the agriculture sector provided a number of relevant lessons for the PPAP, including:

(a) The importance of governance structures for the approval of specific partnerships, to avoid political interference and other conflicts of interest (such as two-tier appraisal and approval processes);
(b) The need for clear sector priorities and alignment of the proposed partnerships with the objectives of the sector, and the use of specific TORs for calls for proposals. Policy dialogue with the industry has been conducted during PPAP preparation and will be supported during implementation;
(c) A crucial element for the success and the sustainability of the partnerships is project support for advisory services to help partners prepare quality investment plans;

[5] Smallholder Agriculture Development Project (SADP)
[6] Roads Maintenance and Rehabilitation Project (RMRP)
[7] In particular the experience with the following: Mali Agricultural Competitiveness and Diversification Project; China Agricultural Technology Transfer Project; Columbia Productive Partnerships Support Project; Columbia Second Rural Productive Partnerships Project; and Vietnam Agriculture Competitiveness Project.

(d) Fostering improved relations between the public and private sector is critical as the private sector does not trust the public sector and is reluctant to engage with smallholders because of the risks and high transaction costs involved. Funding for partnerships also needs to avoid long and protracted project processes; use simple processes for preparation but close supervision of implementation; and respect confidentiality as needed; and
(e) Partnerships need to be market-driven and demand-driven and allow for diversification of farming systems and value chains.

36. *Agriculture programs*. A number of lessons specific to the agriculture sector in PNG have also been incorporated in the project design, as follows:

(a) Investments in production need to be carefully coordinated with processing and marketing capacity. For example, the cocoa rehabilitation program carried out in Bougainville in the aftermath of the conflict was successful in jump-starting cocoa production, but lack of attention to the quality of processing and to shipping capacity led to significant deterioration of cocoa quality. The involvement of commercial operators should limit those risks and ensure better consistency between investments in production, processing and marketing;
(b) In PNG, higher adoption rates by farmers are achieved with technology transfer programs with involve "learning by doing" and demonstration by early adopters at the local level. Existing pilot programs provide successful models that can be scaled up and replicated. The ACIAR project on "Integrated pest and disease management for sustainable cocoa production in PNG" successfully used on-farm sites to demonstrate increased yields by three to fivefold. Similarly, the on-plantation training on cocoa pod borer control provided by the private sector is showing high adoption rates and significant reduction of CPB losses;
(c) The experience with credit services for long-term investments such as tree crops has been disappointing, with very low repayment rates.

37. *Market access infrastructure*.

(a) Public funding of minor roads in PNG is generally unavailable, and there is virtually no routine or periodic maintenance undertaken with public funds. The result is that in many cases, due to rugged terrain, high rainfall and weak soils, newly constructed or rehabilitated minor roads quickly deteriorate, initially increasing journey times and vehicle operating costs, but ultimately rendering the route impassable. PPAP will avoid this consequence by (i) only selecting routes (roads, tracks, paths) for rehabilitation where a formal commitment and assessed ability to maintain the completed road are in place, and (ii) working with the partners to develop their capacity to undertake both routine and periodic maintenance;
(b) Previous experience has shown that community-based maintenance can be unreliable over longer lengths of road, where different communities show a differing level of commitment to maintenance. PPAP would avoid this potential problem by limiting its infrastructure activities to short route/link lengths

(maximum 5 km but generally 1 – 3km), thereby involving more homogeneous communities;

(c) It has been observed in many cases in PNG that rehabilitation of feeder roads has paid inadequate attention to both longitudinal and cross-drainage, with resultant problems where standing water on or adjacent to the carriageway has weakened the pavement, or where run-off has eroded the surface. All rehabilitation works on PPAP would include adequately designed and constructed drainage to avoid these problems.

E. Alternatives considered and reasons for rejection

38. *Broader support to agriculture across Provinces*. The MTDS emphasizes the urgent need to improve livelihoods in rural areas and the NADP provides a broad framework of action for the agriculture sector. The institutional framework in the agriculture sector in PNG is complex and fragmented, however, with responsibilities spread among multiple agencies which are generally facing significant funding and human resources constraints: DAL for overall sector leadership and coordination and monitoring and evaluation; the Provincial Governments and Districts for the delivery of agricultural extension services; and a number of commodity boards specific to each subsector (cocoa, coffee, oil palm, livestock, spices, etc). This institutional set-up makes working across a number of subsectors or Provinces challenging. While growth in the food crops sector has generally kept pace with population growth (at 2.7 percent per annum on average), growth in the coffee and cocoa subsectors, which rely on more complex value-chains, has been sluggish and substantial structural changes will be needed to ensure their sustainability and continued benefits to smallholders. GoPNG and the World Bank have therefore agreed that IDA resources would best be used for an investment program focusing on those two key commodities.

39. *Inclusion of an access to finance component*. The possible inclusion of a specific access to finance component through existing commercial banks or viable microfinance institutions has been assessed by the IFC. Given the law and order challenges in some of the project areas and the specific risks associated with the coffee and cocoa industries, including low repayment rates in the past, IFC has found that there is little interest from those institutions in expending their services to smallholder coffee and cocoa growers at the present time. Lending to commercial operators in the sector is also limited with the exception of large exporters and processors. On that basis, no specific credit component is integrated in the PPAP. However, should there be interest from some of the established and viable finance institutions, specific activities might be eligible through partnerships under Component 2 (such as the provision of financial literacy training or trade finance when interested and eligible operators have been identified).

III. IMPLEMENTATION

A. Partnership arrangements (if applicable)

40. Partnerships between the public and the private sector are a core element of the project design. The project would work in partnership with all agencies involved in the coffee and in the cocoa sectors. In the cocoa sector, they include the Cocoa Board, Cocoa Coconut Institute Ltd (CCIL), National Agriculture Research Institute (NARI), UNRE/Vudal University, the

Provincial Departments of Primary Industries (DPI), the PNG Growers' Association, some NGOs/CBOs and other private sector stakeholders. A cocoa industry coordinating committee (National Cocoa Advisory Committee) would bring those institutions together building on the successful experience of the CPB Response Coordinating Committee. In the coffee sector, a coffee industry coordination committee would bring together representatives of the public and the private sector, including the CIC and its research and extension branch (the former Coffee Research Institute), NARI, the Provincial Department of Primary Industry, Goroka University and representatives of civil society and the private sector.

41. Component 3 would be implemented in collaboration with the Departments responsible for transport infrastructure rehabilitation and maintenance in the project Provinces, such as the Department of Works in Eastern Highlands and the ARB Technical Services Division (TSD).

42. The project is expected to be co-financed by IFAD. IFAD's Sub-Regional Strategy for the Pacific Islands emphasizes the development of market opportunities and income generation in rural areas, including the integration of smallholder agricultural producers with markets. The proposed PPAP is directly aligned with IFAD's strategic focus in the Pacific region. Finally, the European Union (EU) has indicated that it might provide additional financing for the project during implementation.

B. Institutional and implementation arrangements

43. *National Project Steering*. GoPNG has established a Project Steering Committee for project preparation and this would evolve into a Project Steering Committee (PSC) for project implementation. The PSC would include the Department of Agriculture and Livestock (DAL), the Department of National Planning and Monitoring (DNPM), the Department of Finance (DOF), the Department of Treasury (DOT), the Department of Works (DOW), the Department of Environment and Conservation (DEC), the Department of Commerce and Industry, the Cocoa Board, the Coffee Industry Corporation (CIC), the Rural Industries Council (RIC), the National Agriculture Research Institute (NARI) and the Provincial Governments.

44. *Project Coordination at national level.* A key principle of the project design is decentralized project management at industry level. A small Project Coordination Unit (PCU) would be established within DAL with primary responsibility for M&E as well as liaison with the PSC, central government departments (Finance; Treasury; and National Planning and Monitoring) and financiers (IDA and IFAD).

45. *Project Management at industry level*. Project management functions would be placed with the CIC and with the Cocoa Board respectively for the coffee and the cocoa industries. Project Management Units would be established under both institutions to support the CIC and the Cocoa Board with project implementation (including daily management of project activities, financial management, procurement, M&E and reporting). The PMU based in Goroka within the CIC would be guided by a Coffee Industry Coordination Committee (Coffee ICC), which would also act as an industry-level steering committee for the PPAP. Similarly, the PMU based in Kokopo within the Cocoa Board would be guided by a Cocoa Industry Coordination Committee ("National Cocoa Advisory Committee"), which would act as an industry-level steering

committee for the PPAP. Due to the special status of ARB, a Deputy PMU Manager reporting to the Project Manager in Kokopo would be based in the Cocoa Board office in Buka. A Transport Planner/Senior Engineer would also be part of each PMU and be responsible for the implementation of Component 3.

46. *Component 2 Technical Appraisal Committee*. The appraisal of the partnership proposals under Component 2 of the project would be the responsibility of a Technical Appraisal Committee (TAC). Members of the TAC panel would be qualified experts, nominated by the ICCs at project inception. The TAC would have three members with expertise respectively in the coffee industry, cocoa industry, and social sciences. TAC panel members would operate under a Code of Conduct established for the PPAP. The PMU would convene meetings of the TAC as needed to reach decisions and such meetings would be chaired by a neutral Chairperson from an organization representing the private sector.

47. *Local service providers*. To increase the outreach and inclusiveness of project activities, the PMUs would identify and train a pool of qualified service providers who could be mobilized at the local level to assist those potential partners with lower capacity (such as women or youth, and farmers in more remote areas) in the preparation of their proposals. Assistance could extend to continued support in monitoring the implementation of the partnerships.

48. *Technical assistance*. A technical assistance team would support the PCU and PMUs and build capacity of DAL, Cocoa Board and CIC in core management functions. This would include a Project Implementation Advisor, a Financial Management Advisor, a Procurement Advisor, an Environment Specialist and an M&E Advisor on a part-time basis.

49. The detailed project implementation arrangements and PPAP functional chart are presented in Annex 6.

C. Monitoring and evaluation of outcomes/results

50. DAL, through the PCU, would be responsible for overall monitoring and evaluation of the PPAP, working in close collaboration respectively with the CIC and the Cocoa Board. An M&E manual has been prepared to guide all M&E activities and a Management Information System (MIS) would be developed for the project, and would form the basis for tracking key implementation progress indicators. The M&E system would be based on the Results Framework presented in Annex 3.

51. Key features of the M&E system would include:

(a) A baseline survey to be carried out within six month of project effectiveness, and follow-up surveys in year 3 and year 5 of project implementation. Simple baseline information would also be collected as part of the preparation of the partnership proposals;
(b) Independent monitoring of the implementation of activities under Component 2, with a specific focus on process monitoring. Specific studies on critical aspects such

as the quality of governance arrangements under the project, inclusiveness and targeting, would be outsourced to independent entities;
(c) Provisions for monitoring of Component 2 activities by rural communities, as well as feedback mechanisms; and,
(d) Monitoring of the implementation of the ESMF under Component 2 and component 3, which will be the responsibility within each PMU respectively of the Component 2 Coordinator and the Transport Planner/Senior Engineer, with guidance from the Environment Specialist.

52. Baseline data collection for all the agreed indicators would be initiated by the PCU in DAL, in collaboration with the CIC and Cocoa Board and with support from international expertise during the start-up phase. The CIC and Cocoa Board (or CCIL) would each nominate a Senior Monitoring, Evaluation and Survey Officer to provide leadership and coordination at industry level. An outcome-oriented approach, as presented in Annex 3 has been developed that would allow corrections during implementation to achieve the objectives and efficient incorporation of lessons learned.

D. Sustainability

53. PNG coffee exports have been less than one million bags per year during the last few years. The current low level of productivity of smallholder coffee combines with irregular supply in quantity and quality, which results in low revenues for smallholder households. PPAP would support partnerships with traders, processors, exporters, farmer groups and the organizations supporting them, in order to train farmers on more productive and remunerative farm management practices and to link them to markets. Activities would be carried out to improve the quality of PNG coffee and increase the share of differentiated coffees that are exported, resulting in higher prices for smallholder farmers and better incentives to invest in the management of their farms. Differentiation can include better quality, certification or Geographical Indications. Diversification of farming systems is also seen as an efficient strategy to manage risks at farm level, and would be one of the options available under the project. The poor state of minor road infrastructure in the Highland Provinces also makes market access difficult. PPAP includes a component that will carry out road rehabilitation works.

54. The main threat to the sustainability of the PNG cocoa industry is the CPB infestation. However, the current crisis also presents an opportunity for the sector to transition to more intensive and remunerative farm management systems. In effect, better management practices applied to cocoa plantations has proven to be the most effective way to control CPB infestation. PPAP would support the adoption by farmers of these improved management practices through training and technical support. The replanting of cocoa with selected new clonal hybrids would ensure the rejuvenation of the productive base. The activities would be implemented through partnerships between farmer groups and the private sector with a view to building commercial relations that will ensure sustainability. The shift in management practices together with the replanting of smallholder cocoa with improved planting materials would contribute to the sustainability of PNG cocoa production. Sustainability would also be supported by fostering quality and certifications that are in demand by existing buyers. Finally, similar to the situation in the coffee sector, the diversification of cocoa-farming systems is seen as an integral part of

risk management at farm level. It would therefore be one of the options available under the project.

55. Regarding Component 3, the establishment of sustainable maintenance arrangements for each scheme would be a condition for project financing of rehabilitation and upgrades.

56. Institutional aspects. Currently institutions in the coffee and cocoa sector (CIC and Cocoa Boards) need strengthening in a number of areas, such as governance and provision of information to the industry. They are also in a fragile financial position and cannot play their role of industry coordination effectively. PPAP would implement several activities aiming at strengthening these institutions, in terms of governance, policy, financial management, communication and transparency. The project would also assist them to upgrade quality management systems throughout the industry (revision of export standards, strengthening of quality control, etc.). Stronger institutions would contribute to make both industries more sustainable.

E. Critical risks and possible controversial aspects

57. The table below presents a summary of the main risks for the proposed project and the proposed mitigation measures:

Risk	***Risk mitigation measures***	***Risk rating***
To project development objective		
The proposed activities and technical packages fail to lead to significant and sustainable improvements in the livelihoods of small cocoa and coffee growers, because of lack of incentives for change.	The approach of supporting partnerships between producers and private sector operators (traders, exporters) aims at ensuring that they are fully mobilized in the achievement of concrete results in terms of on-farm productivity improvements, market access, quality management and rebuilding of the production base. The approach builds on what operators are already successfully doing and would extend their outreach to new groups farmers.	S
The magnitude of the cocoa crisis due to CPB infestation weakens the financial capacities of farmers to engage in transforming their production systems toward greater intensification. Quality of PNG cocoa continues to drop.	Local and national authorities in the cocoa producing regions, as well as major stakeholders in the cocoa industry, have already mobilized resources and taken action to respond to the crisis in the immediate short-term.	M
Decline in commitment to smallholder coffee and cocoa by national and provincial governments.	Resilience of both the coffee and cocoa industry over the past decades demonstrate strong commitment by stakeholders. The initial response to the CPB crisis and social assessment both indicate continued commitment of stakeholders to the sector.	M
To component results		
Governance and capacity of sector	The recent example of the response committee	S

institutions remain too weak to tackle effectively issues facing the cocoa and coffee sectors.	established to tackle the CPB crisis (CPBRCC) has shown progress with industry collaboration. Significant resources will be dedicated to strengthening capacities, good governance, communication and transparency. Parallel funding (AusAID) may reinforce these activities.	
Difficulties to design and implement partnerships with the private sector. Vested interest and political interferences make partnerships difficult to implement.	The concept of productive partnership has been thoroughly discussed and adopted by a wide range of public and private stakeholders as an effective way to improve significantly and in a sustainable manner the performance of the two sectors. It is already implemented to a certain extent. PPAP will support the extension and scaling up of these productive alliances.	M
Efforts to improve the quality of cocoa and coffee exports do not yield the expected results and PNG loses ground on world markets.	Maintaining PNG cocoa quality depends on the effective control of the CPB infestation for which there is currently an important mobilization at both industry and government levels. On coffee, the Bank will be supporting quality promotion through additional TA ahead of project implementation.	S
The road rehabilitation works do not result in significant impact in market access for small and isolated cocoa and coffee producers.	The prioritization process for the infrastructure investments has been designed to ensure that PPAP yields the highest possible returns in terms of facilitating physical access to market for farmers.	M
Overall risk rating		S

F. Credit conditions and covenants

Effectiveness

(a) The Department of Agriculture and Livestock, on behalf of Government, has confirmed Government's endorsement of the Project Implementation Manual (PIM) to IDA;

Disbursement

(b) The CIC Subsidiary Agreement has been executed on behalf of the Recipient and CIC;
(c) The Cocoa Board Subsidiary Agreement has been executed on behalf of the Recipient and the Cocoa Board;
(d) The Cocoa Board has provided to IDA the audits of its accounts for the years 2005, 2006, 2007 and 2008 together with the Cocoa Board management response acceptable to IDA;

Program management

(e) Government will maintain, throughout the life of the project, a Project Steering Committee which will meet on a six-monthly basis;
(f) Industry Coordination Committees with broad representation of respectively the cocoa and coffee industries are established and maintained throughout the life of the project;

(g) Government will maintain, throughout the life of the project, a Project Coordination Unit in DAL, as well as a Project Management Unit in the Cocoa Board (Kokopo) and a Project Management Unit in the CIC (Goroka), under terms of reference acceptable to the Association;
(h) A Project Implementation Manual (PIM), including Operational Manuals for each component, a Financial Management Manual and a Procurement Manual, acceptable to the Association has been adopted by the project implementing agencies (DAL, CIC and Cocoa Board);
(i) An MIS acceptable to IDA is operational throughout the life of the project.

Implementation:

(j) An annual work plan and budget for each component, included an updated procurement plan, shall be submitted to IDA within three months of effectiveness in project year 1, and for review by September 30 each subsequent year;
(k) A baseline survey has been carried out, under terms of reference acceptable to the Association, within six months of effectiveness;
(l) Under Component 2, the Technical Appraisal Committee members have been identified and trained within three months of effectiveness;
(m) Progress reports are prepared by Government on a semi-annual basis, and additional reports assessing progress against the project design at appraisal are prepared three months before the end of project year 2 and of project year 4.

IV. APPRAISAL SUMMARY

A. Economic and financial analyses

58. *Financial analysis*. Annex 9 summarizes the methodology and results of the financial and economic analysis. The financial analysis indicates strong returns to investments at farm level as well as significant increases in smallholder incomes for all project activities. The analysis was carried out using six farm models for indicative activities under the project (including the adoption of improved cocoa garden management; improved coffee garden management; replanting; and certification). Consistent with the result of previous pilots (e.g. ACIAR project), the analysis shows that smallholders can double or triple their cash incomes through improved farm management practices and replanting with improved material, both for coffee and cocoa. The increased incomes at farm level come mainly for increased yields and higher farm gate prices for better quality products, through contractual relationships with the private sector and improved market access infrastructure. In the case of cocoa, the reduction in losses from cocoa pod borer infestation also contributes to increased cash incomes for smallholders. Improved cash flow management by smallholder households will be required to ensure that part of incremental benefits are re-invested to sustain more intensive management practices. The project activities also result in an increase in returns to labor, which is a key incentive for smallholders in the project areas. Finally, the models show that, without access to external financing, smallholder farmers would generally not be able to implement the initial investments required to improve farm management practices – where access to credit is not available, such financing would have to be provided through partnership arrangements under Component 2.

59. Because of the demand-driven nature of the project, it is not possible to assess the exact mix of activities that will be implemented. Aggregated benefits have therefore been estimated using a likely combination of activities under the project and realistic targets regarding the areas that could be covered over the life time of the project. Conservative assumptions have been used and only direct farm-level benefits have been estimated. For example, broader benefits of improved transport infrastructure (such as access to social services) are not included in the analysis. The IRR at project level, all costs included, is estimated at 28 percent. Sensitivity analysis indicates that it is sensitive to changes in prices and yields. For example, a 20 percent reduction in expected yields reduced the IRR to 23 percent and 22 percent respectively for cocoa and coffee, and a 20 percent reduction in price reduces the IRR to 21 percent and 20 percent respectively for cocoa and coffee.

60. *Economic analysis.* Using similar assumptions regarding the likely composition of project activities, the ERR of the project is estimated at 14 percent using an opportunity cost of labor of PGK5/day. This is considered acceptable, in particular as labor costs are likely to be overestimated since the typical "day" worked in cocoa or coffee usually involves about one-half a day on these crops while the rest of the day is spent on other farm, household, cultural obligations and other activities. In addition, broader benefits of the project under Component 1 and Component 3 have not been quantified. The analysis indicates the importance of raising productivity, especially productivity of labor, as part of project activities. This has become critical with the upcoming LNG project expected to increase the cost of labor and to result in an appreciation of the PNG Kina.

61. Analysis of market demand for PNG coffee and cocoa indicates that the additional quantities of coffee and cocoa expected to be generated by the project could be easily absorbed. In the case of cocoa, the project's objective would initially be to maintain the current level and quality of PNG cocoa beans in the context of the CPB infestation. In the second half of project implementation, increases in volumes could be expected and the project would increase its focus on the promotion of quality, and the adoption of sustainability practices in response to market demand when they are expected to provide better returns for smallholders. In the coffee sector, the strategic analysis carried out with the CIC indicates that the best opportunities for PNG lie in the fast growing market segments for differentiated coffees. Project activities will enable farmers and other stakeholders in the industry to assess those opportunities, and promote the adoption of the related practices, when they are expected to generate additional benefits for smallholders or to limit their risks (e.g. guaranteed minimum price under Fair Trade).

B. Technical

62. PNG has a strong technical base for the continued development of the smallholder cocoa and coffee sectors. The country has several decades of experience with the development of both crops. Research institutions in the sector (NARI, CCIL, Coffee Research Institute) have acquired recognition at regional level. Processors and exporters also provide strong technical expertise and inputs to smallholder farmers. The project would strengthen the technical base by providing highly specialized, targeted technical inputs in areas such as industry governance, sustainability management and standards and regulations improvement.

63. An increased focus on quality is needed to ensure the sustainability of both the cocoa and the coffee industries. PNG cocoa's premium on world markets testifies to the efficiency of quality management systems. If cocoa quality deteriorates, PNG cocoa will lose its premium on world market with the subsequent loss of income for producers. The impact of the CPB presents a strong challenge for the quality of PNG cocoa and will receive specific attention under the project, building on the experience already developed by sector institutions. Experience in ENB Province shows that the incidence of CPB infestation can be limited to very manageable levels (10 percent) through the application of good farm management practices (pruning, regular harvesting, sanitation and shade control). This also provides the opportunity to help smallholder production systems reach higher productivity levels by planting/replanting (using high yielding hybrid clones) and by the application of improved management practices that could double the current average yield from 300 to 600 Kg/ha and above. Finally, the promotion of improved processing practices would be another critical element to maintain the quality of PNG cocoa beans.

64. PNG's production factors (labor costs, processing and transport conditions) make it unlikely to be very competitive in the field of bulk commodity coffee where it is a price-taker with a substantial penalty in the global markets. Conversely, PNG's best competitive opportunities to improve incomes for the long term lie in the growing global trends toward differentiation (coffees differentiated by quality or sustainability certifications are among the fastest growing segment on global markets). By moving toward better remunerated production and improving the quality of its coffee - in stages - all PNG producers could benefit as demand for these differentiated coffees increases and, eventually, as the performance and image of PNG coffee improves, the substantial penalty it receives (C market) diminishes. The focus of PPAP would therefore support the development of differentiated coffees, as well as improvements in the productivity and quality of smallholder coffee. Given the importance of processing in that respect, the promotion of improved processing practices would be supported by the project.

65. Under Component 3, infrastructure works would generally involve replacement and improvement of the pavement layers and drainage on existing minor roads using basic tried and tested technology, in compliance with national standards. Subsequent road maintenance would also involve simple labor-based or equipment-based activities. Any works involving wharves and/or jetties would be designed and constructed using traditional methods to comply with national technical standards.

C. Fiduciary

66. A Financial Management Assessment, consistent with the Financial Management Arrangements in Bank Projects (Guidelines to Staff) was undertaken at pre-appraisal. The overall financial management risk is expected to be substantial but would be reduced to moderate through a number of measures detailed in Annex 7. These include the recruitment of additional, experienced financial management staff in the PCU and PMUs, support by a Financial Management Advisor (TA), additional training under the project and the strengthening of internal audit functions of implementing agencies. A Financial Management Manual has been

prepared. Designated accounts would be established with each PMU in accordance with the decentralized management design of the project.

67. A procurement capacity assessment of project implementing agencies has been undertaken at pre-appraisal. The overall procurement risk is expected to be "high" consistent with the Country Procurement Assessment Report. The main risks concerning procurement under the project are expected to include: (a) lack of procurement expertise and (b) recent changes in the national procurement regulations. An action plan has been developed and adopted to mitigate those risks and it is presented in Annex 8. Actions include the recruitment of qualified procurement officers, the preparation of a Procurement Manual, and the provision of Technical Assistance. The Procurement Manual and a procurement plan for the first 18 months of project implementation have been prepared.

D. Social

68. Coffee- and cocoa-growing are an integral part of farming systems and rural livelihoods in the project area and they play a critical role in helping households meet their cash requirements. As part of the preparation of the Social Assessment, surveys and consultations have been conducted in potential project target areas to obtain an in-depth understanding of current social challenges and the potential impact of the project on local communities. The surveys and consultations that were part of the Social Assessment included a wide range of stakeholders, including community representatives, local level governments (LLG), grower associations and cooperatives, youth and women's groups, extension workers, and the private sector in a sample of locations similar to those expected to be eventually covered under the project. The Social Assessment concluded that the overall social impact of the project would be positive.

69. The project triggers OP 4.10 on Indigenous Peoples (IP) as most of the communities in the project provinces fulfill the characteristics of indigenous peoples as per paragraph 4 of OP 4.10. As a result, the Borrower will not prepare a separate Indigenous Peoples Plan/Indigenous Peoples Policy Framework, but the following aspects of an IP Plan have been integrated in design and preparation of the project (See Annex 10 for details):

(a) *Free, prior and informed consultation leading to broad community support (during preparation):* During consultations conducted by the team carrying out the Social Assessment, community members expressed interest in the project and voiced their opinions on the coffee and cocoa sub-sectors. In addition, interviewees were keen to understand the potential that PPAP could have on their agricultural activities. As a result of the Social Assessment, Government determined that there was broad support for the project activities;

(b) *Free, prior and informed consultation leading to broad community support (during implementation):* Given the demand-driven nature of the project, the exact location of various project activities will only be determined during implementation. The National Department of Agriculture and Livestock has therefore prepared a Beneficiaries Participation Framework (BPF) which lays out the guidelines for

community consultation during project implementation. This has been integrated into the PIM to ensure that the implementation of the BPF is monitored and evaluated;

(c) *Measures to ensure social and economic benefits:* The project design pays particular attention to groups that may be vulnerable to exclusion from project benefits and will explicitly target these groups, these include:

- Farmer groups and communities with limited access to information, production innovations, and markets. These disadvantages often coincide with geographic remoteness such as the remote areas of the Highlands;

- Farmers in cocoa growing areas whose livelihoods have been significantly impacted (negatively) by the cocoa pod borer and who cannot find alternative income sources;
- Female laborers and farmers, and young farmers who like women are often invisible stakeholders.

70. The PPAP is addressing these challenges by incorporating measures to provide benefits and mitigate potential adverse effects of the project to these groups. Measures include, inter alia: paying attention to gender balance among service providers and extension workers; providing support to low-capacity groups in the preparation of proposals under Component 2, ensuring that outreach efforts reach women's groups, and including engagement with women as a criteria in the partnership selection process; and, in Component 3, financing the rehabilitation of existing transport links that provide access between smallholder farming communities and marketing or processing points. Those improvements will also facilitate extension services.

71. The project will not finance activities that require voluntary or involuntary resettlement or damage to physical assets. Activities implemented by smallholders under Component 2 will be on their own land. Where the project will use land for commonly-held purposes (roads, paths, buildings) either the land will have already been alienated (existing roads) or is already communally accessed (existing walking tracks). The project will minimize land acquisition (either for temporary purposes or for permanent purposes) through appropriate design of infrastructure rehabilitation works. Minor land acquisition may be required but only when land is offered voluntarily by the community. Activities under Component 3 which might lead to a loss of income (e.g. crops in the right-of-way when roads are rehabilitated) would be addressed by the Compensation Policy Framework, consistent with OP4.12.

E. Environment

72. Coffee and cocoa production in PNG is dominated by smallholder farmers (over 85 percent of production) with relatively minimum environmental impact overall. The proposed PPAP is expected to enhance positive environmental outcomes through the promotion and adoption of improved farming practices, sustainability practices, better pest management through an integrated approach, and improvement of waste management in the processing of these crops.

73. Notwithstanding, consistent with the provisions of Environmental Assessment OP4.01, the EA category assigned to the proposed PPAP is "B" due to concerns of adverse impacts from (a) the civil works being financed under Component 3, (b) the management of the cocoa pod borer and other pests, and (c) the potentially significant water use required for the processing of coffee and, for both crops, the management of liquid waste material at the processing point. However, these impacts are expected to be local and can be acceptably managed through widely available mitigation measures.

74. In addition to OP4.01, the proposed project also triggers Pest Management OP4.09. The National Department of Agricultural and Livestock, consistent with the requirements of these two policies, has prepared an Environmental Assessment (EA), and an umbrella Environmental and Social Management Framework, including an Integrated Pest Management Plan and a Compensation Policy Framework. As part of the EA preparation process, consultations have been held with representatives of key stakeholders including potentially affected people. The final ESMF has been disclosed both locally in Port Moresby and in the provinces where the project will first be implemented and also at the Infoshop of the World Bank.

F. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[X]	[ ]
Physical Cultural Resources (OP/BP 4.11)	[ ]	[X]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Indigenous Peoples (OP/BP 4.10)	[X]	[ ]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)*	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

G. Policy Exceptions and Readiness

N/A.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

Annex 1: Country and Sector Background

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Country background

1. *A dual economy*. PNG is a resource-rich, low income country of approximately 6.5 million people, with a dual economy. The modern extractive sector draws on substantial reserves of metal ores and hydrocarbons and accounts for 30 percent of GDP and 80 percent of merchandise exports, however it generates only a small fraction of employment. The majority of the population (86 percent) resides in rural areas and is largely dependent on semi-subsistence agriculture. Despite strong economic growth since 2005, fuelled by the global commodity boom, half of the population lives below the national poverty line[8]. The pattern of growth based mainly on the extractive industries sector has not led to improvements in living standards in rural areas.

2. *Disadvantaged rural areas*. Overwhelmingly, poor people live in rural areas, with the most disadvantaged residing in areas characterized by lack of access to markets, services and income generating opportunities. Agricultural support services and banking services are virtually non-existent for the majority of smallholder farmers. Transport networks are in poor condition, with about 85 percent of main roads and nearly all feeder roads impassable or abandoned during some time of the year. It is estimated that 17 percent of the population has no access to any road and 35 percent lives more than 10 km from a national road. Shipping and air transport to isolated rural communities are in decline and wharves and airstrips are falling into disrepair. Finally, low and order issues are widespread and further increase the risks of doing business in rural areas.

3. While some provinces are resource rich and draw high revenues from the extractive industries sectors, work carried out by the National Fiscal and Economic Commission shows that this does not translate in better access to services and infrastructure. Pockets of poverty can be found in most provinces, even the wealthiest, and there are substantial disparities between districts and at lower level. The provinces covered by the PPAP include some of the most disadvantaged districts at national level, such as Pomio in East New Britain, Jimi in Western Highlands, Kundiawa in Simbu, and Obura-Wonenara in Eastern Highlands.

Sector policies and institutions

4. *Government has made agricultural development a priority*. The GoPNG's Medium-Term Development Strategy (MTDS) 2005-2010 places agriculture at the center of the government's growth strategy and recognizes the need to develop the non-mineral economy, with a focus on export-led growth. GoPNG's renewed commitment to agricultural development has been demonstrated through the National Executive Council (NEC)'s decision to prepare a National Agriculture Development Plan (NADP) for the period 2007-2016. The NADP was finalized by the National Department of Agriculture and Livestock (DAL) and endorsed by NEC in 2007. A further decision by NEC in 2007 committed funding to the NADP for an annual amount of Kina 100 million over its ten year implementation period. The Plan recognizes the limitations imposed by a dearth of public goods in the areas of infrastructure, institutional capacity, access to

[8] Which allows for 2,200 calories per adult per day and an allowance for basic non-food expenditures. The population below the national poverty line was 37.5 percent in 1996.

information and access to financial services. These in turn hinder technology development and dissemination, market access, and private investments.

5. *Public institutions are struggling to adjust their roles and deliver services*. While the NADP provides an overall framework for the agriculture sector, translating it into a coherent set of sector programs has been challenging. DAL has not been successful at developing adequate governance mechanisms for the implementation of the NADP. The collaboration among the plethora of agencies involved in the agriculture sector remains limited. A complex institutional set up, with responsibilities for the delivery of agricultural services shared between several commodity boards and the under-resourced Departments of Primary Industry at provincial level has generally resulted in competition for resources rather than cooperation. Public extension services and other sources of information for farmers are virtually inexistent in most rural areas. DAL has also struggled to adjust to its reduced mandate focused on overall sector leadership and coordination, policy development and monitoring and evaluation.

6. The NADP highlights the role of the private sector in agricultural development, and indeed the private sector has stepped in and is a primary provider of inputs, marketing, sustainability certification and quality control services to smallholders. However, these efforts are currently limited by their perception of risks in expanding investments to farmers and by their own financial capacity. In addition, where deteriorated infrastructure creates bottlenecks, complementary investments in transport infrastructure are needed to open up market access and improve the livelihoods of rural households.

7. *Agriculture is central to rural livelihoods*. Agriculture accounts for approximately a third of GDP and employs three fourths of the labor force. The sector is dominated by smallholder farming systems. A robust subsistence food production system dominated by root crops that provide the staple food of most Papua New Guineans generally provides sufficient nutritious food on a year-round basis. Coffee and cocoa are the main cash crops, with respectively about 30 percent and 20 percent of the labor force nationwide involved in their production, processing and sale. Cash is increasingly required to meet the costs of education, health and other goods and services and has also become indispensable in many transactions such as bride prices, compensation payments and other social obligations.

8. The overall performance of the sector, however, has been disappointing over the past decade, due to inconsistencies in sector policies, underinvestment and the collapse of publicly-funded support services. Renewed attention to the sector at the highest level of government provides an opportunity to reverse those trends. This has become even more urgent as the upcoming LNG project is expected to have a significant impact on other sectors of the economy, including agriculture, through increased costs of labor and possible appreciation of the Kina (PGK).

Coffee

9. *Demand for PNG coffee*. Arabica coffee is PNG's most important export crop in terms of its economic and social impact. PNG coffee export revenues consistently exceed US$ 100 million annually (PGK409 million in 2007), equivalent to 30 percent of agricultural export revenues, of which on average between 65-70 percent of FOB value goes to growers. Coffee production is the backbone of the rural economy in the Highlands, with two provinces, Western Highlands and

Eastern Highlands, accounting for 84 percent of national exports and Simbu Province providing another 8 percent. Almost all coffee produced in PNG is Arabica, and approximately 50 percent falls into the Y1 Grade. Certified coffees represent a growing but still small share of production (3 percent). PNG is a small producer at international level (less than 1 percent o world supply) and a price taker. The main destinations for PNG coffee are Germany (44 percent), the United States (20 percent) and Australia (19 percent). Exporters foresee a sustained demand for PNG coffee and consider that markets have the capacity to absorb a doubling of high quality Y Grade and premium smallholder coffee from PNG.

10. *Issues affecting the industry*. The majority of coffee (88 percent) is produced by about 370,000[9] smallholder producers nationwide, in low-input low-output systems where soil fertility is maintained by nitrogen fixing shade trees and organic matter, and where weeds are suppressed by the level of shading. Fertilizers and pesticides are rarely used. Productivity is low, with yields on average 30-50 percent of their potential, and quality has also been deteriorating. Total production has been below 1 million bags in recent years with a decreasing long-term trend. There is little empirical data available but the reasons behind low productivity have been documented in recent research: the lack of support services to promote improved tree husbandry practices; lack of adequate replanting (most of the trees are over 40 years old and well beyond their optimal production age); constraints to market access and quality issues that reduce farm-gate prices and reduce smallholders' incentives to invest or harvest coffee; and law and order issues.

11. *Structure of the coffee industry*. The sector is highly competitive with itinerant buyers purchasing the majority of the crop from smallholders as parchment, while growers with good access to factories may sell cherry directly to registered buyers or wet factories. The Coffee Industry Corporation (CIC)[10] has registered 17 exporters, 103 processors (58 dry factories and 45 wet factories) and five manufacturers, and estimated that there were 5,000 itinerant buyers in PNG in 2007. The six larger exporters (those that export more than 50,000 bags or 3,000 tons) account for 85 percent of total exports. There are some coffee growers cooperatives registered with the CIC however few of them are effectively functioning and providing services to their members.

12. To secure supply in the competitive and risky environment in which they operate, a number of exporters and processors in the coffee industry are already working with groups of farmers to improve productivity, quality, and provide sustainability certification. In 2009, the CIC estimated that between 6,000 and 10,000 coffee-growing households were involved in one of the internationally recognized certification schemes, generally through support from processors and exporters. Other partnerships have been established between exporters and farmers for the production and marketing of gourmet coffees. Surveys carried out during the preparation of the PPAP indicate growing interest from farmers' groups to join those schemes, and increased investments in differentiated coffees by the major exporters, consistent with the trend in demand observed at international level (see Annex 9).

[9] Or approximately 2.5 million people who are dependent on coffee for their livelihood.
[10] The CIC is the statutory body responsible for the regulation of the industry. Its head office is in Goroka, Eastern Highlands Province, and it has field officers in all coffee growing Provinces.

13. *Strategic directions for PNG coffee sector*. The CIC has formulated a 10-year strategic plan covering the period 2008-2018 which recognizes the need to improve industry coordination and also emphasizes the need to increase returns to smallholder growers to ensure the sustainability of the industry. To that end, there is increasing consensus within the industry that PNG should build on its competitive advantage in the higher value segments of the market. The main destination markets for PNG coffee have seen a dramatic increase in the share of differentiated coffees imported: in Germany, that share has increased from a few percents in 1990 to over 60 percent in 2008. There is general acknowledgement that an improvement in the quality of PNG coffee, including moves to take advantage of opportunities offered by sustainability initiatives, is critical for the sustainability of the industry. There has been a significant increase in the proportion of PNG coffee marketed as Organic, Fair-trade and Fair-trade Organic over the past years although that share remains very low compared to other producing countries such as Jamaica, Costa Rica, Guatemala or El Salvador.

Cocoa

14. *Demand for PNG cocoa*. About 20 percent of PNG's rural population nationwide is engaged in cocoa production, processing and sale. In 2008, PNG exported 51,000 metric tons of cocoa beans. There is strong and sustained demand for PNG cocoa as documented by extensive market analysis done by the Cocoa Board[11] and exporters. Europe and the USA represent 52 percent of the market for PNG cocoa beans, with PNG cocoa benefiting from a fine flavor status which brings a premium in NYC exchange (over US$ 200 per ton over Ivorian beans). PNG cocoa beans are also sought after in those markets for their good physical properties (large beans, high fat content). PNG is the main source of fermented cocoa in East Asia, and benefiting from its proximity to Asian grinders and their demand for well fermented and good physical quality cocoa beans (Singapore, Thailand, Malaysia and Indonesia buy 46 percent of PNG cocoa). Exporters unanimously consider that those markets could easily absorb a doubling of PNG cocoa production and the issue is the capacity of PNG to respond to market demand for sustained quantity and quality of cocoa production.

15. *Issues affecting the sector*. Two provinces (East New Britain and Autonomous Region of Bougainville) produce 70 percent of total cocoa exports, with another province (East Sepik) producing another 12 percent. Over 85 percent of PNG cocoa is produced on small holdings by an estimated 150,000 coastal households[12] with a low average yield of 300 kg per hectare. They typically follow a low-input low-output farming system mixing food crops with cocoa trees. In addition to low productivity, quality management is another area for improvement. Quality problems with cocoa from the ARB in particular have been an issue for some time. Many large central fermentaries operated by private plantations and cooperatives were destroyed during civil conflict and the breakdown in trust between groups has prevented their re-establishment. Buyers have started to report a decrease in cocoa quality primarily due to inadequate fermentation and/or drying of beans.

[11] The Cocoa Board is the statutory body responsible for the regulation of the cocoa industry. It has a head office in Rabaul, East New Britain Province, and field officers in all cocoa growing Provinces.
[12] Or just over a million people who are dependent on cocoa for their livelihood.

16. In the immediate short-term however, the greatest threat both to the productivity and quality of PNG cocoa arises from the Cocoa Pod Borer (CPB)[13]. Cocoa is the largest single source of income in East New Britain Province and the Autonomous Region of Bougainville and the arrival of the CPB threatens to devastate their economy. Severe losses are reported in affected areas (50 percent and over), and further sharp reductions appear inevitable in the coming years unless there is a dramatic take-up of management practices that reduce CPB losses. With the fragile recovery of the economy of ARB essentially reliant on the cocoa industry, the negative socio-economic impact of a CPB infestation could be even greater than that observed in ENB Province.

17. The arrival of the CPB has rendered the traditional low-input low-output system no longer an option. Simple technical responses are available to manage and reduce the CPB infestation[14]. The successful response requires a dramatic change to an intensive labor regime. The IPM 5-step CPB response program developed by NGIP-AgMark has enabled smallholders in affected areas to achieve 75 percent of their previous production levels through additional labor inputs only, and 90 percent if spot-spraying of insecticide is also adopted. If these measures are accompanied by re-planting with high-yielding hybrid clones, production can increase to above pre-CPB level from a reduced household cocoa area. A recent ACIAR project has demonstrated that smallholder farmers can increase their yields up to five times using those improved tree husbandry practices and improved planting material. While technical solutions are available for CPB control, their adoption will require a substantial scaling-up of farmer support services and on-farm investments. Another key element of the CPB response strategy is diversification into other crops, in particular for households who will find it difficult to find the time and labor to maintain cocoa blocks, notably widows and families with disabled fathers, who are likely to abandon them.

18. Emergency funding has been provided by GoPNG and, in mid-2009, Kina 5 million has been provided to the ENB Province Government to implement emergency response measures. An effective group of industry specialists and political leaders has come together as the Cocoa Pod Borer Response Coordinating Committee (CPBRCC) to oversee the response strategy. Similar committees have been established in other affected provinces, including ARB, where CPB was first detected in mid-2009.

19. *Structure of the cocoa industry.* The marketing chain is driven by the private sector, with around 2,500 licensed cocoa dealers buying wet beans from producers and 5,500 licensed fermentaries operating throughout the country in 2003. The sector has been relatively concentrated with 6 to 7 exporters in total. While there is competition between exporters, NGIP-Agmark is the dominant cocoa exporter, accounting for 60 to 70 percent of the market.

[13] *Conopomorpha cramerella*. Infestation by CPB has had a dramatic impact on the cocoa industry in parts of Southeast Asia where crop losses have been reported at up to 90 percent of former production level. CPB was first detected in ENB Province in March 2006, with subsequent detections in West Sepik Province (June 2006), Madang Province (April 2008) and Bougainville (August 2009). An eradication program was implemented in ENB Province in 2006-2007 but CPB re-emerged within the eradication zone in late February 2007 and it has subsequently spread rapidly in the province.

[14] IPM approaches to control CPB have been developed and tested by Vudal University, the Cocoa Coconut Research Institute (CCIL) and the main exporter, NGIP-Agmark.

20. A number of private operators, including NGIP-Agmark have been investing in support services for farmers through various modalities – training on existing plantations, provision of inputs and advice, etc – and this trend has accelerated since the arrival of the CPB in 2006, as buyers try to secure their supply.

Market Access Infrastructure

21. *Market access conditions*. Physical market access conditions vary in the proposed PPAP provinces, for instance:

(a) The Eastern Highlands road network is currently 1,185 km in total comprising 306 km of national roads, 227 km of provincial roads and 651 km of district roads. The condition of the provincial and district roads is fair to poor with a considerable length of the network not trafficable, especially when wet;
(b) ARB is still in recovery from the devastation of armed conflict in the 1990-1995 period that resulted in the destruction of practically all market access infrastructure. Under post-conflict recovery programs, funding was provided for road rehabilitation from 2000 to 2006, and 327km of the Coastal Trunk Road on the main island was rehabilitated, except for the rebuilding of destroyed bridges, together with the maintenance of 600 km of sealed and unsealed pavements and the rehabilitation of several wharves. Transport infrastructure – including the condition of wharves and storage facilities - remains a constraints for the marketing and export of cocoa from the province;
(c) Conversely, market access infrastructure is relatively well developed in ENB province, with the Gazelle Peninsula boasting the most intensive and best maintained road network in PNG that provides good access for the majority of smallholder cocoa growers. The areas where the road network fails to provide a reliable link for potentially productive land are the Lassul area in the Bainings District and the Pomio area in the South eastern corner of the province. There are 944 km of national and provincial roads in ENB Province, most of which are in good to fair condition with only 2 percent being in poor condition.

22. *Sustainability of Road maintenance*. Road maintenance in PNG presents serious challenges - physical, technical, political and financial. The extensive distances involved in connecting dispersed centers of population, the rugged terrain, very high rainfall, unstable and erodible soils, all contribute to a considerable annual funding need, as well as mobilization of human resources, plant and materials, to maintain the nation's public road network in a serviceable state, yet available resources to meet these needs are scarce. Inevitably allocation of funds from national, provincial and local level governments, as well as donor support, depends on prioritization, so that the lowest trafficked roads suffer from a sustained lack of funding, and are consequently generally in a poor state of repair.

23. A summary appraisal of existing road maintenance models being used in PNG by the National Roads Authority (NRA), the World Bank supported Road Maintenance and Rehabilitation Project (RMRP) and Smallholder Agricultural Development Project (SADP), the ADB-supported Highlands Region Road Improvement Investment Program (HRRIIP) and the

AusAID-supported Transport Sector Support Program (TSSP) is provided in Table 1 below. The typical Provincial Works Dept maintenance model is included for comparison purposes.

Table 1: Applicability of existing road maintenance models to PPAP

Scope of program	Maintenance model			Applicability to PPAP
	Funding	**Implementation**	**Prioritization**	
National Roads Authority (NRA)				
Enabling legislation covers 'public roads' but current program focused on progressively taking over rehabilitated sections of key national roads from DOW	Road Fund from road user charge (currently diesel fuel levy)	Routine (4-cycle/annum), periodic and emergency maintenance on tendered performance-based, annual or multi-year term contracts. Main contractor employs communities for roadside maintenance. Consultant supervised.	Based on RAMS outputs	1. *Funding:* some form of user charge/levy on beneficiaries could possibly be feasible, but practicalities of collection and management likely to be problematic 2. *Implementation:* NRA proposes employing Community Relations Officer (CRO) for each contract to liaise between contractor and roadside communities, to maximize local employment etc. PPAP should monitor progress of this initiative.
Road Maintenance & Rehabilitation Project (RMRP)				
Rehabilitation and routine maintenance of national and provincial roads and bridges in 8 coastal provinces.	Routine maintenance fully funded by GoPNG or PNGSDP	Routine (3-cycle) maintenance on tendered annual term contracts. Mix of unit rate- and performance-based contracts, consultant supervised	Annual work program / RAMS output	1. *Funding:* Innovative funding options will be required for PPAP. PNGSDP funding a possibility. 2. *Implementation:* PPAP could use some RMRP methods (e.g. community-based roadside maintenance)
Smallholder Agricultural Development Project (SADP)				
Upgrading and maintenance of provincial access roads, establishment of a sustainable financing mechanism for road maintenance in oil palm growing areas	Road Maintenance Trust Fund established in each smallholder oil palm scheme, financed by smallholders, palm oil millers & provincial governments	Upgrading / reconstruction of 550 km of existing provincial access roads serving oil palm catchment area. The project would finance construction and maintenance contracts & purchase of non-routine maintenance equipment.	Unknown	1. *Funding:* awaiting details of SADP user-charge mechanisms – could be replicated in principle if suitable. 2. *Implementation:* Details not known, but aspects could provide possible model for PPAP
Highlands Region Roads Improvement Investment Project (HRRIIP)				
10-yr rehab &	Routine	a) 10-yr 'build-	Annual program	1. *Funding:* As per NRA

routine maintenance of national & provincial roads in highlands provinces	maintenance fully funded through NRA	and-operate' tendered contracts. Maintenance portion performance-based, falling under NRA, consultant supervised b) 10-yr tendered maintenance contracts, initially unit rate-based, then performance-based contracts managed by NRA	/ RAMS output	above. 2. *Implementation:* As per NRA above. Contracts are likely to include special provisions for community-based roadside maintenance. PPAP should consider the merits of such provisions.
Transport Sector Support Program (TSSP)				
Improving governance, capacity building, and institutional strengthening, & support for priority maintenance and rehabilitation works.	Joint donor / GoPNG funding	Generally separate unit rate tendered contracts for rehabilitation, routine, periodic & emergency maintenance. Consultant / TA / Departmental supervision		1. *Funding:* Heavily reliant on donor funding, so not applicable 2. *Implementation:* PPAP should review the provisions in TSSP contracts for ensuring maximum level of local employment
Provincial Works Departments				
Limited routine, periodic & emergency maintenance. Technical & limited material support to Districts / LLG	Annual Provincial Government budget	Mix of unit rate contract, plant –hire, force account / direct labor, community contracts etc. Consultant or departmental supervision	Needs assessment / local priorities	1. *Funding:* periodic (5- 7 yearly re-sheeting) of PPAP roads would most likely need to be funded by Province 2. *Implementation:* PPAP routine maintenance is expected to employ similar methods

24. The table clearly shows that the trend under NRA and current donor-supported models is to outsource all forms of road maintenance – routine, periodic and emergency - at national, provincial, district and LLG level, generally using performance-based term contracts. Within DOW and provincial works departments, however, there is a great willingness and some limited capacity to execute maintenance works by force account, when other options are not available.

25. PPAP aims to establish partnerships between some or all stakeholders - provincial, district and local level governments on the one hand, beneficiary communities and project partners on the other - to share the burden of maintenance on roads that are rehabilitated under the project. The PPAP model therefore needs to be sufficiently flexible to meet the different situations pertaining to individual sub-projects and while specific arrangements developed for each case

will most likely draw on some aspects of one or more of the existing models, they are not expected to replicate any single one directly.

Addressing Market Failures

26. Both for coffee and cocoa production, smallholder farmers are faced with similar constraints and significant market failures that impede their performance and their ability to respond to market signals. They are disadvantaged by significant diseconomies of scale resulting in high transaction costs and limited market access. Smallholder farmers have little access to information, new technologies and improved planting material. Because of information asymmetries, few farmers have knowledge about quality or standards requirements for higher remuneration or other market opportunities. Finally, the location of many smallholder farmers means that they lack access to roads and the necessary infrastructure for coffee and cocoa processing. Their remoteness also increases the costs of interventions to support producers. Finding suitable forms of collective action to overcome these disadvantages requires considerable efforts. A history of failed attempts at various forms of cooperatives or joint interest groups in PNG attests to the associated risks. These risks also make it difficult for commercial banks to provide services to smallholder farmers and their organizations.

27. Agribusiness enterprises and traders are critical for communicating market demand to producers and establishing value chains that effectively link them to the market. However, building long-term relationships with smallholder farmers involves considerable transaction costs on the part of the agribusiness. These include: identifying producers; reaching them in difficult access areas; establishing farmer groups; and introducing good agricultural practices. The public sector plays a critical role in strengthening smallholder competitiveness through support for better technology transfer and improved organization. In addition, there is a need for critical infrastructure where supply chains have been broken due to deteriorating roads that no longer permit farmers to cost-effectively bring their products to market. However, weak capacity to deliver services severely limits public intervention. Strengthening public institutions is an important step, but will not be sufficient to reach the majority of farmers or to reach them consistently.

28. Since relationships along the supply chains are defined primarily by exporters/processors, improving both the productivity and quality of smallholder production, as well as addressing dire threats to those industries such as the cocoa pod borer, require the active involvement of these commercial operators. Dozens of processors and exporters have been effectively delivering producer support and so are natural partners to reach producers cost-effectively. Fostering a scaling-up of those market-oriented interventions is expected to partly offset the limited outreach of public institutions. This entails selective public funding (with clear eligibility and selection criteria) to offset some of the investment risks and stimulate the expansion of regular and ongoing linkages between private enterprises and smallholder farmers.

29. This will also require a coordinated response from the multiple government agencies involved in the agriculture sector at various levels – the Department of Agriculture and Livestock; the Cocoa Board; the CIC; Provincial and local governments; and the research, training and education institutions.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Sector Issues	Project	Ratings	
		Implementation Progress (IP)	Development Objective (DO)
World Bank financed			
Cash crops (oil palm), rural roads	Oro Smallholder Oil Palm Development Project (FY93, closed FY01)	S	S
Cash crops (oil palm), rural roads	Smallholder Agriculture Development Project	MU	MU
Roads	Road maintenance and Rehabilitation Project	S	S
Post-disaster reconstruction	Gazelle Restoration Project	S	S
Emergency assistance	El Nino Drought Response Project	U	U
Other Development Agencies			
Asian Development Bank	Roads maintenance project		
Asian Development Bank	Smallholder Support Services Pilot Project (closed 2007)		
AusAID	National roads maintenance project		
AusAID	Community Development Scheme		
AusAID	Support for the National Agriculture Research System		
ACIAR	Support for coffee and cocoa research programs		
NZAID	Institutional Strengthening System for FPDA		
NZAID	Support for DAL functional and expenditure review		

Annex 3: Results Framework and Monitoring

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Results Framework

PDO	Project Outcome Indicators	Use of Project Outcome Information
To improve the livelihoods of smallholder cocoa and coffee growers through the improvement of the performance and sustainability of value chains in cocoa- and coffee-growing areas.	• the net income of smallholder cocoa and coffee growers in the project area • the number of farm households adopting improved farming practices • the number and coverage of partnerships implemented and/or scaled up and likely to be sustained • the percentage of the export price and quality premiums, received by farmers	These indicators will help assess the extent to which the activities of the project resulted in improved livelihoods for small producers engaged in coffee and cocoa production in project areas.
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
Result 1: Establishment of effective, relevant, and representative industry coordination committees, contributing to improved sector policy	• the percentage of cocoa and coffee industry coordination committee members reporting satisfactory value, representativeness and relevance of the committees • the number of policy and regulatory measures adopted and implemented • the percentage of buying points with access to price and quality information • Percentage of smallholders reporting increased access to industry information	Assess the implementation progress of component 1
Result 2: CIC and Cocoa Board establish sustainable information systems and produce high quality M&E data and reports	• the availability and dissemination of quality M&E data and reports	Ensure that adequate M&E is performed and available and, if not, take corrective measures
Result 3: PMU has adequate capacity to efficiently procure goods and services and ensure financial reporting and controls	• Timely implementation of procurement activities and satisfactory financial management reports.	Ensure that adequate procurement and financial management are applied and, if not, take corrective measures
Result 4: Smallholders have adopted improved cocoa management practices in project areas which results in good control of CPB infestation and improved yields	• CPB control plan has been developed and is in place • Losses due to CPB infestation are reduced to sustainable levels • Cocoa yields have increased for smallholders	Assess the implementation progress of component 2, particularly in terms of: • Effectiveness of the control of the CPB infestation , and, if necessary, revise and adjust the CPB control plan

		• Effectiveness of the adoption of the improved production management practices and their ability to deliver the outcome in terms of increased cocoa yields; if necessary, revise and amend the partnership agreements
Result 5: Smallholder cocoa plantations have been rejuvenated and diversification crops have been introduced and disseminated	• Number of hectares of cocoa replanted or rejuvenated with improved planting material • Number of hectares of shade and diversification crops planted	Assess the implementation progress of component 2, particularly in terms of the effectiveness of the technical package and support measures to deliver the acreage to be replanted, and , if necessary, revise and amend the partnership agreements
Result 6: The quality of cocoa delivered by farmers in targeted areas has been maintained or improved	• Percentage of production rejected • Average dried cocoa moisture content in ARB reported by buyers	Assess the implementation progress of component 2
Result 7: Smallholders have adopted improved coffee garden/block management practices in project areas resulting in improved yields and quality of coffee delivered	• Coffee yields have increased for smallholders	Assess the implementation progress of component 2, particularly in terms of the effectiveness of the adoption of the improved production management practices and their ability of to deliver the outcome in terms of increased coffee yields ; if necessary, revise and amend the partnership agreements
Result 8: Smallholder coffee gardens/blocks have been rejuvenated and diversification crops have been introduced	• Number of hectares of coffee rejuvenated • Additional volume of diversified products sold	Assess the implementation progress of component 2
Result 9: The quality and marketability of coffee along the value chain has been improved	• Percentage of differentiated coffee exported from PNG by value • Percentage of coffee with sustainability certification exported from PNG by volume and value • Percentage increase in price received by farmers in project areas over the standard quality (Y1) price	Assess the implementation progress of component 2
Result 10: Women contribute to increases in household income through involvement in improved farming practices, processing and marketing	• Number of women in farming households reporting increased access to, and use of, information on improved farming practices, processing and marketing	Assess effective benefits of project activities to women under Component 2 and 3
Result 11: Critical transport infrastructure has been improved and is more likely to be maintained	• Number of Km of roads rehabilitated and maintained as per Maintenance Agreements • Amount of investment in alternative transport facilities	Ensure that the objective of component 3 is achieved

.

Arrangements for results monitoring

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
(1) Net income of smallholder cocoa and coffee growers (2) Number of farms adopting improved farming practices (3) Number & coverage of partnerships implemented and/or scaled-up and likely to be sustained (4) Percentage of the export price and quality premiums received by farmers	TBD 0 0	3,500 7	7,800 15	12,900 25	18,500 35	24,000 50 70% on average	• Base line survey • Project semi-annual implementation reports • Project completion report • Additional surveys (PY3, PY6)	Surveys Regular monitoring by PCU/PMUs	PCU, PMU Partnership participants
Intermediate Outcome Indicators									
Result 1 (1) The percentage of cocoa and coffee industry coordination committee members reporting satisfactory value, representativeness and relevance of the committees (2) The number of policy and regulatory measures adopted and implemented (3) Percentage of buying points with access to price and quality information (4) Percentage of smallholders reporting increased access to industry information	0 0 0 0					> 70% 5 100% <70%	• Project semi-annual progress reports • Minutes of meetings of industry boards • Annual reports of cocoa and coffee industry organizations • Additional surveys	Interviews of key informants	DAL PMU Partnership participants
Result 2 (1) Availability and timely dissemination of quality	0						• Project quarterly M&E report • Project semi-annual	Assessment Supervision	DAL Industry boards PMU

M&E data and reports							progress reports		
Result 3 (1) Availability and timeliness implementation of procurement activities and satisfactory financial management reports	0						• Project semi-annual progress reports • Project quarterly financial management reports	Assessment Supervision and annual audits	PMU
Result 4 (1) CBP losses are limited to 10 percent of cocoa in project areas of ENBP and ABR (2) Increase in average cocoa yields from 300kg/ha to 600 kg/ha in project areas (3) CPB control plan has been developed and is in place	(50%) 300	30% 350	25% 450	25% 550	10% 600	10% 600	• Project semi- annual progress reports • Additional surveys	Industry board reporting Interviews of key informants	PMU Partnership participants
Result 5 (1) Number of hectares of cocoa replanted or rejuvenated with improved planting material (2) Number of hectares of shade and diversification crops planted	0 0	1,400 100	3,500 400	6,500 600	10,000 800	13,000 1,000	Project semi- annual progress reports Additional surveys	Reporting by partners Interviews of key informants	PCU, PMU Partnership participants
Result 6 (1) % of production rejected in project areas (2) Average dried cocoa moisture content in ARB reported by buyers						<5% 7%	Project semi- annual progress reports Additional surveys	Reporting by partners Industry board reporting	PMU Industry board Partnership participants
Result 7 (1) Increase in average coffee yields from 500kg/ha to 800 kg/ha in project areas	500	550	650	750	800	800	Project semi- annual progress reports Additional surveys	Reporting by partners Industry board reporting Surveys	PCU, PMU Partnership participants
Result 8 (1) Number of hectares of coffee rejuvenated (2) Additional volume of	0 0	2,100	4,200	6,300	8,400	10,500	Project semi- annual progress reports Additional surveys	Reporting by partners Industry board reporting	PMU Partnership participants

diversified products sold through partnerships								Surveys	
Result 9 (1) Percentage of differentiated coffees exported by PNG by value (2) % of coffee with sustainability certification exported from PNG by volume and value (3) Average quality premium received by farmers in project areas	5 TBD TBD	6	10	15	18	20	CIC Annual Report Additional surveys	Industry board reporting International commodity boards bulletins Reporting by partners	PMU Industry board (CIC) Partnership participants
Result 10 (1) Number of women in farming households reporting increased access to, and use of, information on improved farming practices, processing and marketing							Baseline survey Follow-up surveys External assessments Project semi-annual progress reports	Survey Independent assessment	PMU PCU
Result 11 (1) Number of Km of roads rehabilitated and maintained as per Maintenance Agreements (2) Amount of investment in alternative transport facilities	0	5	15	35	55	100	Project semi- annual progress reports	Independent assessment Survey	PCU

Annex 4: Detailed Project Description

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Project Development Objective

1. The development objective of the proposed project would be to improve the livelihoods of smallholder cocoa and coffee producers through the improvement of the performance and the sustainability of value chains in cocoa- and coffee-producing areas. This would be achieved through strengthening industry coordination and institutions, facilitating linkages between farmers and agribusiness for the provision of market access, technologies and services, and through the provision of critical public infrastructure.

2. Key outcomes would be that: (i) smallholder farmers adopt efficient, market responsive and sustainable production practices; (ii) demand-driven productive partnerships are scaled-up and sustained; and (iii) key infrastructure bottlenecks in the targeted value chains are addressed.

3. The project would link four groups of stakeholders into public-private partnerships to enhance the performance of the sector, these are: smallholder farmers, agribusinesses, governments (national, provincial and local) and knowledge providers (research and training institutions, technical experts).

Project Implementation Period

4. The project would be implemented over a six year period. This takes into consideration the time required to implement the structural changes promoted by the project in coffee- and cocoa-growing areas, the production cycles of coffee and cocoa, as well as the substantial institution building needs in the sector.

5. Given the rapidly evolving environment in the main subsectors covered by the project, in particular in the cocoa subsector, as well as in the country macroeconomic context, a first review is scheduled at the end of the second year of project implementation (PY2) and at a second review at the end of the fourth year of implementation (PY4).

Geographical coverage

6. The project would initially be implemented in six provinces: Eastern Highlands Province, Simbu Province, Western Highlands Province and Jiwaka Province[15] (which jointly export 92 percent of PNG coffee), East New Britain Province and the Autonomous Region of Bougainville (which jointly export 70 percent of PNG cocoa). A roll-out of project activities to secondary producing areas (such as Madang Province, East Sepik Province and Morobe Province) would be considered at the time of the first review of project implementation, and further expansion would also be considered at the time of the second review of project implementation. Key criteria for expansion to new provinces would include: (i) successful implementation of activities in initial project provinces; (ii) demonstrated capacity of implementing agencies to manage a larger

[15] Newly created province and formerly part of Western Highlands Province

geographical coverage of project activities; and (iii) strong interest demonstrated by the private sector and farmers in new provinces. Component 1 focuses on national-level and industry-wide institutions and therefore activities would benefit all provinces.

Detailed Component Description

7. The project would include three components: (a) Institutional Strengthening and Industry Coordination; (b) Productive Partnerships; and (c) Market Access Infrastructure.

8. **Component 1: Institutional strengthening and industry coordination** (total estimated cost: US$ 9.58 million). The specific objective of this component would be to improve the performance of sector institutions and to enhance industry coordination in the cocoa and coffee sectors. The ultimate goal would be to enable those institutions to support the structural changes required in the cocoa and coffee sectors in response to market demand and other major developments such as the impact of the cocoa pod borer on yields and quality. This also requires building trust between public and private stakeholders and ensuring that public agencies are more responsive to the needs of the private sector, including farmers. This component would cover the following sub-components:

Sub-component A: Industry coordination and policy development. This subcomponent would build the capacity of industry level coordination committees to support sector dialogue and policy development respectively in the cocoa and coffee subsectors. The CIC and the Cocoa Board would respectively provide the Secretariat for those industry-level platforms. Support for the operation of those industry platforms would be provided as well as technical assistance for key policy studies on priority topics identified by those committees. In the cocoa sector, it is expected that those studies would include, in particular: (i) the financial sustainability of the Cocoa Board and revision of the Cocoa Board Act; and (ii) support for the development of an industry development plan. In the coffee sector, those studies would cover: (i) the efficiency of public expenditure in the coffee sector; (ii) the efficiency and transparency of PNG coffee grades and standards; (iii) the effectiveness of industry associations represented in the board; and (iv) a review of the performance of CIC extension services.

Sub-component B: Communication and information management systems. This subcomponent would aim at improving transparency in the sector and support policy development. It would finance targeted communication campaigns identified by the industry coordination committees around key policy and farming practice changes. It would also support the development of effective information management systems addressing the current gaps in the collection, generation and dissemination of technical and market information to stakeholders, including on prices and costs. The related TA, training, data collection, surveys and information dissemination would be financed by the project.

Sub-component C: Quality and sustainability management. This subcomponent would strengthen quality promotion in the coffee and the cocoa industries and support, where appropriate, the adoption of sustainability practices. In the cocoa industry, this would include: (i) re-training of fermentery owners, traders and inspectors, working with the

exporters in view of the CPB impact on cocoa quality, (ii) studies on potential changes to PNG export standards and licensing regulations in response to the impact of the CPB[16], and (iii) a survey of fermenteries status and improvement in the capacity of the Cocoa Board to carry out fermentery inspections. In the coffee sector, this would include: (i) an analysis of options and benefits for PNG farmers regarding differentiated coffees, in order to inform decisions on the adoption of specific practices (including: certified coffees- Organic, Fair Trade, Bird Friendly, Rainforest, Utz, etc; gourmet coffees; and Geographical Indications) and the development and implementation of a strategy to promote differentiated coffees. This could leverage the expertise of COSA[17] and that of the Coffee Quality Institute; (ii) leveraging SCAN[18] for training of trainers in order to reduce the costs of certification in PNG, and assessing opportunities to leverage the resources of FAST[19] for improving access to supply chain finance. Resources would also be available for the promotion of PNG origin.

Sub-component D: Project management and monitoring and evaluation (M&E). This sub-component would finance all project management functions of the Project Coordinating Unit in Port Moresby, the Project Management Units in Goroka and Kokopo (and for the latter, its sub-office in Buka), as well as the related M&E activities. This sub-component would also finance the operations of the Technical Appraisal Committee (TAC). A detailed description of project implementation arrangements is provided in Annex 6, and that of the M&E arrangements in Annex 3. This sub-component would finance local and international TA, training, vehicles and equipment, as well as operating costs of the PCU and PMUs.

9. **Component 2**: **Productive Partnerships** (total estimated cost US$ 20.10 million). The specific objective of this component would be to foster the integration of a greater number of smallholder producers in performing and remunerative value-chains, by developing and implementing public-private alliances in the project areas aimed at improving market linkages. This component would have two sub-components:

Sub-component A: Productive partnerships in cocoa growing areas. This sub-component would cover result-oriented partnerships in cocoa-growing areas which improve the profitability, quality and sustainability of smallholder cocoa production. Its implementation would be under the responsibility of the PMU within the Cocoa Board with support from a Technical Appraisal Committee (TAC) for the review and approval of project proposals.

Sub-component B: Productive partnerships in the coffee growing areas. This sub-component would cover result-oriented partnerships in coffee-growing areas which improve the profitability, quality and sustainability of smallholder coffee production. Its implementation would be under the responsibility of the PMU within the CIC with support from a Technical Appraisal Committee (TAC) for the review and approval of project proposals.

[16] Introduction of two export quality standards; revision of fermentaries licensing requirements, and of the dry bean dealer licensing policy
[17] The Committee on Sustainability Assessment
[18] The Sustainable Commodity Assistance Network
[19] The Finance Alliance for Sustainable Trade

10. *Eligible partners*. Project funding would be channeled through partnerships with legal entities in the private sector and civil society, who have already been successfully engaged with smallholders to increase output, productivity, quality and sustainability of cocoa- and coffee-based farming systems, and who are interested in scaling up those activities. The partners would need to have a demonstrated capacity to manage contracts and activities of the scope and nature identified in the proposed partnership. It is anticipated that the majority of partnerships would involve identified farmer groups and any of the following:

- An agribusiness or private sector firm or association of firms engaged in the sector;
- A knowledge or service provider (private, public or civil society entity, such as University or NGO);
- Smallholder farmer cooperatives or associations;
- A multiple partnership involving more than two of the above, with one partner designated as the lead.

11. To be eligible, private entities would need to be legally registered in PNG and demonstrate a history (minimum one year) of involvement in similar activities. The universe of potential partners is broad and purposely inclusive. To qualify as a lead partner, an entity must be eligible to sign legal contracts and receive funds. The lead partner must be a legally incorporated company or business group registered under the Investment Promotion Authority (IPA) of Papua New Guinea or a cooperative society registered with the Cooperative Societies of PNG or a registered Association. The other partners and participants need not be legally registered or incorporated.

12. Eligible activities will generally be restricted to the geographic target areas/communities defined by the lead partners through their joint-partner or linked farmer groups. These target communities will predominantly include a large proportion of smallholder cocoa or coffee farmers. These are defined as those holding less than 5 ha of coffee per household and less than 5 ha of cocoa per household. PPAP will not exclude larger farmers when these function as partners in service delivery such as nucleus estates for technical assistance or processing.

13. Box 1 presents examples of potential partnerships identified during project preparation and for which interest has been confirmed by the parties. Given the relatively small number of private sector entities and civil society organizations engaged with smallholder growers in the project provinces, potential partners are usually well known to the implementing agencies. It is expected that a total of 5 to 10 partnerships will be established in year one of project implementation, including a mix of large, medium and smaller ones. The proportion of medium and smaller entities engaged is expected to increase as capacity of potential partners is built and the project increases its outreach.

14. *Eligible activities*. Those partnerships would be demand-driven, and based on agreed results which would be consistent with the specific objectives of the PPAP. During project preparation, a number of priority activities have been jointly identified by stakeholders and they include the following:

a. Specialized training in *good farming practices* including sustainable pest management approaches such as 'training by association' for cocoa[20] or training of farmer group leaders in coffee growing areas;
b. Training of farmers to improve *quality and productivity*. This includes replanting support to farmers for the implementation of rotational methods and improved planting material (e.g. clones for cocoa);
c. *Production of improved planting material*: The rehabilitation and expansion of existing nurseries, and the establishment under technical control by qualified operators of local level satellite nurseries and budwood gardens. In general, the partner would manage the scheduling, supervision and monitoring of nurseries;
d. Training to improve *business skills and farm management*;
e. Developing and scaling-up proven extension methodologies for engaging and building the *capacity of extension agents* and other key stakeholders to deliver improved sustainable farming practices, improved quality and productivity, business and farm management skills;
f. Capacity building of *farmer groups or cooperatives* in the skills necessary to operate effectively as associations including management, record-keeping, participatory or democratic processes;
g. *Sustainable and certified production systems*. Support to interested groups of farmers for producing certified or specialty coffee or cocoa under internationally recognized sustainability schemes, including the provision of objective information to assist farmers to make informed decisions on whether certification is a sound option for them and, if so, what type of certification is the best solution. This includes support for knowledge providers and farmer groups or cooperatives that would build group capacity, and address certification requirements;
h. *Post-harvest and processing*. Matching grants will be available to partners that make investments in improved processing, trading, and storage facilities for quality management and environmental-sustainability;
i. *Diversification of farming systems*. Partnerships to facilitate alternative crops and new technologies for the diversification of cocoa- and coffee-farming systems where appropriate to reduce one-crop dependence and risk.

15. The PIM also lists the activities and expenditure categories which are not eligible for financing under the project. These include activities which do not comply with the World Bank safeguards policies. Activities on large blocks or plantations will not be supported except when they clearly serve as a base for the delivery of extension, inputs, processing and marketing services to surrounding smallholders.

16. Specific quantitative result targets for these activities have also been defined, based on the current industry strategic development plans and on the analysis conducted during preparation, and they have provided the basis to define PPAP target results. The calls for expressions of

[20] The "training by association" model developed in ENB province covers the field training of lead farmers (and other stakeholders in the industry) to implement the simple 5-step CPB management method – weekly harvesting of every pod, every tree; centralized pod breaking and discarding damaged beans; burial of all pod material; regular pruning and shade control; and target or spot spraying at strategic times- in a plantation setting over two weeks. Trainees are then provided with a tool kit to extend their practices within their farmer groups.

interest would specify the eligible activities and expected outcomes (see Annex 6 for Implementation Arrangements).

17. *Partnership arrangements*. Expected results and cost-sharing arrangements would be specified in the partnership agreements between those partners. The PIM provides detailed guidelines on cost-sharing arrangements.

18. Cost sharing between PPAP and the partners will vary depending on the relative assets of the partners. Partners with lower revenues would receive a higher level of support. The main partners identified in the proposals would be classified into three levels:

a. Partners with combined annual revenues in excess of PGK 5 million will receive 60% support for eligible activities and expenditures under their proposals;
b. Partners with combined annual revenues between PGK 400,000 and 5 million will receive 70% support for eligible activities and expenditures under their proposals;
c. Partners with combined annual revenues less than PGK 400,000 will receive 80% support for eligible activities and expenditures under their proposals.

19. The maximum project financing per Partnership would be USD 700,000. The maximum allotted to any individual partner would be less than 12% of the component 2 budget for that sector. This would be revisited as the project progresses to ensure optimal use of the funds.

20. *Partnership development*. The PMU would advertize and call for proposals for partnerships. The PMU, assisted by a small Technical Appraisal Committee, would identify eligible proposals and contract expertise (local service providers) to provide assistance to eligible proponents, as needed, for the full development of those proposals. Financing of eligible proposals would be proposed by the PMU, appraised by the expert Technical Appraisal Committee (TAC), and the final endorsement provided by the Industry Steering Committees. The composition and TOR of the TAC are described in the PIM.

21. The detailed guidelines on cost sharing arrangements, ceiling level for partnerships, standard contractual formats and the rules for the implementation of this component (e.g. eligibility criteria, selection process, evaluation process, etc) are described in the Project Implementation Manual (PIM). Annex 6 presents the detailed implementation arrangements for this component.

22. *Support for partnerships preparation and implementation*. In order to assist potential beneficiaries with lower capacity and to increase the inclusiveness of project activities, the PMUs would pre-identify a pool of qualified local service providers and train them on project procedures so that they are able to assist beneficiaries in the preparation of their proposals, and in their implementation as needed. Specifically, this would include service providers qualified to work with disadvantaged groups or with significant outreach in more remote locations.

23. *Selection and ranking criteria*. Proposals would be restricted to eligible activities as defined in the call for proposals. The selection and ranking criteria are defined in the PIM and include: (a) the financial and management capacity of the lead partner; (b) relevance in responding to the call for proposals and alignment with PPAP objectives; (c) technical aspects, including capacity

building of those involved in the partnership and sustainability of the partnership; (d) number of households to benefit from the activities; (e) expected benefits –social, economic and environmental; and (f) consideration given to smallholders in disadvantaged locations and to vulnerable groups (including women and young farmers).

24. *Targeting*. The design of the project includes a number of measures to ensure that the disadvantaged groups identified in the Social Assessment (such as smallholders in remote areas, or the more vulnerable groups, such as women and young farmer) are able to benefit from project activities. These include, in addition to the selection and ranking criteria above: (i) information sessions for potential partners and beneficiaries, to raise their awareness about the selection and ranking criteria of the PPAP; (ii) possible support by qualified service providers to prepare proposals, as well as their continued support for implementation and monitoring of the partnership; and (iiii) regular monitoring by the PCU and PMUs that the project is actually reaching its objectives in terms of inclusiveness, so that adjustments to the approach can be made as needed.

25. By the end of the project, it is expected that up to 50 partnerships would have been implemented, and that up to 20,000 to 30,000 smallholder farmers would have been trained, up to 13,000 hectares of cocoa gardens rejuvenated or under improved management, as well as up to 10,500 hectares of coffee gardens, up to 1,000 hectares of alternative crops developed by smallholders in partnerships with the private sector, up to 4 large nurseries rehabilitated or expanded and another 10 satellite nurseries and budwood gardens established at ward level, and up to 10 processing facilities upgraded each in cocoa and coffee producing areas.

26. *Ceilings and size of partnerships*. The scale of the larger partnerships is expected to be in the range of US$ 500,000 to 1,000,000. These would include the largest training and replanting programs carried out with over a thousand farmers, for example in CPB affected areas. Medium-size partnerships would be those in the range of US$ 100,000 to 500,000 covering activities such as medium-scale replanting and extension programs (500-1,000 households), upgrading of larger scale processing facilities, and support for certification. Smaller-size partnerships (in the range of US$15,000 to 100,000) would cover activities such as training of smaller groups of farmers, scaling-up existing nurseries, establishment of decentralized nurseries, and upgrading of fermenteries.

Box 1: Potential productive partnerships identified during preparation

Type of partners	*Partners*	*Scope of partnership*
Cocoa		
Agribusiness-farmers	NGIP-Agmark and farmers	Training of farmers on CPB control, production of hybrid planting material (ENB and ARB), central processing
Agribusiness-farmers	Coconut products limited and farmers	Training of farmers on CPB control, production of hybrid planting material (ENB)
Agribusiness-farmers	Outspan PNG and farmers	Farmer training, quality improvement though central

		processing (ARB)
Agribusiness-farmers	Yenfer Cocoa Development Ltd and farmers	Farmer training, quality improvement though central processing (ARB)
Coffee		
Agribusiness-farmers	Kongo Coffee Limited and farmers	Expansion of Elimbari specialty coffee for export markets -2,500 smallholders (Simbu)
Agribusiness-farmers	Ethica coffee/Gouno farmer group	Extension on coffee quality, distribution of small pulperies, expansion of specialty coffee production from 22 to 140 tons/year (EH)
Agribusiness-farmers	Coffee Connections Limited and farmers	Extension, certification to HOAC -2600 members (EH, Simbu)
Agribusiness-farmers	Pacific Arabica Coffee and farmers	Extension and central processing wet factory serving 2,500 growers (WH)
Agribusiness-farmers	Monpi and farmers	Extension, improved planting materials, certification.
Diversification		
Agribusiness-farmers	PNG Balsa limited and farmers	Farmer training, quality control and marketing of balsa (ENB)
Agribusiness-farmers	Pacific Spices Limited	Extension, planting material and marketing of alternative cash crops (ENB)
Civil society-farmers	ENB Council of Women	Mobilization of farmer group and production of alternative crops
Agribusiness-farmers	New Guinea Fruit Company and farmers	Expanded homey production as complementary activity to coffee (EHP)

27. **Component 3: Market access infrastructure** (total estimated cost US$ 16.57 million). The specific objective of this component would be to improve smallholder market access in targeted areas under the project. High levels of poverty in the project area are directly correlated with the lack of access to markets. Deteriorated market access infrastructure significantly reduces farm-gate prices, when it does not result in significant product losses, poor product quality, or total lack of market opportunities. Deteriorated transport infrastructure is also associated with higher levels of law and order issues and directly affects linkages between smallholders and the private sector.

28. In meeting the objectives of Component 3, investments under this component would be directed at the rehabilitation of existing transport links (these will generally be short – maximum length 5km - feeder roads and access tracks/footpaths, but could possibly also include wharves or jetties) that provide access between smallholder farming communities in both the coffee and cocoa sectors, and marketing or processing points located on a trafficable route, and for which a sustainable maintenance regime can be introduced (or strengthened) during the project.

29. Specific investments in infrastructure under Component 3 would only be identified following the selection of individual Component 2 project activities. Once the scope of a Component 2 investment is established, the potential transport infrastructure interventions that will directly impact on the market access of the target beneficiary smallholder communities can be identified and undergo a rigorous selection process for prioritization for funding under PPAP.

30. Project interventions under Component 3 would thus follow a 2-stage process: preparation and implementation.

Sub-component A: Preparation of market access infrastructure investments. The preparation process for each Component 3 specific investment would involve identification, screening, assessment and ranking of all candidate routes/ links that provide access to and from the targeted communities. The process would be led by the PMU Transport Planner/Senior Engineer. It is described in detail in the Project Implementation Manual and includes the following aspects:

i. Provision of appropriate scale mapping showing target communities and their existing access routes/links;
ii. Size of community, current and potential production of coffee/cocoa and other crops;
iii. Existing social welfare and/or other facilities located within the community or along the route;
iv. Length of access route(s)/link(s) between community and market / processing point, assessment of physical condition along its length, current and future traffic (volumes and type);
v. Investigation of appropriate standard of rehabilitation required to suit the future traffic needs, and estimated cost to rehabilitate. The intention is to find a balance in all cases between investment cost and maintainability. Adequate drainage provision will be a critical factor in all land transport routes, be they roads or footpaths;
vi. Initial screening and selection of routes / links that meet the primary criteria (short length, feasible rehabilitation, maintainability);
vii. Undertaking a transparent socio-economic comparison to rank all selected links within the target area;
viii. For the highest ranked route(s) under each partnership, assessing future ability of, and obtaining formal commitment from target community, PPAP partner, LLG and/or other stakeholder to provide sustained maintenance of the completed route/link, and
ix. Agreement on the extent of investment available to each partnership and the resulting scope of transport routes / links that will be rehabilitated.

Sub-component B: Market access infrastructure development. The implementation process for Component 3 investments is set out in detail in the Implementation Manual and would comprise the following activities:

i. Detailed design and preparation of suitable bid and contract documentation (i.e. small works, labor-based methods and/or community-based works where appropriate) of the rehabilitation works;
ii. Procurement of consultants as required for materials testing and survey, construction supervision, and community-based maintenance training activities;
iii. Procurement and contracting rehabilitation works on selected lengths of transport route / links, through appropriate design and contract packaging;
iv. Working with target community groups, PPAP partners, LLGs and/or other stakeholders to develop and introduce sustainable regimes for routine and periodic maintenance of the rehabilitated transport links.

Annex 5: Project Costs

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Project Cost By Component and/or Activity	Local US $million	Foreign US $million	Total US $million
Component 1: Institutional Strengthening and Industry Coordination	**4.02**	**4.72**	**8.74**
Sub-component A: Industry coordination	0.18	0.33	0.51
Sub-component B: Communication and information	0.17	0.19	0.36
Sub-component C: Quality promotion	0.62	0.94	1.56
Sub-component D: Project Management and M&E	3.05	3.26	6.31
Component 2: Productive Partnerships	**15.32**	**1.70**	**17.02**
Sub-component A (Cocoa areas)	7.66	0.85	8.51
Sub-component B (Coffee areas)	10.80	1.20	8.51
Component 3: Market infrastructure development	**10.70**	**2.86**	**13.56**
Sub-component A (Preparation)	1.27	0.50	1.77
Sub-component B (Implementation)	9.43	2.36	11.79
Total Baseline Cost	30.04	9.29	39.32
Physical Contingencies	0.47	0.12	0.59
Price Contingencies	5.76	0.58	6.34
Total Project Costs[1]	36.27	10.02	**46.26**
Interest during construction			
Front-end Fee			
Total Financing Required			**46.26**

Annex 6: Implementation Arrangements

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

1. This Annex summarizes the project implementation arrangements. The details are provided in the PIM.

National project oversight

2. Project general oversight and guidance would be provided by a Project Steering Committee (PSC) chaired by the Secretary of the Department of Agriculture and Livestock (DAL) and comprising representatives from relevant government departments and agencies as well as the private sector, which would include, but not be limited to: the Department of National Planning and Monitoring, the Department of Finance, the Department of Treasury, the Department of Works, the Department of Environment and Conservation, the Department of Commerce and Industry, the Cocoa Board, the Coffee Industry Corporation, the Rural Industries Council, the National Agriculture Research Institute, and the Provincial Governments. The role of the PSC would be to provide guidance on policy matters and quality control for annual work programs and budgets, and to facilitate critical decisions for the implementation of the project components. The PSC would meet twice a year, and/or at the request of the PSC Chairman. The Project Coordinator based in DAL would provide the Secretariat to the PSC.

Project coordination at national level

3. DAL would be responsible for coordination of project implementation at national level. A small Project Coordination Unit (PCU) would be established in DAL with primary responsibility for reporting to the PSC and to financiers (IDA and IFAD) and for the overall monitoring and evaluation (M&E) of project activities. The PCU would be staffed with a Project Coordinator and a Financial Management Advisor (FMA).

4. The PCU would be responsible for the following:

    a. The consolidation of annual work programs and budgets prepared by the Project Management Units and their submission to the PSC;
    b. Monitoring implementation of project activities as per the Project Implementation Plan and Project Implementation Manual (including the Components Implementation Manuals, the Financial Management Manual, the Procurement Manual, and the Environment and Social management Framework);
    c. The operation of the PCU designated account, the consolidation of financial management reporting, and arrangements for the annual audits;
    d. Liaison with financiers (IDA/IFAD);
    e. Monitoring and evaluating project progress through the implementation and coordination of project M&E activities; and

f. The preparation of semi-annual progress reports, including activity progress (results indicators), financial execution, procurement progress, and work program for the next semester.

Project Implementation at industry level

5. A key principle of project design is to decentralise core project management functions to the industries that are the focus of the project. Accordingly, project management functions would be placed with the respective industry peak bodies, the Cocoa Board and the CIC, with project management units (PMU) established with those institutions respectively in Kokopo and in Goroka. In both instances, the PMU would be responsible for the daily management of project implementation. The PMUs would be resourced and staffed to help build institutional capacity within CIC and the Cocoa Board.

6. **Project Management Units**. The two PMUs would have overall responsibility for project management and performance in the Provinces that they cover[21]. Each PMU would be headed by a PMU Manager with experience with the implementation of large investment programs. The PMUs would be located within the offices of their respective industry institution and support them for all project implementation activities.

7. Each PMU would be staffed with a PMU Manager, a Senior Finance Management Officer, a Senior Procurement Officer, a Coordinator for Component 2 (Productive Partnerships), and administrative support staff. In addition, to support implementation of the PPAP in ARB, a Deputy PMU Manager would be based in Buka in the Cocoa Board office. Each PMU would also include a Transport Planner/Senior Engineer, who would be responsible for the overall implementation of Component 3 (Market access infrastructure). Finally, a Senior Monitoring, Evaluation and Survey Officer will support each PMU.

8. The Industry Coordination Committees supported under Component 1 of the project would also act as Steering Committees for the project at industry level. They would provide technical guidance on industry policy issues, review the annual programs and budgets prepared by the PMUs, and guide each industry body and its PMU on project implementation issues. These two committees would include, but not be limited to:

    a. Cocoa Industry Coordinating Committee (National Cocoa Advisory Committee): the Cocoa Board, CCIL, NARI, Grower's Association, representative of exporters/processors, representative of traders, a representative of civil society organizations, UNRE/University of Vudal, the DAL regional coordinator for the Islands region, and representatives of Provincial Governments and provincial departments (DPI, Works). The Committee would select its chair annually on a rotational basis.

    b. Coffee Industry Coordinating Committee: the CIC (Goroka and Ayura branches), NARI, representative of growers, representative of exporters/processors,

[21] Initially East New Britain province and Autonomous Region of Bougainville for the Rabaul PMU; and Eastern Highlands, Simbu, Jiwaka and Western Highlands provinces for the Goroka PMU.

representative of traders, a representative of civil society organizations, Goroka University, the DAL regional coordinator for the Highlands region, and representatives of Provincial Governments and provincial departments (DPI, Works). The Committee would select its chair annually on a rotational basis.

9. The PMUs would be responsible for all aspects of the management of PPAP for their respective sub-sectors. This would include:

    a. The management of the timely implementation of all activities under Component 1 of the project, under the guidance of the Industry Coordination Committees;

    b. The management of all activities under Component 2 of the project, with technical support provided by the Technical Appraisal Committee (TAC);

    c. The management of the timely implementation of all activities under Component 3 of the project, in collaboration with the relevant technical agencies in each province (such as DST in ARB and Department of Works in Easter Highlands).

    d. The preparation of annual work programs and budgets, for submission to the Industry Committees and to the PCU for consolidation;

    e. The management of the project designated account of each PMU (one designated account for each PMU), and related financial management activities and reporting, for consolidation by the PCU;

    f. Procurement activities and reporting ;

    g. Ensuring compliance with the project's ESMF, including the Compensation Policy Framework and Integrated Pest Management Plan;

    h. The management of M&E activities at industry level; and

    i. The preparation of semi-annual progress reports for consolidation by the PCU.

Technical assistance

10. Neither of DAL, the Cocoa Board nor CIC have recent experience with the implementation of investment programs financed by IFIs. To build their capacity, the PCU and the PMUs would also be supported by the following TA: a Project Implementation Advisor, a Procurement Advisor, an M&E Advisor, and short-term specialists recruited under Components 1 and 3. Technical Assistance would also include an Environment Specialist who will build the capacity of implementing agencies to implement the provisions of the ESMF and monitor its implementation during the first years of project implementation.

Component 1 implementation

11. Each PMU based respectively in the Cocoa Board and in the CIC would have overall responsibility for the implementation of Component 1 activities, with guidance provided by the Industry Coordination Committees (ICC). The ICCs would review the draft annual work programs and budgets prepared by the PMUs, including proposals for specific studies and reviews of policy issues, proposed information and communication activities and proposed

training activities, before they are finalized. The ICCs would be expected to provide guidance on the scope and focus of these activities and their specific terms of reference. The ICCs would regularly (on a quarterly basis) review progress with the implementation of activities under Component 1 of the PPAP. Proceeds and minutes of ICC meetings would be widely shared within the sector.

Component 2 implementation

12. Implementation of Component 2 would be under the responsibility of each PMU under the direct responsibility of the Component 2 coordinator. To conduct the technical appraisal of the proposed partnerships, the PMU would be assisted by a Technical Appraisal Committee (TAC). Final endorsement of proposals would be the responsibility of the Industry Coordination Committees.

13. *Partnership Selection*. Partnership selection would follow a six-monthly cycle:

14. *Step 1: Promotion and Call for Proposals* (CFP). The Component 2 Coordinator in the PMUs would advertize and call for proposals from potential partners. The eligibility criteria, modalities for the partnerships and expected outcomes for each round (TORs) would be communicated as part of advertizing. A simple, standard format for proposals (two-page proposal) is included in the PIM and would be provided to interested parties. Advertizing would be through usual public channels, complemented by radio programs and information to NGO and industry networks to maximize outreach, including through information sessions carried out by the PMU in the project area.

15. *Step 2: Registration and Eligibility Screening.* The applications would be immediately registered by the PMU into the electronic Record of Applications Received. The PMU will then promptly review proposals for completeness and accuracy and verify that they comply with the established Eligibility Criteria.

16. *Step 3: PMU Partnership Subproject Application Review and Ranking.* The two page proposals for partnerships would be screened by the PMU using the established scoring sheet and those that are top ranked by the PMU using this pre-determined scoring system would be promptly returned to the Applicant for further preparation. Each Applicant will receive confirmation or acknowledgement of preliminary acceptance or rejection (with reasons in writing submitted to Applicant for any rejection) from the respective PMU within 15 working days of receipt. If the proposal is accepted, the Applicant would be informed of their short-listing and requested to complete a more complete application according to the pre-published PPAP requirements (management, procurement, financial, and M&E).

17. *Step 4: Partnership Preparation*. The PMU would identify those proponents in need of assistance to prepare full proposals and mobilize qualified service providers to that end. The PMU would also carry out field visits and checks as needed before the proposals are submitted to the TAC.

18. *Step 5: TAC Partnership Subproject Application Review and Selection.* The TAC members appraise the proposals presented by the PMUs, rank them and provide a recommendation for their financing. Appraisal of the proposals would be confidential and TAC members required to adhere to the PPAP Code of Conduct included in the PIM. In case of inconsistency in the evaluation of some proposals by TAC members, the PMU would convene a joint meeting of TAC members. The selection criteria and agreed scoring is presented in the PIM. Prior to the first round, TAC members would be trained by the PMU on all guidelines and processes to be followed.

19. *Step 6: Partnership Approval.* Recommendations for financing are submitted by the PMU Manager to the Industry Coordination Committee (Cocoa ICC and Coffee ICC respectively) for final endorsement. In the event that a member of the ICC has submitted a proposal for consideration in that specific round, s/he would not take part in the decision to avoid conflicts of interest and an alternate would participate to the ICC meeting.

20. *Step 7: Partnership Signature*. The partnership agreements are drafted and negotiated by the PMU and signed with the successful proponents. With regards to disbursements, the lead partner would follow the disbursement conditions outlined in the Partnership Agreement and consistent with the Financial Management Manual.

21. *Step 8: Partnership Implementation, Monitoring and Evaluation*. The PMUs monitors the implementation of the partnership agreements. This would be under the responsibility of the Component 2 Coordinator in each PMU. The Coordinator would carry out regular visits to subprojects implemented under this component, supervise implementation, monitor that all the terms of the partnership agreement are being complied with, and advise partners on project policies and procedures as needed.

22. Business standards (e.g. for processing time lines; regarding confidentiality rules) would be applied throughout the cycle to maximize the responsiveness of the project. They are specified in the Project Implementation Manual and summarized in Table 1 below.

Table 1: Partnership Cycle Time Line

Time schedule -weeks	***Step***	***Responsibility***
Ongoing for next cycle but at least 3 months prior to projected final approvals.	Awareness and information campaign and call for proposals	PMU
Up to 15 working days (3 weeks)	Registration & Eligibility Screening response to Applicants	PMU
Up to 20 working days (4 weeks)	Partnership Application Review & Priority Ranking by PMU	PMU
Up to 30 working days (6 weeks)	Partnership Preparation	Proponents, with support from service provider if needed
Up to 20 working days (4 weeks)	PMU verification: Check data and appraisal of expanded proposal to meet prior submission criteria and the management, procurement,	PMU

	financial, and M&E requirements	
Up to 20 working days (4 weeks)	TAC Partnership Application Review & Selection	TAC
Up to one week	ICC meeting and decisions	ICC (secretariat: PMU)
Up to 10 working days (2 weeks)	Partnership contractual signatures	PMU and partners
Maximum time from registration to signature: Up to 23 weeks		
Week 23-on	Supervise implementation	PMU, independent monitoring entity

23. *Technical Appraisal Committee*. The TAC would have an independent review function to ensure transparency and objectivity in the selection process. The members of the TAC would be nominated by the ICCs within three months after project effectiveness and contracted by the PCU following a formal interview process. The TAC members for each round would include a cocoa industry specialist, a coffee industry specialist and a social development specialist. The industry specialists would also have the skills to advise as needed on environmental aspects. All TAC members would be individuals with an established reputation for their knowledge of the sector and their integrity. In the event of inconsistent evaluation of some proposals by the panel members, the PMU would call a TAC meeting, which would be chaired by an independent representative of the private sector (for example from RIC or another institution representing the private sector and considered as neutral by the industry) and make final recommendations.

24. *Local Service providers*. To ensure that smaller entities and disadvantaged groups identified in the Social Assessment, such as women, isolated households or youth, are able to engage in project activities, the project would finance support from qualified service providers to potential partners in those target groups. Support would include needs assessment, preparation of draft and full proposals, and continued assistance through monitoring of partnership implementation. A pool of qualified local service providers would be identified by the PMU at project inception, and regularly updated. Those service providers would be trained by the PMU on project processes and procedures. When support is needed for the development of a partnership proposal, a service provider would be selected by proponents in consultation with the PMU.

25. *Partnership Implementation.* Responsibility for the implementation of all activities under a partnership agreement including reaching the agreed outcome would rest with the partners. The agreements would define their financial and technical responsibilities (lead and sub-partners), activities to be supported and cost-sharing, agreed target results, implementation plan, disbursement procedures and financial reporting arrangements, procurement mechanisms, and monitoring and reporting requirements.

26. *Monitoring and Evaluation.* Regular monitoring of the implementation of the partnerships would be the responsibility of the Component 2 Coordinator in each PMU, with guidance

from the M&E Specialist (TA). Partnership agreements would also include provisions for monitoring of their implementation by beneficiaries and feedback procedures. During the preparation of the partnership proposals, simple baseline data would be collected to support the final assessment of the impact of the partnership. Finally, monitoring of the governance processes used to implement Component 2 would be contracted out to an independent entity and adjustments to processes would be made through annual reviews on the basis of the findings of those reviews.

27. *Dispute resolution.* The PIM includes provisions for dispute resolution, which are also part of the Partnership Agreement. The PMU will explain to each partner their rights and obligations as well as procedures for resolving grievances, and will seek a resolution through informal arbitration. If the resolution proposed by the PMU is not acceptable to both sides, the matter will be referred to the relevant Administrative Dispute Tribunal.

Component 3 implementation

28. The scope and location of Component 3 sub-projects would only be defined as implementation proceeds, and will depend entirely on the Component 2 partnerships, but it is expected that approximately 150km of transport routes would be rehabilitated over five years. It is expected that the preparation and development of individual Component 3 investments would follow an annual cycle, i.e. following on from two consecutive half-yearly cycles for the Component 2 partnership selection process.

29. Implementation of both sub-components within Component 3 would be managed by the Transport Planner/Senior Engineer in each of the PMUs, reporting to and supported by their respective Project Manager. In carrying out the infrastructure investment preparation under sub-component 3A, the Transport Planner/Senior Engineer will lead the identification, screening, assessment and ranking process described in detail in the Project Implementation Manual for each partnership supported under Component 2. In doing so, s/he would be required to consult with, and obtain the consent of, the industry partners and affected communities at each stage, as well as maintaining close liaison with public sector stakeholders. This would also include the preparation of the required specific maintenance agreements.

30. For each cycle, each PMU would submit a recommendation of the infrastructure selected for investments under each partnership to the Industry Coordination Committee for approval of funding.

31. In developing the selected infrastructure investments in sub-component 3B, the Transport Planner/Senior Engineer would work closely with the relevant technical departments in project provinces, (e.g. ABG Division of Technical Services in ARB, Provincial Technical Services Division in ENB Province, and Provincial Department of Transport and Works in EH, WH and Simbu Provinces) for technical liaison and guidance, and with the local District Administrator and Local Level Governments for the implementation of specific investments under this component.

32. All works and services contracts would be prepared and managed by the two PMUs on behalf of their respective counterparts, the Coffee Industry Corporation (CIC) and Cocoa Board (CB). CIC and CB would be able to award contracts below a threshold of PGK300,000 directly, and through the Central Service Tender Board (CSTB) for contracts above the threshold amount.

33. Once rehabilitation has been successfully completed on a particular length of minor road or path, or a wharf or jetty, the route or node would typically be formally handed over to the Local Level Government (LLG) or District Administrator for future maintenance. It is envisaged that the maintenance arrangements – to be formalised through a Memorandum of Understanding between the LLG, District Administrator and partners - might be as follows:

    i. the community(ies) would undertake labor-based routine maintenance (drain cleaning, grass cutting, pothole patching, profiling) to an agreed standard for a set annual fee per kilometer, to be resourced by the partners in agreement between them;

    ii. the District Administrator/LLG would undertake periodic maintenance to an agreed standard, involving annual light grading and 5-yearly re-sheeting, using the most appropriate implementation means at its disposal through local resources (community-based, force account, equipment hire or contract) and funded through its annual maintenance budget;

    iii. Funding for emergency maintenance, where, when and if required, sufficient to restore lost access and which in the opinion of the District Administrator is beyond the scope of routine maintenance, would be requested by the District Administrator from the Provincial Government annual maintenance budget allocation, and would be carried out using the most appropriate locally resourced implementation means as above. If this were not forthcoming the District Administrator, LLG and partners would need to seek an alternative solution.

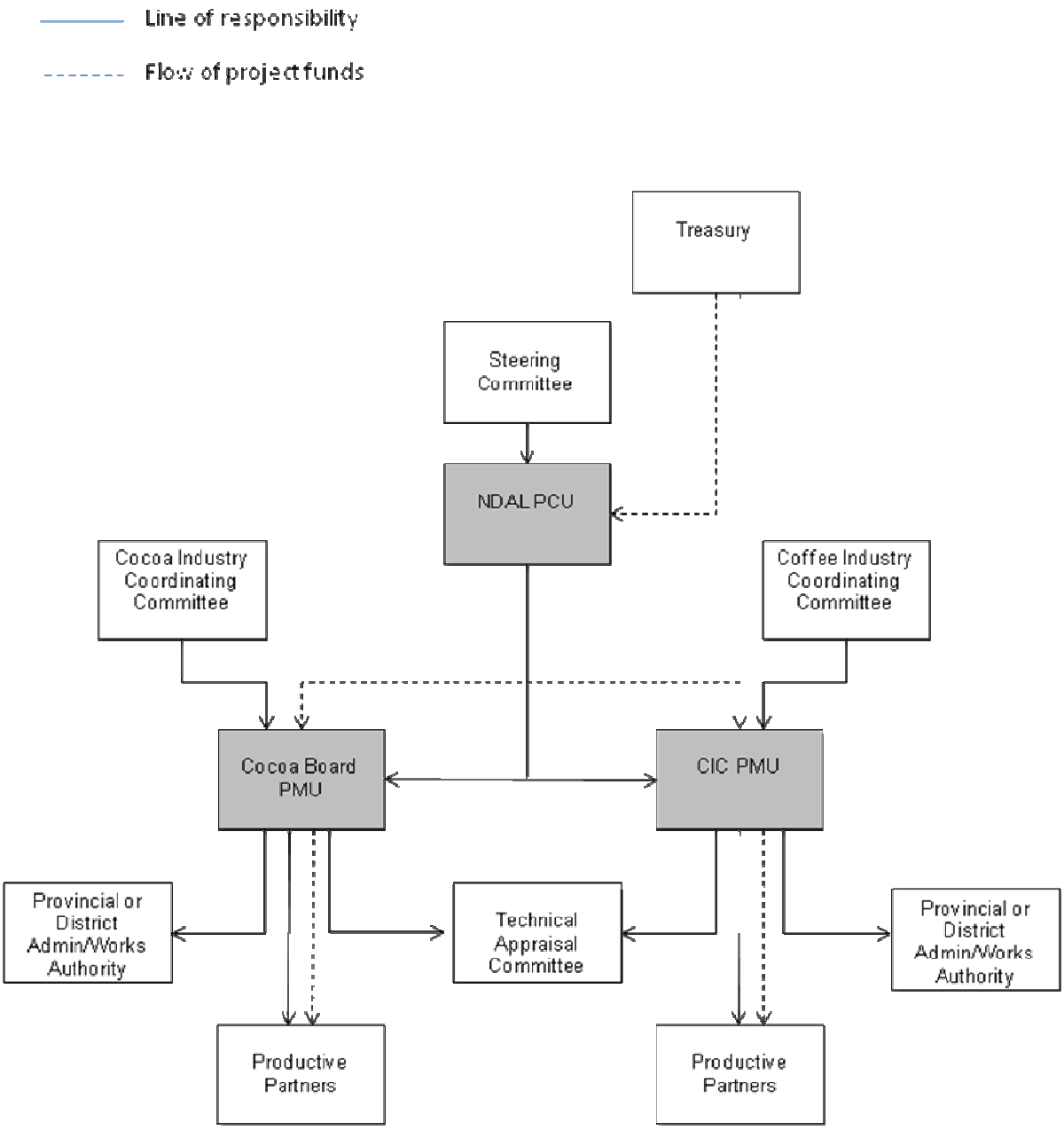
34. It is expected that in undertaking the above maintenance arrangements, the District Administrator and LLG would continue to seek and receive technical support from the respective Provincial Departments through provision of advice generally, and specific allocation of technical staff on an “as-required” basis to prepare bid and contract documentation, supervise construction and certify contract payments, as is the case at present.

35. A community-based road maintenance specialist (TA) contracted by the PMU would work with all the stakeholders on each completed section of infrastructure, to develop a specific maintenance program for that section, to facilitate the development of a managed approach to routine maintenance by the community, and to engender a positive working relationship between the community, partners and local authorities with regard to mobilizing resources for maintenance.

36. Wherever possible and appropriate, the private partner working with the community would be encouraged to contribute in whatever way it is able to provide long term support to the sustainable maintenance arrangement of access routes or nodes rehabilitated under the project in its area of operation. It would be the task of the PMU to motivate and secure such contributions.

37. Implementation of possible innovative or alternative transport means would follow the same processes described above, but maintenance, and if applicable, operation arrangements and funding would depend on the type of investment chosen in each case. The guiding principle of Component 3 would apply to all investments, however; a commitment to maintenance (and if necessary in this case, operation) would be the fundamental eligibility criterion for selecting candidate routes and/or nodes or technologies.

Fig 6.1. PPAP Functional Chart



Annex 7: Financial Management and Disbursement Arrangements

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

I. Introduction

1. The financial management assessment was carried out in accordance with the Financial Management Practice Manual, issued by the Financial Management Sector Board on November 3, 2005. This annex present results of the assessment and the proposed financial management arrangements for the project. The objective of the assessment was to determine whether the implementing entities have acceptable financial management arrangements, in order to ensure that: (1) the project funds will be used only for the intended purposes in an efficient and economical way, (2) the project financial reports will be prepared in an accurate, reliable and timely manner, and (3) the project assets will be safeguarded.

II. Overall conclusion

2. Overall, the financial management system will meet the financial management requirement as stipulated in OP/BP subject to the implementation of agreed actions and mitigating measures.

3. The assessed financial management risk of the Project before the mitigating measures is considered **substantial** but could be reduced to **moderate** after the proposed and existing mitigating measures described in this Annex are implemented.

4. The mitigating measures would include the following: (i) Strengthening of internal audit functions by engaging reputable audit consultants with qualifications and terms of reference acceptable to IDA; (ii) Value for money audit which includes physical inspection by AGO (Auditor's General Office) as part of its annual financial audit of the project; (iii) Hiring of adequate number of skilled and qualified accountants; (iv) Provision of technical assistance, training and workshops to strengthen the capacity of the Financial Management and Accounting Units of DAL, CIC and Cocoa Board; (v) Use of the grievance redress mechanism with issues processed and reported to CIC, Cocoa Board and DAL.

III. Country Background

5. PNG has struggled in the past ten years to improve its public finance management. A PEFA assessment was carried out in 2005, which considered that in some respects the public finance management system had deteriorated, noting in particular the failure to adhere to the public finance management legal framework and a permissive culture towards breaches of financial rules and processes.

6. A further PEFA, led by the PNG Department of Finance with the assistance of the World Bank, ADB, EC and AusAID was completed in March 2009. The analysis was carried out for the years 2005 to 2007 and the 2008 budget. The assessment confirmed significant progress in several important public finance management areas identified under the Public Expenditure Review and Rationalization Report (PERR) program, although gains have not been uniform.

There has been progress in improving internal audit functions. The assessment noted that budget preparation is now more orderly, transparent and consultative and that progress has been assisted by the implementation of the 2006 Fiscal Responsibility Act. There is better linkage between the budget and the Medium Term Development Plan (MTDP). The assessment also notes progress on clearing the backlog of public accounts and active engagement by the Public Accounts Committee of Parliament and the Auditor-General's Office, although their findings appear seldom acted on.

7. While the legal basis for public finance management is sound and includes a Fiscal Responsibility Act, there is a general failure to observe rules and a general lack of integrity in the budget process. The assessment noted important remaining weaknesses in the government's ability to implement the budget. Systems and procedures for expenditure and payroll control cannot be relied on, budget integrity continues to be undermined by unauthorized ad-hoc diversion of funds including for regional development purposes. Despite the government's "Opening the Budget" initiative, transparency in budget execution is weak with comparisons of actual expenditures with budget figures being difficult. Significant extra-budgetary resources are still not adequately disclosed. While the budget is publicly available once passed, its presentation makes it difficult to follow. Delays in preparing the public accounts and thus the related audit reports remain. The accountability of statutory authorities is particularly weak. Failure to adequately address corruption by the political elite is also perceived as a significant issue. However there is increasing demand for good governance, promoted by a free press, NGOs and others.

8. The planned new IFMIS with a revised chart of accounts aligning classification with international standards, if implemented as planned, will address some of the major weaknesses by providing reliable information for monitoring budget execution by the Department of Finance and line ministries, through reducing data entry inaccuracies and speeding up data reconciliation.

9. The 2009 PEFA assessment notes that less than 50 percent of aid is management through country systems. The Bank uses the AGO (Auditor's General Office) for the audit of Bank projects.

IV. Risk Analysis

10. The summary risk analysis is based on the assessment of financial management arrangements proposed for this project. Table 1 identifies the key risks related to the Project's financial management and suggests how they may be mitigated.

Table 1: Key financial management risks and mitigation measures

Type of risk	Risk rating	Risk mitigating measures	Residual risk rating	Condition of Negotiation, Board, Effectiveness (Y/N)
INHERENT RISKS (risk that arises from environment in which Project is situated)				
Country Level	**High**		**Substantial**	
PNG has struggled in the last ten years to improve its PFM but its functioning remains poor although the 2009 PEFA assessment notes a number of improvements. While the legal basis of PFM is sound and includes a Fiscal Responsibility Act there is a general failure to observe rules and a general lack of integrity in the budget process. Failure to adequately address corruption by the political elite is also perceived as a significant issue. However there is increasing demand for good governance, promoted by a free press, NGOs and others.		The planned new IFMIS with a revised chart of accounts aligning classification with international standards, if implemented as planned will address some of the major weaknesses by providing reliable information for monitoring budget execution by the Department of Finance and line ministries, through reducing data entry inaccuracies and speeding up data reconciliation.		
Entity Level	**Substantial**		**Moderate**	
The implementing agencies are:				
DAL: DAL has no recent experience in implementing IDA financed projects. While legal and institutional framework is in place, monitoring and enforcement remain areas for improvement.	High	(1) An FM advisor will be hired and be based in the DAL-PCU. S/He will be in charge of overall Project financial management and disbursement of the components under DAL responsibility, and consolidated financial reporting of PPAP project to be audited by the Auditor's General Office (AGO). (2) Project fiduciary staff is adequately qualified and experienced, and will be maintained throughout the life of the Project. (3) The DAL accounting staff will be trained continuously during the life of the Project. (4) Internal Audit Unit will be strengthened; (5) Project software is in place and will be updated as necessary.	Substantial	Six months after Effectiveness Three months after Effectiveness

CIC: CIC has no experience in implementing World Bank projects, but has implementing EU and AUSAID projects.	Substantial	(1) A qualified accountant will be hired and be based in the PMU. S/He will be in charge of overall Project financial management and disbursement. (2) An independent Audit consultant will review CIC systems (internal audit). (3) Project fiduciary staff is adequately qualified and experienced, and will be maintained throughout the life of the Project. (4) The CIC accounting staff will be trained continuously during the life of the Project. (5) Project software is updated if needed, and financial management and internal control manuals are in place and will be updated as necessary	Moderate	Three months after Effectiveness Six months after Effectiveness Three months after Effectiveness
CB: CB has not yet been able to provide its audit reports for 2005, 2006, 2007 and 2008. Audits for previous years showed serious accountability concerns and whilst CB has taken some actions to address these, further actions are required. Since 2004 CB has operated with no effective governance structure, the board of directors does not meet on a regular basis.	High	(1) A qualified accountant will be hired and be based in the PMU. S/He will be in charge of overall Project financial management and disbursement. (2) An independent Audit consultant will review CB systems (internal audit). (3) Project fiduciary staff is adequately qualified and experienced, and will be maintained throughout the life of the Project. (4) The CB accounting staff will be trained continuously during the life of the Project. (4) Project software is updated if required, and financial management and internal control manuals are in place and will be updated as necessary. (5) Audit of financial statements 2005, 2006, 2007, 2008 shall be completed by AGO. (6) CB response to AGO, acceptable to the Bank, should include a time bound action plan to address weaknesses identified in the audit reports.	Substantial	Three months after Effectiveness Six months after Effectiveness Three months after Effectiveness Before Disbursement
Project level	**Substantial**		**Moderate**	
(1) Project Size: The project is located in three different entities: DAL, CIC, CB with a total credit of US$39 million, out of which the IDA investment is US$25 million equivalent.		(1) DAL, CIC and CB will be strengthened in order to manage the increased activities (2) All staff involved in fiduciary aspects will be trained in the use of Project tools (software, procedures manual) and Bank fiduciary procedures.		
OVERALL INHERENT RISK	**Substantial**		**Moderate**	
CONTROL RISKS (risk that the Project's financial management system is inadequate to ensure funds used economically and efficiently for intended purpose)				

Budgeting Budget preparation is a relatively weak in the GoPNG budget process, but more consistency is needed in the Projections made by different government agencies and entities, such as DAL, CIC, and CB. Given the current budget cycle, late MTDP preparation could delay Project budget preparation and release of funds.	Substantial	(1) DOF has committed to ensuring Project activities are fully reflected in the MTDP. (2) Implementing entities (DAL, CIC, CB) need to strengthen the overall planning and budgeting system. (3) The Bank team and Project staff will work closely to establish comprehensive Project cost tables, detailed work program, and quarterly budgeting for the first 12 months of the Project implementation. (4) The GoPNG will provide counterpart funds to the implementing entities (DAL, CIC, CB) to support project implementation. (5) Training, mentoring, and hands-on experience will be provided to DAL, CIC, CB fiduciary staff in financial planning and budget preparation. (6) Regular review /monitoring of Project budget performance, including timely release of Project funds, will be part of the quarterly IFRs and annually reviewed by the Project Steering Committee.	Moderate	Completed Three months after effectiveness
Accounting (1) The existing accounting software do not capture project accounts. (2) Financial management and accounting procedures may not be well understood by all involved in implementation.	Substantial	(1) Accounting software of DAL, CIC, CB may need to be updated to be used for Project accounting. (2) DAL accounting system needs capacity to consolidate reports of the three agencies. (3) Financial Management staff will be recruited to assist DAL, CIC and CB to manage PPAP project's accounts.	Moderate	Three months after Effectiveness Three months after Effectiveness
Internal Control DAL has its own internal audit department headed by a chief internal auditor and three auditors. Staff capacity is weak. CIC and CB have no Internal Audit Unit in place. The PPAP Project requires significant and focused attention on internal audit given its size and nature.	High	(1) Recruit an independent Audit Consultant to conduct an internal audit of the project including all the implementing agencies. The Consultant will produce an audit work plan acceptable to IDA including capacity building in DAL. (2) Recommendations arising from the internal audit are to be auctioned by the IAs..	Substantial	Six months after Effectiveness

Fund Flow The fund flow arrangement is described in the Project FM manual. Replenishment of funds is delayed by the Department of Treasury and Finance or because of lack of counterpart funds.	Substantial	Department of Treasury has provided assurances on finding a workable solution to ensure adequate and timely availability of funds for PPAP in the first quarter of each fiscal year.	Moderate	
Financial Reporting The Project FM team has no experience in producing interim unaudited financial reports.	Moderate	(1) The IFR guidelines will be used by the Project management team over the life of the Project. (2) Training will regularly be provided to financial, accounting, and M&E staff in the use of IFR Guidelines. (3) The format, content, and periodicity of FMR were discussed and agreed upon during negotiations.	Moderate	Negotiations
Auditing (1) AGO needs to be strengthened. (2) There is a concern about a quality of the audit reports and a risk of severe delays in the production of Project units' audit reports by the AGO.	High	(1) There are ongoing efforts to strengthen AGO and building its capacity under the PFM reform component of the ECP (Enhanced Corporation Program) funded by Australia. (2) The Steering Committee will provide an oversight role on Project funds and follow up on implementation of internal and external audit findings. (3) Auditor's TOR will be prepared and agreed upon by IDA.	Substantial	Negotiations
CONTROL RISK	**Substantial**		**Moderate**	
OVERALL RISK	**Substantial**		**Moderate**	

11. With the mitigation measures in place, the residual risk will be reduced to moderate and thus ensure that the financial management arrangements are acceptable to the Bank.

V. Institutional and Implementation Arrangements

12. **Coffee Industry Corporation Limited (CIC)**. The CIC was established in September 1991 under the then Government's devolution policy for the agricultural sector. It is the key policy and coordinating body for the coffee industry. The CIC is a registered company, which is limited by guarantee under the Companies Act (chapter 146), with a share capital and reports to a Board comprising 12 directors. It is governed by the Coffee Industry Corporation (Statutory Functions and Powers) Act 1991 and independent from the State. The representation on the Board is six Directors representing smallholder grower groups, while the Coffee Exporters Council, the PNG Block holders Association and the Plantations & Processors Association are each represented by a director and there are three ex-officio PNG Government directors (from the Department of Treasury & Finance, the Department of Trade & Industry and DAL). Each Director, or the Unit that the Director represents, holds one share in CIC. There are two main divisions in addition to the Chief Executive Officer's Secretariat and commercial operations, namely the Research and Grower Services Division and the Industry Operations Division.

13. The CIC FY 2008 audited accounts (audited by the Auditor General) were made available in August 2009. CIC reports by calendar year and therefore the 2008 accounts represent to 31 December 2008. It is noted that the audit opinion on the FY 2007 accounts was qualified on the basis that there was a deficiency of working capital. The FY 2008 audit was qualified for two items (see also the next point), and both these points also raised comment in FY 2007 audit. CIC had (at December 2008) unpaid Group and withholding tax. It was and is intended to offset this amount payable with VAT refunds due. It is expected that this set off will have a minimal impact, from a balance sheet perspective, and this is acceptable although the logistics of working through this offset arrangement need to be agreed with all parties involved, and completed at an early opportunity. The FY 2008 audit report also raised an issue with payroll tax potentially not being correctly applied to some allowances paid to staff. While this matter is being addressed, it needs to be resolved and finalized at an early opportunity.

14. The FY 2008 accounts show prima facie a healthy working capital position and a ratio of current assets to current liabilities of 1.7:1. However an amount of PGK 7 million is held on behalf of growers and these monies cannot be immediately used by CIC, without further authority. Adding back (deducting) these monies from the current assets to current liabilities ratio generates a working capital ratio of 1.04:1. This working capital ratio is acceptable, but given that asset balances include donor funds yet to be disbursed it suggests that CIC will continue to rely on the support of the National Government to allow it to pay its liabilities as and when they fall due.

15. CIC has prepared a strategic plan for the 10 year period 2008–2018. It includes a commitment to maintaining and improving governance standards within the CIC organization. CIC has handled similar donor funds in the past, and the CIC has not received any adverse audit/review of the controls placed around the disbursement of particular donor funds. However, improvements in the controls around all funds and disbursements should be sought.

16. **Cocoa Board (CB).** The Cocoa Board is the central policy making body for the cocoa industry and also has regulatory powers. Its major task is to regulate cocoa quality through licensing and control of domestic fermentaries, as well as point of export inspection. It also is the voice of the industry to central and sub national governments in PNG as well as the link to the central agencies. The CB was first established under the Cocoa Act of 1974, revised in 1981 and in 1995. The CB currently has 49 staff, with three at senior executive level, 20 in Corporate Services and 34 in Field Services. The Field Service personnel are fermentary and point of export inspectors who are located in the various cocoa growing provinces. The CB offices and key staff are located at Kokopo, the PNG centre of the cocoa industry and where other key industry stakeholders have their base. The Act requires the CB to have a Board in place, however, it has been without an independent advisory committee to oversee its operations and performance for some years. As a result, the CB has limited lobbying power within the central government and agencies and the private sector believes it is at a severe disadvantage to other similar boards in PNG, which have high profile and well connected Chairpersons who can lobby their interests at the highest levels. The CB operates to a financial year (FY) commencing on October 1 to September 30 to coincide with the seasonal flow of the cocoa industry.

17. Its annual audited accounts were last completed for the year ending September 2004. This audit was completed in October 2008. There were a number of qualifications in that audit opinion, some of which were specific while some were more general. The accounting balances between CB and Coffee Industry Corporation Limited (CCIL) need to be reconciled and agreed. This will require adjustments (probably write offs) in either entity, or possibly both. Accounts for the years 2004/05, 2005/06, 2006/07 and 2007/08 have been prepared and audited by the AGO. The FY 2008/09 accounts are currently in draft format.

18. The CB's draft Strategic Plan released in November 2008 covers the period 2008 through to 2018. The strategic plan is light in the areas of corporate governance and budgets. Significantly, it does not demonstrate an up-to-date appreciation of the impact of cocoa pod borer (CPB) infestation on the industry and the finances of the CB. The CB is highly dependent on fermentary license fees and export levies for its financial viability. This dependency results in a focus on collecting license fees and export levies, rather than delivering effectives services to farmers. CPB will have a material negative impact on CB and its revenue is likely to decrease dramatically in the short term, placing the organization in a precarious financial position. In addition, the CPB response is likely to mean that certain areas of activity are likely to request increased expenditures to address particular CPB issues. Therefore, facing a significant shortfall in revenue the CB will need to either increase revenue from other sources or reduce expenditure as needed, or both. In any event, and against the background of more recent knowledge of the impact of CPB, a short term plan needs to be drawn up and costed to cover the next two, or possibly, three years. This Plan should address both decreasing revenue and the pressures that CPB will place upon the organization from a practical perspective.

VII. Budgeting Arrangement

19. The overall Project budget and disbursement schedule are presented in the detailed cost tables for the Project.

VIII. Accounting Arrangement

20. **Books of accounts**. All implementing entities (DAL, CIC, CB) that will receive funds from PPAP will maintain books of accounts specifically for the project. The book of accounts will include a cash book, ledgers, journal vouchers, a fixed asset register, and a contracts register. A chart of accounts will be drawn up for the project, in which the account codes will match the classification of expenditures and sources and application of funds indicated in the Financing Agreements. The chart of accounts will be developed in a way that will allow project costs to be directly related to specific project activities and outputs. The Implementing Agencies will update the existing accounting software or acquire a new one if the current systems are not customized to handle individual project accounts.

21. **Information system**. The books of accounts need to be maintained on a computerized accounting system. Although DAL uses Government Accounting System, its chart of accounts excludes projects. The Government accounts are prepared on the Government's computerized system. As noted, an accounting software package that would be interfaced with the current

Accounting Software may need to be acquired. The Project accounting arrangements will comply with the IDA Financing Agreement and Government financial laws and regulations.

22. CIC uses the "AccPac" accounting software package. AccPac is a well regarded and commonly used accounting software. The AccPac accounting system will effectively and efficiently record the activities within the PPAP project, and CIC would not need to purchase any new or additional AccPac modules.

23. The CB uses the "Attache" accounting software package, which is a well used package throughout Australia and New Zealand. This accounting package was introduced in 2007 (after about a decade using MYOB) and Attache has the capability and capacity to manage activities under the PPAP.

24. **Project Financial Management Manual**. A Financial Management Manual has been prepared and key project staff will be subsequently trained on its use. The Manual describes the internal control arrangements, accounting system, including the project's major transaction cycles, cofinancing arrangements, fund flow processes, accounting records, supporting documents, computer files, specific accounts in the financial statements involved in processing transactions, the accounting processes from the initiation of a transaction to its inclusion in the financial statements, authorization procedures for transactions, the financial reporting process used to prepare the financial statements and interim financial reports, financial and accounting policies for the project, budgeting procedures, financial forecasting procedures, procedures undertaken for replenishing the Designated Accounts, and auditing arrangements.

IX. Staffing Arrangements

25. DAL Chief Accountant will be responsible for preparing the consolidated financial statements for the project, assisted by the Finance Management Advisor recruited under the project. Each PMU will also be staffed with a qualified Accountant (Sr. Financial Management Officer).

26. All accounting staff of the implementing entities working with this Project will require training in recent World Bank Financial Management and Disbursement Guidelines, which will be arranged in consultation with the Country Financial Management Specialist.

27. DAL will strengthen their accounting unit by recruiting additional qualified, experienced accountants. In addition, appropriate staffing arrangements will have to be maintained throughout the life of the project.

28. CIC will strengthen their accounting unit by recruiting additional qualified, experienced accountants. In addition, appropriate staffing arrangements will have to be maintained throughout the life of the Project. A CFO should be appointed as a priority.

29. Regarding the Cocoa Board, the appointment of additional accounting staff may be required, although the volume of transactions related to the impact of CPB could impact this. There is a need for the CB to give appropriate focus to matters of commercial and financial responsibility compliance and governance. This must be driven by the Board and may necessitate

the appointment of a lead Chief Financial Officer (CFO). Moreover, approved governance needs to be driven from the top – the Board must show leadership in this area.

X. Internal Control and Internal Auditing

30. **Internal Control**. DAL's internal control systems have certain levels of segregation of duties and controls. The Government's regular financial rules and procedures that apply to ministry operations, stated in Public Financial Act will be used under the project. These procedures include regular post audits by DAL's Internal Audit Unit on a regular basis. The internal control environment revolves around the internal audit function, which reviews day-to-day operations of DAL and donor funds, including the adequacy and effectiveness of internal controls.

31. **Internal auditing**. The Internal Audit Unit of DAL is an independent unit headed by the Chief Internal Auditor, who reports directly to the Permanent Secretary. The Internal Audit Unit is guided by the Public Financial Act. The Unit has an audit strategy and plan but there is no Internal Audit Manual. DAL internal audit unit is weak. The internal auditors perform a compliance audit and financial audit on a selected entities based on its annual audit plan.

32. CIC and CB do not have an internal audit function in place. Basic internal controls, such as division of duty, are not implemented routinely by CIC and CB. In part, these weaknesses can be attributed to the lack of staffing and resources.

33. It is recommended to engage an independent audit consultant to develop and implement a work plan to (a) strengthen the internal audit function within DAL and (b) review the internal controls and financial systems of the CIC and Cocoa Board. The consultant will support the project implementation by ensuring that internal control systems are functioning adequately and that management addresses issues raised in the internal auditor's report. The work plan would need to be acceptable to IDA. Any recommendations arising from the audit shall be included in the report provided by the consultant.

34. The annual external audit should include in its TORs additional scope to review the internal controls and the compliance with the implemented recommendations from the internal audit report.

XI. Fund flow arrangements

35. Project Agreements would be signed between the GoPNG and respectively the CIC and the Cocoa Board, which would define the terms and conditions under which IDA and IFAD funds would be made available to the CIC and Cocoa Board as the implementing entities.

36. The IFAD co-financing will be administered by the World Bank/ IDA under a Letter of Appointment signed between the two agencies. This specifies that IFAD appoints the World Bank/ IDA as Cooperating Institution in line with the General Conditions of the Fund. This provisions that the World Bank/IDA will process all withdrawal applications and administer all

procurement financed from the proceeds of IFAD loan. IFAD will also adopt all financial reporting and audit provisions as required by the World Bank/ IDA.

37. Each source of funding (IDA and IFAD) will contribute to all activities under the project as per the agreed fixed percentages. The table below indicates the amounts allocated and the percentages to be financed from each source of funding[22].

Categories	IDA Credit		IFAD Loan		Total
Goods, Works, Services, Training, Incremental Operating Costs and Infrastructure Investments exclusive of taxes	US$ 25million	64 %	US$ 14 million	36 %	100%

38. **Designated Accounts**: Following authorization from the Treasurer, DAL, CIC and the Cocoa Board will each open a Designated Account (DA) to receive the IDA and IFAD funds in any commercial bank of their choice acceptable to IDA. These Designated Accounts will be managed by DAL-PCU, CIC-PMU, CB-PMU. Signatories for all Designated Accounts are documented in the Financial Management Manual. Upon effectiveness, all implementing entities (DAL-PCU, CIC-PMU, CB-PMU), through the Department of Treasury, will make the initial request for the advance from the IDA and IFAD accounts into their respective DAs. The currency of such a designated account would be Kina with a designated ceiling to be confirmed by negotiations.

39. **Counterpart Funds:** DAL, CIC and the Cocoa Board will also create a parallel operational account into which the counterpart funds provided by GoPNG will be deposited. The counterpart funds under the development budget are due to be released quarterly, and unused appropriations can be carried over into the following financial year (whereas appropriations under the recurrent budget cannot).

40. **Disbursement methods:** The project could use four disbursement methods: (a) advances into the DA; (b) direct payment from the IDA and IFAD accounts; (c) special commitment; and (d) replenishment. Where direct payment is used, this would be subject to IDA's no objection prior to signature on the contract; it would only be used for large payments or when payments are in currencies that the borrower may have difficulty obtaining. The most commonly used disbursement method in PPAP will be the advance method using the DAs. This is the most appropriate considering capacity issues.

41. **Fund Flow Arrangements:** In the DA advance method, following the initial advance from the IDA and IFAD accounts, DAL, CIC and the Cocoa Board will subsequently make requests for further advances into the DA upon accounting for the equivalent amount advanced

[22] These may be adjusted as needed during the implementation of the PPAP, for example if other donors contribute to the project

and used, with appropriate reconciliation in a defined format as per the Disbursement Letter and Disbursement Guidelines.

42. In requesting disbursements into the DA for expenditures incurred, DAL, CIC and the Cocoa Board will make extensive use of a Statement of Expenditure (SOE) record. The SOE could be used for (a) civil works contracts to a value less than US$100,000 equivalent each; (b) goods contracts costing less than US$100,000 equivalent each; (c) service contracts for individual consultants costing less than US$50,000 equivalent each and for firms costing less than US$100,000; (d) training, workshops; and (e) operating costs. Disbursements for services and goods exceeding the foregoing limits would be made in accordance with respective procurement guidelines and provisions in the Financing Agreement against submission of full documentation and signed contracts.

43. All Withdrawal Applications would need to be processed by the Department of Treasury who will be the signatory on the Withdrawal Applications. This would allow the Department of Treasury to capture the necessary information to update their Debt Management and accounting systems.

44. If the Designated Account remains inactive for more than six months, the Borrower may be requested to refund to IDA and IFAD the amounts advanced to the Designated Account.

XII. Financial Reporting Arrangements

45. DAL will provide a consolidated quarterly Interim Financial Report (IFR) and annual Financial Report to IDA and IFAD within 45 days after the end of the period to monitor the use of project funds. Formats for these reports should be generated from the DAL financial management system. The information in these reports will be clearly linked with the chart of accounts for the project.

46. The following consolidated quarterly IFRs and annual Financial Reports will be produced by DAL for the Project:

a) A statement of sources and uses of funds for the reported quarter and cumulative period from project inception, reconciled to opening and closing bank balances;
b) A statement of uses of funds (expenditures) by project activity/component, comparing actual expenditures, commitments and expenditure plus commitments against budget, with explanations for significant variances for both the quarter and cumulative period;
c) A voucher tracking report; and
d) Other information as agreed at the time of negotiations.

XIII. External Audit Arrangement

47. As per the Public Finance Act, the AGO is responsible for auditing all Government organizations, including local authorities and public corporations and donor funds. The Auditor General has the power to authorize any person registered as an auditor under the Auditors and Accountants Act and approved by the AGO to conduct an audit on his/her behalf.

48. AGO or a registered auditor approved by the AGO will conduct an annual external audit of PPAP. The auditors will provide a consolidated audit report on the Project financial statements, as well as an audit report on the project financial statement managed by DAL, CIC and the Cocoa Board (which includes the Designated Accounts).

49. The audit will adhere to International Standards on Auditing (IFAC/INTOSAI pronouncements) and the report will be submitted within six months after the end of the financial year. In addition, the auditors will provide a detailed management letter containing their assessment of the internal controls, accounting system, and compliance with financial covenants in the Financing Agreement. Terms of reference for the audit will be agreed upon during negotiations.

XVI. Financial Management Action Plan

50. The action plan in Table 2 indicates the actions to be taken for the Project to strengthen its financial management system and the dates that they must be completed.

Table 2. Action plan to strengthen Financial Management

	Action	Date due by	Responsible
1	Prepare formats of unaudited IFRs that will be used for the Project and make them consistent with IDA formats	By negotiations	DAL , IDA
2	Agree on terms of reference for external auditors	By negotiations	AGO and IDA
3	Appoint an FM Specialist to assist DAL-PCU and the two FM officers in CIC-PMU and CB-PMU. Designate qualified accountants to work with the FM consultants on this Project.	Three months after effectiveness	DAL, CIC, CB
4	CB Audit of financial statements for 2005, 2006, 2007, 2008 shall be carried out by AGO. CB response to AGO should include a time bound action plan acceptable to IDA to address weaknesses identified in the audit reports.	Before disbursement	AGO, CB
5	Update software to accommodate Project needs or acquire new accounting software for the Project.	Three months after effectiveness	DAL, CIC, CB
6	Recruit an independent audit consultant to conduct an internal audit of the project systems in each of the implementing agencies.	Six months after effectiveness	DAL, CIC, CB
7	IFRs submitted to IDA	45 days after the end of the required period	DAL,CIC, CB
9	Annual audit of Project Financial Statements and consolidated Financial Statements.	Within 6 months after the end of each fiscal year	DAL

XV. Financial Management Supervision Plan

51. A joint supervision mission will be conducted at least twice a year based on the risk assessment of the Project. The supervision mission objective is to ensure that strong financial management systems are maintained throughout the life of the Project. Regular reviews will also be carried out through the IFRs to ensure that expenditures incurred by the Project remain eligible for IDA and IFAD funding. An implementation support plan is proposed, based on the outcome of the financial management risk assessment (Table 3).

Table 3. Financial management Supervision Plan

FM activity	Frequency
Desk reviews	
Interim financial reports review (IFRs)	Quarterly
Project audit report review	Annually
On site visits	
Review of overall operation of the FM system	Semiannually, based on the substantial risk rating
Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, systems audit report, and other reviews	As needed
Transaction reviews (if needed)	As needed in case of any issue arising
Capacity-building support	
FM training sessions	Before Project start and thereafter as needed

XVI. Conclusion of the Assessment

52. As noted, a review of the financial management arrangements assessed the financial management risk to be Substantial, but after mitigation measures are undertaken the risk will be reduced to Moderate. With the mitigation measures, the financial management arrangements should be adequate to provide, with reasonable assurance, accurate and timely information on the status of the project as required by IDA. The recommended improvements/mitigation measures are detailed in the Financial Management Action Plan.

Annex 8: Procurement Arrangements

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

A. General

1. All procurement for the proposed project, including under the IFAD loan[23], would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, revised October 2006, and the provisions stipulated in the Credit Agreement. The general description of various items under different expenditure categories is presented below. For each contract to be financed by the IDA Credit and IFAD Loan, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame would be agreed between the Borrower and IDA in the Procurement Plan. The Procurement Plan would be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

2. **Institutional Arrangements and Procurement Responsibilities:** Project general oversight and guidance would be provided by a Project Steering Committee (PSC). At national level, a small Project Coordination Unit (PCU) would be established in DAL and would be staffed with a Project Coordinator and a Financial Management Advisor. Project management functions would be placed with Project Management Units (PMUs) within the respective industry peak bodies, i.e. the Cocoa Board of PNG (CB) and the Coffee Industry Corporation (CIC) respectively in Rabaul and in Goroka. In both instances, the PMUs would be responsible for daily management of project implementation including procurement functions. Each PMU would include a Senior Procurement Officer (SPO).

3. **Procurement of Works**: **(US$ 14.6 million, Credit/Loan and Government Financing):** Works procured under this project would be directed at the rehabilitation of existing transport links (feeder roads and access tracks/footpaths, wharves or jetties) that provide access between smallholder farming communities in both the coffee and cocoa sectors, and marketing or processing points (located on a trafficable route), and for which a sustainable maintenance regime can be introduced or strengthened. Investments in infrastructure will only be identified following the selection of individual activities under Component 2. Once the scope of a Component 2 investments is agreed, the potential market access infrastructure interventions that will directly impact on the market access of the target beneficiary smallholder communities can be identified and undergo a selection process for prioritization for funding under the Project.

a. International Competitive Bidding (ICB): The project is not expected to include ICB civil works contracts (i.e. contracts estimated to cost more than US$500,000). If ICB packages are identified, a "Slice and Package" strategy would be adopted, as to attract the interest of both small and large firms. The Works are reasonably homogeneous and

[23] Under IFAD's Procurement Guidelines, procurement from a non-member country may be permitted on an exceptional basis due to specific country circumstance, joint cofinancing, or for specific types of expenditure for which the most suitable suppliers are expected to be located in non-member countries.

roads would be sliced "vertically" into sections with similar features is suited, since each slice is a complete, self-contained entity in itself. Five slices is the maximum number to be adopted.

b. **National Competitive Bidding (NCB):** Contracts estimated to cost US$500,000 or less but more than US$50,000 are expected to be procured under NCB. Standard Bidding Documents would be developed and agreed with IDA.

c. **Shopping:** Contracts estimated to cost less than US$50,000 are expected to be procured under Shopping and would be applied for simple works (e.g. routine roadside repairs).

4. **Procurement of Goods: (US$ 0.42 million, Credit/Loan and Government Financing).** Goods required for the project would comprise of vehicles, IT equipment (hardware and off-shelf software), office equipment and furniture.

a. **International Competitive Bidding (ICB):** The project is not expected to include ICB contracts (i.e. contracts estimated to cost more than US$200,000).
b. **National Competitive Bidding (NCB):** Contracts estimated to cost US$200,000 or less but more than US$50,000 would be procured under NCB. Those contracts would be adopted for items such as vehicles and software. Standard Bidding Documents would be developed and agreed with IDA. The estimated aggregate amount under this method is US$ 0.24 million.
c. **Shopping:** Goods estimated to cost less than US$50,000, such as cars, computers office equipment, may be procured through Shopping. The estimated cost of goods to be procured through this method is US$ 0.18 million.

5. **Selection of Consultants (US$ 8.7 million, Credit/Loan and Government Financing):** Most contracts under Component 1 would involve consulting services. They would consist of services in diverse areas, reflecting the needs of the different institutions supported by the project. The preparation of investments under Component 2 and 3 would also involve consulting services. Technical Assistance would also be necessary for project management and monitoring and evaluation. The ceiling for short-lists of consultants composed entirely of national consultants would be US$200,000. In the event that sufficient numbers of qualified national firms are not available for effective competition, then the short-list would consist of both national and international consultants.

a. **Quality Cost Based Selection (QCBS):** With regard to the assignments where the scope of work of the assignment can be precisely defined and the Terms of Reference are clear and well specified (such as project management services) the recommended method is QCBS.
b. **Least-Cost Selection (LCS):** A contract to be selected under this method would be for the audit of the project accounts. The assignment is of standard nature.
c. **Selection Based on Consultants' Qualifications (CQS):** Regarding small assignments (below US$200,000) of a routine nature, qualified consultant firms may be selected through CQS method.
d. **Single Source Selection (SSS):** Consideration would be given for SSS regarding assignments meeting the requirements of paragraph 3.10 of the Consultant

Guidelines. This could be the case for technical assistance for preparation of proposals under Component 2, Productive Partnerships (reference is made to 3.10(c)), and training and accreditation of coffee cuppers (reference is made to 3.10(d)).

e. Individual Consultants: International consultants, as well as local ones, may be appointed by the implementing agencies to assist in project implementation and to provide technical assistance. They should be selected through a comparison of qualifications of at least three qualified consultants among those who have expressed interest in the assignments or have been approached directly by the implementing agencies. In addition, with appropriate justifications and after concurrence by IDA, individual consultants may be selected on a sole-source basis in exceptional cases, such as: tasks that are continuation of previous work that the consultants have carried out and for which the consultants were selected competitively; assignments lasting less than six months; and when the individual consultant is the only consultant qualified for the assignment.

6. **Productive Partnerships (US$19.3 million, Credit/Loan and Government Financing)**. The objective Component 2 is to foster the integration of smallholder producers in performing and remunerative value-chains by developing and implementing public-private alliances (productive partnerships) in the project areas. The partnerships would include identified groups of farmers and any of the following: an agribusiness or private sector operator engaged in the sector; a knowledge provider (private, NGO, public); a multiple partnership involving an agribusiness/private sector operator and knowledge provider(s). The partnerships would be demand-driven and based on agreed results which would be consistent with the specific objectives of the Project.

Through a process described in the Component 2 Implementation Manual, both the Cocoa Board and CIC would advertize and call for expressions of interest in the proposed partnerships (Call for Proposals). The PMUs, assisted by a Technical Appraisal Committee, would identify eligible proposals. Financing of eligible proposals would be proposed by the PMUs, appraised by the Technical Appraisal Committee, and submissions endorsed by the respective Industry Coordination Committee. The proponents will have to demonstrate that they have already been successfully working with smallholders to increase productivity, quality and sustainability of cocoa- and coffee-based farming systems, and are interested in scaling up those activities. They would also need to have a demonstrated capacity to manage contracts and activities of the scope and nature identified in the proposed partnership. Eligible expenditures would include technical assistance, training and workshops, goods, equipment and materials as well as small works such as on-farm works. It is not possible to pre-identify items to be procured by the partnerships at this stage. The total cost of each proposal is likely to vary, but they are not expected to exceed US$700,000. In addition, the submission of many large proposals and contracts (above US$200,000 per contract) is not anticipated. Procurement for eligible activities under approved proposals from selected productive partnerships would be carried out by the partnership using the Community Participation in Procurement method (as per para. 3.17 of the Procurement Guidelines).

7. The following procurement practices are recommended to be used for procurement under approved proposals of selected productive partnership:

a. Goods. For small goods contracts (US$10,000 or less equivalent per contract), Direct Contracting may be used provided that the price is reasonable. For goods costing US$200,000 equivalent or less per contract, Shopping would normally used. Larger goods contracts may be procured using Open Competitive Bidding procedures (similar to National Competitive Bidding).

b. Civil Works. For small works contracts (US$50,000 or less equivalent per contract), Direct Contracting may be used provided that the price is reasonable. For works under US$200,000 or less equivalent per contract, Shopping would normally be used. Larger works contracts may be procured using Open Competitive Bidding procedures (similar to National Competitive Bidding).

c. Consulting Services. For small contracts (US$100,000 or less equivalent), single source selection (but usually based on a comparison of qualifications of several candidates or previous experience with the firm) would be used (to certain extent, this procedure is similar to the World Bank's CQS method). For larger contracts, consultants would be selected through a competitive process similar to the Bank's QCBS or LCS methods.

8. The procurement practice for each activity will be specified in the proposals. The PCU and PMUs will monitor the adherence to the approved proposals by the partnership.

9. All contracts financed in whole or in part by the project and procured under the productive partnership arrangements shall be subject to post-review by IDA.

10. **Incremental Operating Costs (US$ 1.77 million, Credit/Loan and Government Financing):** This would include communications, utilities, stationary, transportation, accommodation and travel allowances (e.g. to monitor implementation in the field). The procurement of such items would follow the implementing agency's administrative procedures.

11. Others (US$ 0.69 million, Credit/Loan and Government Financing).

12. Training would be required for activities undertaken under Component 1, such as training on sustainability practices, and under Component 4.

B. Assessment of the agency's capacity to implement procurement

13. Procurement activities would be carried out by DAL, the Cocoa Board and CIC. An assessment of the capacity of DAL, the Cocoa Board and CIC to implement procurement actions for the Project was carried out in October 2009. The assessment reviewed the organizational structure for implementing the project and the interaction between the staff responsible for procurement and other national agencies. The PCU located within DAL would be staffed with a Senior Procurement Advisor. This Advisor will also provide guidance to the Senior Procurement Officers located within the PMUs for CIC and the Cocoa Board.

14. The overall project risk for procurement is “high”, consistent with the CPAR. The key issues and risks concerning procurement for implementation of the project have been identified and include: lack of procurement expertise within the Implementing Agencies, recent changes in the national procurement regulations, and complex procurement scope (civil work contracts in remote areas). The following action plan has been adopted:

Perceived Risk	**Action**	**Timeframe**
Several legal provisions do not conform to World Bank’s policy regarding NCB: (i) Insufficient bid preparation time; (ii) Criteria other than price that are not specified in bid documents can be used for bid evaluation; (iii) Contract award may not be made to lowest evaluated qualified and responsive bidder (iv) price negotiations conducted with “winning” bidders prior to contract signature; (v) No requirement for public notice of contract awards; (vi) Ineffective bid protest mechanism; (vii) No provisions related to resolving contractual disputes	Inclusion of Special Procedures for National Competitive Bidding, as per the PNG Country Procurement Assessment Report (June, 2006), into the project’s Legal Agreements. Provisions to be reflected in bidding documents approved by the World Bank Provisions to be summarized in the Project Procurement Manual	During negotiations

Perceived Risk	Action	Timeframe
Widespread perception of corruption and weak capacity of oversight agencies constraints to carry their mandate. Specific risks: (i) fragile selection of the tender/evaluation committees and other teams responsible for decision making; and (ii) Inadequate preparation of estimates for procurement packages (iii) Bid/Proposal evaluation: collusion between tender committee and bidders; delay in evaluation process that would benefit certain bidder(s)/consultant(s); proposals are rejected for reasons unrelated to the capacity of the bidders in carrying out of the contracts/services; False information about the information provided by the bidders	Implementing agencies to establish steps of the membership selection process and minimum qualifications for members Implementing agencies to prepare detailed estimates for all major contracts Strong verification procedures, particularly in the prior review of packages. Appropriate sanctions against tender committees and others who have failed in their duties or deliberately abused their powers	Three months after effectiveness During implementation During implementation During implementation
Project implementation delays as procurement planning is not fully adopted by Implementing Agencies.	Preparation of a final procurement plan	Completed
Procurement capacity is weak.	Consultants to assist implementing agencies on procurement for a period of time commensurable with the project procurement load	During implementation
Implementation of recent changes in the national procurement regulations	Project preparation Team to Consult with CSTB.	Completed

C. Procurement Plan

15. The Implementing Agencies have developed a Procurement Plan for project implementation which will provide the basis for the procurement methods. This plan would be made available at the implementing agencies head offices. It would also be available in the Project's database and in the Bank's external website. The Procurement Plan would be updated in agreement with the

World Bank annually or as required to reflect the actual project implementation needs and improvements in institutional capacity

D. Frequency of Procurement Supervision

16. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agencies has recommended that procurement supervision shall be carried out twice a year in first two years and then once in the remaining Project period. This includes ex-post-review of contracts (sample of 20%).

E. Prior Review Thresholds

- **a.** Goods would include: (a) all contracts awarded on the basis of ICB; (b) contracts estimated to cost US$100,000 or more awarded on the basis of NCB; and (c) first three contracts awarded on the basis of Shopping. All other contracts would be subject to post review on a sample basis.
- **b.** Works would include: (a) all contracts awarded on the basis of ICB; (b) contracts estimated to cost US$100,000 or more awarded on the basis of NCB; and (c) first three contracts awarded on the basis of Shopping. All other contracts would be subject to post review on a sample basis.
- **c.** Consultant services would involve the prior review of (a) contracts greater than US$100,000 equivalent for consultant services provided by firms, and (b) selected contracts for individual consultants (on an exceptional basis and as indicated in the procurement plan). All other procurement of consultant services would be subject to post review on a sample basis.
- **d.** All the prior review contracts would be stated in the Procurement Plan.

F. Details of the Procurement Arrangements Involving International Competition

1. Goods, Works, and Non Consulting Services

(a) List of contract packages to be procured following ICB and direct contracting: none.

2. Consulting Services

(a) List of consulting assignments with short-list of international firms: none.

Annex 9: Economic and Financial Analysis

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

A. Farm Level

1. The primary beneficiaries of the PPAP would be the smallholder families in the project provinces. These typically consist of the nuclear family, often with extended family members. The holding usually consists of a subsistence garden of root crops and vegetables supplemented by small livestock plus an area of tree crops, such as cocoa in the coastal areas, and coffee in the highlands, to provide cash income when needed. The area of tree crops held depends on the labor supply of the household and the standard of maintenance. The expected impact of the project on incomes is examined by consideration of the proposed interventions on average-sized holdings of 1 hectare[24] and assumes that there will be little impact on subsistence production since subsistence production will continue to be determined by family need (it is secured by households before they invest in cocoa or coffee production). The analysis assumes that the PPAP would provide resources, technical assistance, and incentives to facilitate replanting with improved material and upgrading the level of tree husbandry while the smallholders provide the labor and field management. Summary tables are presented in this section based on detailed tables in Annex 1.

Cocoa

2. **Without project situation**. Prior to the outbreak of the CPB, a family with 1 ha of cocoa would expect to earn PGK1,135 per year (table 9.1) from collecting wet pods yielding on average 840 kg of wet beans per hectare (equivalent to 300 kg of dry beans), and selling for PGK 1.5 to 1.7/kg to traders and buyers. The largest cash cost would be for transport to the buyer at about PGK25/bag of 62.5 kg, or about PGK125 for a typical holding producing some 5 bags/ha/yr (312.5kg). Most labor would be for weed control and harvesting. Under these assumptions, the return to family labor would be PGK 21 per day, with low labor inputs of approximately 55 days per year. With the outbreak of the CPB, it is expected that the family income has dropped by approximately 55 percent as yield declined to 150 kg/ha[25] and the price discounted by some 15 percent for poor quality beans. The return to labor falls to PGK 11 per day.

[24] There are significant variations in size of holdings in different districts and LLGs, both for cocoa and coffee. For example, in 2007 Curry et al. found an average size of cocoa holdings of 4.8 ha for Kokopo-Vunamami and 1.7 ha for Livuan-Reimbar LLG areas. Estimates from other surveys range from 0.8 to 5.4 ha per household on average in ENB Province (*Farming or foraging? Household labour and livelihoods strategies amongst smallholder cocoa growers in PNG*, Curtin University of Technology, 2007). The CIC estimates that coffee holdings in the project areas range from 0.5 ha to 3 ha per household on average depending on districts and LLGs.

[25] Situation observed in infested areas of ENP Province in 2009.

Table 9.1 – PNG PPAP
Cocoa Rehabilitation - Summary Crop Budget for 1 ha

Production Method	Gross Income PGK/yr	Yield at Maturity kg (Year 5) Dry bean equivalent	Average Price PGK/kg wet bean	Days Worked	Return to Labor PGK/day
Traditional – no CPB	1,135	300	1.65	54	21
Traditional – with CPB	515	150	1.40	47	11
Improved management (at maturity)	2,810	750	1.65	133	21
Replanting and improved management	3,230	850	1.65	154	21

Source: Annex 1, Tables 1-3

3. **With project.** With the proposed interventions, smallholder cocoa block management would be intensified to follow the proven approach which consists of timely harvest, field hygiene, regular pruning, and rationale application of pesticides until the CPB is under control. Some farmers would also choose to replace a proportion of their old cocoa trees with high yielding clones. With this method, they should be able to obtain an average dry bean yield of 850 kg/ha leading to a total cash income of PGK 3,230 per year for a family with 1 ha of cocoa. Labor use would triple to 154 days/ha as field maintenance intensifies and the volume to be harvested rises steeply. In this case, returns to labor would return to PGK 21/day and extra labor could be hired.

4. Most families, though, are reluctant to cut down bearing trees. Under the ENB Province Cocoa Pod Borer Eradication Program, enforced tree clearing was initiated. This proved unpopular and impractical and was discontinued. The socially acceptable compromise is to implement a sustained replanting program of 10 percent of trees annually on each farm. The increased yield from improved management on the rest of the block offsets the fall in farm income from the loss of 10 percent of trees during the immature period up to year 3. Even without the CPB, a sustained 10-year rotation should have been established since production declines steeply after this period. With CPB, efforts would be made to encourage a faster replanting program while minimizing a sharp fall in incomes or establishing an unwanted cyclical pattern of production. The above result indicates that there are strong incentives for households to participate in the PPAP whether the objective is to maximize cash income or returns per day worked. The incentive not to participate is the increased demand for labor for intensive management and the opportunity cost of that labor, as well as the impact on cash requirements for additional operating costs. Most households would have the equivalent of two labor units each, between the nucleus and extended family, for both subsistence and cash cropping and labor availability is not considered constraining at this size of holding.

5. **Impact on Cash Needs for Operating Costs.** Shifting from low to high inputs results in a major increase in cash requirements to meet operating expenses. The low input household with about 1 ha of cocoa requires about PGK 250/year for transport of beans to market plus bags,

tools and other small items. With replanting new clones and intensifying field management, the average household will need PGK300 for transport, plus approximately PGK300 to 400 for insecticides, herbicides and other miscellaneous items per year for their hectare of cocoa. In addition, PGK150/ha would be required each year for the purchase of seedlings in a 10 year rotation plus payment for any hired labor to clear, plant, and harvest the increased output. While this would be covered by increased cash returns, this would require good cash flow management by smallholders. In the absence of formal credit for agriculture, the initial investment could pose a difficulty for many households and would need to be partly covered under the partnership component of the project.

6. **Diversified Crops.** While there are some opportunities for other crops, these involve higher risk and uncertainty than cocoa for smallholders given the lack of established markets in the project area. For example, increased vegetable production in the initial CPB infestation period soon oversupplied the market. Within the tree crops group, growers are already familiar with various nuts, fruits, and balsa wood. The PPAP may support diversification proposals, under the Productive Partnerships component, provided that these meet the proposed criteria.

Coffee

7. **Without project situation.** Arabica coffee in the highlands plays a similar role in the farming system as cocoa in the lowlands and provides secure cash income ("coffee is the lifeline of the Highlands"). While the Coffee Berry Borer (CBB) is a threat, it has not yet arrived in PNG and the main need is to revitalize the industry by rehabilitating coffee gardens, improving crop husbandry, and strengthening support services. National production has fallen below 1 million bags per year with a concomitant fall in smallholder incomes. The majority of smallholders have small coffee holdings (0.5 to 3 ha) and produce uncertified Y grade parchment coffee yielding on average 572kg/ha of parchment per year, giving a net cash income of about PGK 2,060/year when sold at the current price of PGK4/kg of parchment (table 9.2). This gives a return to labor of approximately PGK 12.8 per day for approximately 160 days per year.

8. **With project.** With pruning, improved husbandry, infilling with volunteer seedlings and attention to quality as supported by the proposed project, annual cash income would rise to PGK 3,790/year from a yield of 1,000 kg of parchment at an increased price of PGK4.2/kg, reflecting better quality. The labor inputs needed would increase to about 220 days/ha/year with returns to labor rising from PGK12.8/day to PGK17/day.

Table 9.2 – PNG PPAP
Coffee Rehabilitation- Summary Crop Budget for 1 ha

Production Method	Gross Income (PGK)/yr	Yield at Maturity kg. of parchment	Price PGK/kg. of parchment	Days Worked	Return to Labor PGK/day
Traditional – low input.	2,060	572	4.0	160	12.8
Improved –upgraded management	3,790	1,000	4.2	220	17
Improved – with	4,840	1,215	4.5	355	14

sustained replanting. Certified parchment					

Source: Annex 1, Tables 4-6

9. The preferred technology includes a sustained 10-year replanting rotation with high yielding clones, upgraded management and pruning, and in some areas production of certified coffee (parchment or green bean). Under this option, the gross income for a 1 ha holding would rise to PGK 4,840/year from sale of 1,215 kg of parchment at a premium price of PGK4.5/kg (certified coffee). The number of days worked would rise to 355 per year and the return to labor would be about PGK14/day. While this option would maximize the cash income per hectare, it would clearly put a strain on family labor supply and is best suited for households with access to sufficient labor. In addition, cash needs for operating expenditures would rise from approximately PGK230/ha/year to about PGK630/year for transport of beans, certification and miscellaneous costs, plus PGK150/year for the purchase of improved seedlings. Similar to cocoa, this would require good cash flow management by smallholders. As in the case of cocoa production, since the absence of formal credit for agriculture could pose a difficulty for some households in meeting the initial investment costs this would need to be addressed under the partnership arrangements.

B. Aggregate costs and benefits

1. Both for cocoa and coffee, the aggregated costs and benefits will eventually depend to some extent on the mix of partnerships that would be financed. Assumptions have been made on the most likely mix of activities, however some variations are to be expected based on actual proposals from project partners. Furthermore, the analysis carried out focuses on direct farm-level benefits and does not include other potential benefits beyond farm-gate. It is therefore a conservative estimate.

2. **Cocoa**. The PPAP is expected to benefit some 10,000 to 15,000 cocoa-growing households with cocoa trees on about 13,000 ha (table 9.3). Of these, it is assumed that 8,000 ha would benefit from pruning and improved management while 5,000 ha would be replanted on a sustained 10-year cycle. Eventually it is expected that all growers would adopt the sustained replanting approach. Without the project, yields would be expected to continue their decline from 300kg/ha to 150 kg/ha under the impact of the CPB. With the project, yields would rise to about 750kg/ha as a result of management improvement and to 850kg/ha at peak with replanting of high yielding clones before decreasing over a 10-year period. Total production in the project area would increase from 3,900 tons of dry beans to some 7,500 tons of dry beans. This represents 15 percent of national output. The average annual farm gate value of production over a 20 year period increases from approximately PGK8 million to PGK26 million.

Table 9.3 – PNG PPAP Cocoa Benefit Calculations

	Units	Without Project	With Project
Project Area	ha.	13,000	13,000
Number of families	no.	10,000-15,000	10,000-15,000
Adopters – with replanting	no.	0	5,000
Adopters – without replanting	no.	0	8,000

Average yield – dry beans	kg/ha	150 (CPB)-300	800
Producer price – average quality	PGK/kg dry bean	1.40	1.65
Production- dry beans	tons	3,900	7,500
Average annual value of production (farm gate)	PGK m.	8.30	26.06

Source: Annex 1, Table 7

3. **Coffee** . The PPAP is also expected to benefit some 10,000 to 15,000 coffee-growing households, an estimated 10 percent of the total number of coffee growers in the project provinces, having an area of 10,500 ha of coffee in total. Of these, farmers would be expected to adopt upgrading measures on 5,000 ha while on the other 5,500 ha they would upgrade and produce certified coffee to take advantage of the price premium of 12.5 percent over non-certified beans. Without project yields are expected to continue their current downward trend from 400 kg to 350 kg of green beans per hectare per year, while with the project the average yield would rise to 600 kg per ha per year (and 800 kg/ha/year with replanting). The constant price used in the analysis is PGK4.0/kg green bean equivalent for average quality without the project and PGK4.5/kg for an average of certified and non-certified coffee with the project. The adoption rate would be faster for the non-certified production with full uptake completed within 5 years.

Table 9.4 – PNG PPAP Coffee Benefit Calculations

	Units	**Without Project**	**With Project**
Project area	ha.	10,500	10,500
Number of families	no.	10,000-15,000	10,000-15,000
Adopters – no certification	no.	0	5,000
Adopters – with certification	no.	0	5,500
Average yield –green beans	kg/ha	350	600-800
Producer price – average quality	PGK/kg	4.0	4.5
Production- green beans	tons	4,200	7,670
Average annual value of production (farm gate)	PGK m.	14.10	26.50

Source: Annex 1, Table 8

4. It is estimated that production in the project area is currently approximately 4,200 tons of green bean, equivalent to 7.7 percent of national production of 900,000 bags (54,000 tons). With the PPAP, output is expected to rise to 7,670 tons, equivalent to 14 percent of national production, earning growers PKG26.50 million annually on average.

C. Financial Analysis and IRR

1. The IRR at market prices for the project is estimated at 28%, based on a 20-year investment cycle. This return is to the uncosted factors, namely, land and the smallholders' labor. Costs include all off-farm costs for all components as shown in the project cost tables (net of price contingencies) and all incremental on-farm costs. Costs include operating costs after project closure, mainly road maintenance with an annual allowance of US$300,000 per year through to year 20. The benefits are all the direct benefits accruing from investment in coffee and

cocoa. Indirect benefits such as those captured by non-agricultural road users are not quantified and therefore excluded. Total costs rise to US$8.3 million in year 5, then decline after project closure. Incremental benefits from coffee and cocoa production increase gradually as new areas come into production and reach some US$ 17 million per year and fluctuate around this level based on phased replanting.

2. For cocoa, 5,000 ha of replanting with high yielding clones are phased in over a five-year period together with a further 8,000 ha of improved pruning, drainage, management, and tree replanting with growers' own stock over the same period (Annex 1, Table 7). The trees are assumed to have a 10-year economic life after which they are replanted. The without-project situation assumes that CPB remains endemic. With the project, replanting with high yielding clones results in a peak yield of 850 kg/ha after 5 years after which it declines until replacement in the eleventh year. Growers using their own stock for tree replacement and CPB control measures are assumed to achieve a peak yield of 750kg/ha before a decline sets in and the trees need to be replaced. In the base case, a constant price of PGK1.4/kg of poor quality wet cocoa beans is used and PGK1.65/kg for improved quality expected under the project.

3. For coffee, 5,000 ha are replanted over 5 years with improved clones and a further 5,500 ha are rehabilitated over the same period and then replanted with improved stock after their 10-year economic life (Annex 1, Table 8). Yields without project remain at 300-350 kg GBE[26]/ha while, with replanting with high yielding clones, yields peak at 850 kg/ha and with improved management and farmers' own trees stock for infilling yields reach 700 kg/ha before declining. For coffee, a price of PGK4.0/kg for poor quality parchment is used in the without project situation and a price of PGK4.50/kg for improved quality resulting from technical assistance and investment in processing under the project.

4. **Sensitivity to Changes in Key Assumptions.** The model is sensitive to price changes and yield assumptions (Table 9.5). Provided quality is effectively improved under the project, the likelihood of a long-term price fall is low. Similarly, yield assumptions are conservative and should be achieved if extension and replanting activities supported by the project are implemented according to plan.

Table 9.5 – PNG PPAP Sensitivity Analysis Summary Results

Assumption	IRR
Reduction of 20 percent in cocoa price	21%
Reduction of 20 percent in coffee price	20%
Reduction of 20 percent in cocoa yield	23%
Reduction of 20 percent in coffee yields	22%

D. Economic Analysis and IRR

1. In the economic model, labor is costed at PGK5/day, assumed to be the opportunity cost of labor. The aggregated economic IRR including the imputed cost of labor is 14%. However,

[26] Green Bean Equivalent

labor costs are likely to be overestimated since the typical "day" worked in cocoa or coffee usually involves about one-half a day on these crops while the rest of the day is spent on other farm, household, cultural obligations and other activities. The analysis indicates the importance of the project in raising productivity, especially of labor.

2. **Prices.** Economic prices for cocoa and coffee are not markedly different from financial prices. Economic prices are derived from FOB prices for these commodities less transport, processing, and margins. In October 2009, the PNG FOB price for cocoa was US$2,800/ton, equivalent to PGK 7,280/ton. The producer price at buyers' door was PGK 445 per 62.5kg bag of dry bean, or PGK7.1 per kg of dry bean[27] (PGK 7,100/ton). The difference of PGK180/ton between FOB price and producer price corresponds to normal factory to port charges including storage, fumigation, inspection, stevedoring and other costs. There are no commodity export duties and the Kina exchange rate is market-based. Similarly, for coffee, the mid-October 2009 Goroka delivered-in-store price of green beans varied from PGK6.4 to PGK8.0/kg, depending on grade while parchment received a factory door price of PGK3.5 to PGK4.15/kg also depending on class[28]. This represented about 70 percent of the FOB price and is consistent with the ACIAR 2004 study (ASEM/2004/042) into marketing margins for PNG coffee which found "…little evidence to support the premise that smallholder coffee producers in PNG are subject to exploitation by downstream market intermediaries".

3. **Market access infrastructure.** The rehabilitation and maintenance of feeder roads and other market access infrastructure (such as footpaths, jetties, footbridges, etc) in the project areas will contribute to achieving the smallholder income increase goals of the project. The direct benefits of these investments are included in the value of incremental production and no indirect or other benefits are estimated. The full costs of the infrastructure works are included in the investment costs and the maintenance cost is included in recurrent costs. Post-project infrastructure maintenance is estimated at US$300,000 annually. Choice of specific roads /transport infrastructure would be based on meeting criteria including an acceptable rate of return resulting from the value of increased production in the catchment of the proposed infrastructure, and satisfactory maintenance financing arrangements.

4. **Fiscal Impact.** The partnership approach under the project has been adopted partly to reduce the impact on government budget. Under the project, specialist extension services would be provided to coffee and cocoa growers by traders and exporters, complementing those provided by public agencies. This is a scaling up of activities already ongoing, under which established commercial relationships are used to provide improved planting materials, inputs and advice to smallholders since both these and the traders/exporters benefit from regular supply of quality produce. During the six-year project period, most expenditure would be funded by the project. After this, the main fiscal impact will be road maintenance, provisionally estimated at PGK 780,000 per year. Since there are no specific export taxes on coffee and cocoa, there is no source of funds which could be readily identified for earmarking for road maintenance. Agreement on the funding of the road maintenance program would be a condition of including the rehabilitation of a specific road under the PPAP.

[27] The price used in the farm analysis of PGK1.65/kg is for wet beans given that the majority of smallholders sell wet beans

[28] Source: CIC Weekly Marketing Report 12/10/09

5. **Cost Sharing and Grants.** Cost-sharing is an important principle in the partnerships to be implemented under Component 2. Proposals put forward for funding would identify the partners (firm or institution, smallholders, traders, etc.,) and specify the amount of funding each partner would contribute (cost-sharing arrangements) in line with the guidelines established in the Project Implementation Manual. The failure of credit markets to fund worthwhile investments in smallholder agriculture due to the perception of high risk, high administration costs for small loans, and inability to use traditional land for collateral means that smallholders are unable to access finance for the required investments. Investment needs of smallholder farmers to implement the changes in practices promoted under the project would have to be partly covered under the partnership agreements in the absence of other source of financing. Under Component 2, and when feasible, the project would promote the involvement of reputable financial institutions in the provision of financial services to farmers.

Sector Outlook

6. **Cocoa.** World cocoa production has risen steadily at about 3.5 percent annually over the long run from a low of 1.7 million tons in the early 1980s to 3.5 million tons in 2009. Despite the increased output, end-of-season stocks have fallen over the past three years as grindings exceeded production mainly due to falling output in Ivory Coast. In early 2010, commodity traders estimate a deficit of 100,000 tons for the 2009-2010 season.

Table 1- World Cocoa Market estimates (million metric tons)

Year	2002	2003	2004	2005	2006	2007	2008	2009
Net Production	2.87	3.17	3.54	3.39	3.72	3.35	3.69	3.48
Grindings	2.89	3.08	3.24	3.35	3.49	3.65	3.76	3.51
Ending Stocks	1.34	1.41	1.68	1.69	1.88	1.57	1.58	1.56
Stocks/Use ratio	0.46	0.46	0.52	0.5	0.54	0.43	0.42	0.44

Source: ICO

7. *Global production.* West Africa is the major producing region contributing 60 percent of global production. Ivory Coast is the dominant producer contributing some 40 percent of annual world output. Indonesia, Malaysia and Brazil together account for another 20 percent of output with smaller producers, such as PNG, responsible for the rest. Because of its large share of production, events in Ivory Coast have a major impact on world output and prices. Yields and production in Ivory Coast have declined over the past three years because of drought and pests and diseases. While resistant varieties are being planted, it will be many years before all affected plants are replaced and are bearing a substantial amount of pods. Other problems that will delay recovery are the age of trees, increasing age of farmers, civil unrest and unavailability of forest soils for expansion. As a result, market share is being lost from West Africa to Asia, particularly Indonesia, and the opportunity for PNG to increase its share is positive. However, the Cocoa Pod Borer (CPB) is a major threat to the sector which needs to be addressed.

8. *Global consumption.* Despite record production, prices have been strong and reached over US$3,000 per ton in January 2010, a 30 year high. Generally, high prices are expected to last with the usual short-term fluctuations as stocks rise and fall. Western Europe and North America together consume 70 percent of world production of cocoa, mostly as chocolate. Since increased consumption of chocolate is highly correlated with increased income, the economic performance of the OECD countries is expected to be the major influence on demand and prices. With recovery from the global financial crisis under way, the price outlook is encouraging. In addition, European consumers are becoming increasingly aware of the cocoa content of chocolate and appear to be willing to pay a premium for a higher cocoa content. Consumers are also showing a preference for Fair Trade and Organic cocoa. Major buyers at global level are increasing their demand for certified cocoa.

9. *Outlook for PNG*. PNG is a small producer (less than 60,000 tons/year) accounting for a little more than 1 percent of total world production and is a price taker. PNG cocoa prices are determined by global market movements and the differential (or "premium") received compared to other origins. PNG is a major source of fermented cocoa beans in Asia, however if production falls below a certain level due to the CPB (e.g. down to 35,000 tons) it is expected that buyers will start looking for other sources outside the region, which would limit any increase in price differential in favor of PNG cocoa. The NADP's objective is to increase PNG exports to 100,000 tons per year. The outbreak of the cocoa pod borer makes reaching this objective unrealistic in the short- to medium-term, and requires that the policy aim should now be to maintain PNG's place in the market with an emphasis on reducing CPB losses, improving quality, and thereby increasing returns to labor.

10. Finally, PNG is expected to follow the general trend towards certifying that the product is produced under certain specific conditions, is traceable to its origin, and complies with labor and other laws and regulations. With the support of technical assistance under the PPAP, interested participating growers could enter this market and could expect to receive a premium for certification over and above that already received for PNG cocoa on world markets.

11. **Coffee .** There is a long term global oversupply of coffee, which has a low elasticity of demand, primarily because of a massive increase in plantings in Vietnam and Brazil.

12. *Global production*. Global production increased from 88.7 million bags in 1990 to 105.1 million bags a decade later and to 125.2 million bags estimated for 2009/2010 (Table 2 below), mainly due to plantings in Brazil and Vietnam. Brazil accounts for 30 percent, Vietnam for 15 percent, and Colombia for 11 percent of world output with other countries producing comparatively small amounts. The aggressive planting programs have resulted in a long-term over-supply of coffee. Weather-related events in Brazil are the largest determinant of short run production volatility.

Table 2- World Coffee Market Estimates (in million 60 kg bags)

Year	1990	1999	2005	2006	2007	2008	2009	2010
Production	88.7	105.1	122.6	117	133.6	122.2	130	125.2
Implied Use	96.3	98	118.6	124.4	129.4	128.3	125.7	131.8
Ending Stocks	55.9	35.9	46	38.6	42.8	36.7	41	34.7
Stocks/Use Ratio	0.58	0.37	0.38	0.31	0.33	0.29	0.3	0.26
Price US$/ton	857	888	893	957	1078	1242	1156	1268

Note: Prices are ICO Composite for Arabica and Robusta

Source: World Bank and USDA

13. *Global consumption*. Consumption rose slowly from 96 million bags in 1990 to 98 million bags a decade later, then increased steadily to a projected 131.8 million bags for 2010. Nominal prices have risen by 50 percent over the 20 years which implies a fall in real terms. As with cocoa, consumption is highest in Europe and North America, both in total and in per capita consumption, and economic conditions in these regions have the greatest impact on demand. The price difference between Arabica and Robusta has narrowed as demand from roasters changes leaving many growers with very narrow margins and causing some to leave the industry. The outlook is for continued pressure on growers to reduce costs while increasing quality. Specialty and certified coffees are some of the fastest growing segments of the market, including in major export destinations for PNG.

14. *Outlook for PNG*. PNG produces less than 1 million bags (less than 1% of world production), most of which is exported, and is a price taker with no impact on world prices. About 10 percent of PNG coffee is classified as A grade, and Organic or Fair Trade or receives some certification. 80 percent is Y grade, receiving discounted prices. The discount is for poor processing at the village level leading to inconsistent product quality. Based on global consumption trends and PNG's comparative advantage, industry policy focuses on cost reduction, general quality improvements, and the promotion of differentiated coffees.

Annex 1

Table 1: Model 1 – Cocoa crop budget without project

Traditional Low-Input/Low-Output (1ha.) with POD BORER Wet Bean Delivery	Note	Unit	Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Weeding & Pruning	a	Pers. day		30	30	30	30	30	30	30	30	30	30
Infilling		Pers. day		5	5	5	5	5	5	5	5	5	5
Harvesting	b	Pers. day		15	10	8	8	8	8	8	8	8	8
Marketing	c	Pers. day		4	4	4	4	4	4	4	4	4	4
Total Labour Requirements				**54**	**49**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**
Gross Income													
Cocoa yield (kg dry beans/ha)	d	kg		300	200	150	150	150	150	150	150	150	150
Cocoa yield (kg wet beans/ha)		kg		840	560	420	420	420	420	420	420	420	420
Farmgate value	e	PGK/kg	1.65	1.65	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Total Gross Income				**1,386**	**785**	**589**	**589**	**589**	**589**	**589**	**589**	**589**	**589**
Variable Costs													
Bags		Bag	1.20	6	4	3	3	3	3	3	3	3	3
Transport		per bag	25.00	144	96	72	72	72	72	72	72	72	72
Tools and equipment		Lump sum		100	100	0	0	0	0	0	0	0	0
Total Variable Costs				**250**	**200**	**75**	**75**	**75**	**75**	**75**	**75**	**75**	**75**
Net Cash Flow		PGK/ha		1,136	586	514	514	514	514	514	514	514	514
Net Cash Flow per Person Day	f	PGK		21.04	11.95	11.06	11.06	11.06	11.06	11.06	11.06	11.06	11.06
Value of Labour Used	g	Pers. day	5.00	270	245	233	233	233	233	233	233	233	233
Net Benefit				**866**	**341**	**282**	**282**	**282**	**282**	**282**	**282**	**282**	**282**

a/ 2.5 days/mth
b/ Harvesting assumption: 200 kgs of pods or 20 kg of dry bean equivalent per man-day
c/ Marketing - 0.5 day per month in season of 30 weeks
d/ Yield in dry bean equivalent. Industry standard conversion for dry to wet beans 40%
e/ Average farm gate price PGK 1.65/kg discounted 15% for CPB lowering of quality
f/ Return to land and labor. Compare with minimum wage of K1.14/hr for unskilled labor
g/ Estimated opportunity cost of labor

Table 2: Model 2- Cocoa Crop Budget - Old Cocoa Improved Management

Traditional Low-Input/Low-Output (1ha.) with POD BORER Wet Bean Delivery													
	Note	Unit	Unit Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Weeding & Pruning	a	Pers. day		70	70	70	70	70	70	70	70	70	70
Infilling		Pers. day		5	5	5	5	5	5	5	5	5	5
Insecticide Appln.		Pers. day		5	5	5	5	5	5	5	5	5	5
Harvesting	b	Pers. day		15	19	25	35	38	38	30	25	23	20
Marketing	c	Pers. day		15	15	15	15	15	15	15	15	15	15
Total Labour Requirements				**110**	**114**	**120**	**130**	**133**	**133**	**125**	**120**	**118**	**115**
Gross Income													
Cocoa yield (kg dry beans/ha)	d	kg		300	375	500	700	750	750	600	500	450	400
Cocoa yield (kg wet beans/ha)				840	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120
Farmgate value	e	PGK/kg	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Total Gross Income				**1,386**	**1,733**	**2,310**	**3,234**	**3,465**	**3,465**	**2,772**	**2,310**	**2,079**	**1,848**
Variable Costs													
Bags		Bag	1.20	6	11	14	14	14	14	14	12	10	10
Insecticide		lumpsum		200	120	120	120	120	120	120	120	120	120
Herbicides		lumpsum		500	150	150	150	150	100	100	100	100	100
Transport		bag	25	120	150	200	280	300	300	240	200	180	160
Tools and equipment		Lump sum		600	120	120	120	120	120	120	120	120	120
Total Variable Costs				**1426**	**551**	**604**	**684**	**704**	**654**	**594**	**552**	**530**	**510**
Net Cash Flow		PGK/ha		-40	1,182	1,706	2,550	2,761	2,811	2,178	1,758	1,549	1,338
Net Cash Flow per Person Day	f	PGK		-0.36	10.39	14.22	19.62	20.84	21.22	17.42	14.65	13.18	11.63
Value of Labour Used	g	Pers. day	5.00	550	569	600	650	663	663	625	600	588	575
Net Economic Benefit				**-866**	**613**	**1,106**	**1,900**	**2,099**	**2,149**	**1,553**	**1,158**	**962**	**763**

a/ Based on tree density of about 600 trees/ha; 2/3 of amount needed for new clonal cocoa.
b/ Harvesting assumption: 200 kgs of pods or 20 kg of dry bean equivalent per man-day
c/ Marketing - 0.5 day per week in season of 30 weeks
d/ Yield in dry bean equivalent. Industry standard conversion for dry to wet beans 40%
e/ Average farm gate price of PGK 1.65/kg wet beans
f/ Return to land and labor. Compare with minimum wage of K1.14/hr for unskilled labor
g/ Estimated opportunity cost of labor

Table 3: Model 3- Cocoa Crop Budget - With Project

Replanting of clonal cocoa + improved ag management practices													
	Note	Unit	Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Clearing and Planting		Pers. day		75	0	0	0	0	0	0	0	0	0
Infilling		Pers. day		0	0	0	0	0	0	0	0	0	0
Weeding		Pers. day		14	10	10	10	10	10	10	10	10	10
Insecticide Appln.		Pers. day		2	6	6	6	6	6	6	6	6	6
Shade Pruning		Pers. day		2	30	30	30	30	30	30	30	30	30
Cocoa Pruning		Pers. day		0	50	50	50	50	50	50	50	50	50
Harvesting	a	Pers. day		0	9	23	30	38	43	43	40	30	25
Marketing	b	Pers. day		0	15	15	15	15	15	15	15	15	15
Total Labour Requirements		Pers. day		**93**	**120**	**134**	**141**	**149**	**154**	**154**	**151**	**141**	**136**
Gross Income													
Cocoa yield (kg dry beans/ha)		kg		0	180	450	600	750	850	850	800	600	500
Cocoa yield (kg wet beans/ha)		kg		0	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400
Farmgate value	c	PGK/kg	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Total Gross Income				**0**	**832**	**2,079**	**2,772**	**3,465**	**3,927**	**3,927**	**3,696**	**2,772**	**2,310**
Variable Costs													
Seedlings	d	PGK ea.	1.50	900	0	0	0	0	0	0	0	0	0
Insecticide		lumpsum		0	120	120	120	120	120	120	120	120	120
Herbicides		lumpsum		0	100	100	100	100	100	100	100	100	100
Bags		Bag	1.20	0	3	9	12	14	16	16	15	12	10
Transport		bag	25.00	0	72	180	240	300	340	340	320	240	200
Tools and equipment	e	Lump sum		600	120	120	120	120	120	120	120	120	120
Total Variable Costs				**1500**	**415**	**529**	**592**	**654**	**696**	**696**	**675**	**592**	**550**
Net Cash Flow		PGK/ha		-1,500	416	1,550	2,180	2,811	3,231	3,231	3,021	2,180	1,760
Net Cash Flow per Person Day	f	PGK		negative	3.47	11.61	15.46	18.93	21.05	21.05	20.00	15.46	12.94
Value of Labour Used	g	Pers. day	5.00	465	600	668	705	743	768	768	755	705	680
Net Economic Benefit				**-1,965**	**-184**	**883**	**1,475**	**2,068**	**2,463**	**2,463**	**2,266**	**1,475**	**1,080**

a/ Harvesting assumption: 200 kgs of pods or 20 kg of dry bean equivalent per man-day

b/ Marketing - 0.5 day per week in season of 30 weeks

c/ Wet beans (expressed as dry bean equivalent), sold at 70% of Dry bean price of PGK 6/kg

d/ Planting density is 1,000 trees/ha.

e/ Initial set, 600 then replaces 20% p.a.

f/ Return to land and labor. Compare with minimum wage of K1.14/hr for unskilled labor

g/ Estimated opportunity cost of labor

Table 4: Model 4- Coffee Crop Budget - Without Project

Traditional Low-Input/Low-Output, Uncertified Y Grade Parchment (1ha.)

	Note	Unit	Unit Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Weeding	a	Pers. day		24	24	24	24	24	24	24	24	24	24
Infilling with Volunteers		Pers. day		5	5	5	5	5	5	5	5	5	5
Harvesting	b	Pers. day		52	52	52	52	52	52	45	45	39	39
Pulping		Pers. day		37	37	37	37	37	37	32	32	28	28
Fermenting, washing, drying		Pers. day		23	26	26	26	26	26	23	23	20	20
Marketing		Pers. day		16	16	16	16	16	16	14	14	12	12
Total Labour Requirements				**157**	**160**	**160**	**160**	**160**	**160**	**144**	**144**	**127**	**127**
Gross Income													
Coffee yield (kg green bean/ha)	c	kg		400	400	400	400	400	400	350	350	300	300
Coffee yield (kg parchment/ha)		kg		572	572	572	572	572	572	501	501	429	429
Farmgate value (parchment)		PGK/kg	4.00	2,288	2,288	2,288	2,288	2,288	2,288	2,002	2,002	1,716	1,716
Total Gross Income				**2,288**	**2,288**	**2,288**	**2,288**	**2,288**	**2,288**	**2,002**	**2,002**	**1,716**	**1,716**
Variable Costs													
Bags	d	Bag	1.20	14	14	14	14	14	14	12	12	10	10
Transport		per bag	25.00	167	167	167	167	167	167	146	146	125	125
Tools and equipment		Lump sum		50	50	50	50	50	50	50	50	50	50
Total Variable Costs				**230**	**230**	**230**	**230**	**230**	**230**	**208**	**208**	**185**	**185**
Net Cash Flow		PGK/ha		2,058	2,058	2,058	2,058	2,058	2,058	1,794	1,794	1,531	1,531
Net Cash Flow per Person Day	e	PGK		13.11	12.86	12.86	12.86	12.86	12.86	12.50	12.50	12.03	12.03
Value of Labour Used	f	Pers. day	5.00	785	800	800	800	800	800	718	718	636	636
Net Economic Benefit				**1,273**	**1,258**	**1,258**	**1,258**	**1,258**	**1,258**	**1,076**	**1,076**	**895**	**895**

a/ 2 days/mth

b/ Harvesting assumption: 1 person collects 1 bag cherries/day of 50 kg at 6.5 kg cherry/1 kg green bean

c/ Industry standard loss of weight from parchment to green beans of 30% for smallholders

d/ Plastic bags of 50kg.parchment

e/ Return to land and labor. Compare with minimum wage of K1.14/hr for unskilled labor

f/ Opportunity cost of labor

Table 5: Model 5- Coffee Crop Budget - With Project: Improved coffee garden management

Improved Management and Pruning, Quality Control

	Note	Unit	Unit Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Weeding		Pers. day		24	24	24	24	24	24	24	24	24	24
Infilling with Volunteers		Pers. day		5	5	5	5	5	5	5	5	5	5
Pruning		Pers. day		24	24	24	24	24	24	24	24	24	24
Harvesting		Pers. day		52	71	84	91	91	84	78	71	65	58
Pulping		Pers. day		37	37	37	37	37	37	34	31	28	26
Fermenting, washing, drying		Pers. day		26	26	26	26	26	26	24	22	20	18
Marketing		Pers. day		16	16	16	16	16	16	15	14	12	11
Total Labour Requirements				**184**	**203**	**216**	**223**	**223**	**216**	**204**	**191**	**179**	**166**
Gross Income													
Coffee yield (kg green bean/ha)		kg		400	550	650	700	700	650	600	550	500	450
Coffee yield (kg parchment/ha)	a	kg		572	787	930	1,001	1,001	930	858	787	715	644
Farmgate value (parchment)	b	PGK/kg	4.20	2,288	3,146	3,904	4,204	4,204	3,904	3,604	3,303	3,003	2,703
Total Gross Income				**2,288**	**3,146**	**3,904**	**4,204**	**4,204**	**3,904**	**3,604**	**3,303**	**3,003**	**2,703**
Variable Costs													
Bags		Bag	1.20	14	19	22	24	24	22	21	19	17	15
Transport		per bag	25.00	167	229	271	292	292	271	250	229	208	188
Tools and equipment		Lump sum		600	100	100	100	100	100	100	100	100	100
Total Variable Costs				**780**	**348**	**393**	**416**	**416**	**393**	**371**	**348**	**325**	**303**
Net Cash Flow		PGK/ha		1,508	2,798	3,511	3,789	3,789	3,511	3,233	2,955	2,678	2,400
Net Cash Flow per Person Day		PGK		8.20	13.75	16.22	17.00	17.00	16.22	15.86	15.45	14.98	14.44
Value of Labour Used		Pers. day	5.00	920	1,017	1,082	1,115	1,115	1,082	1,019	956	894	831
Net Economic Benefit				**588**	**1,781**	**2,429**	**2,674**	**2,674**	**2,429**	**2,214**	**1,999**	**1,784**	**1,569**

Table 6: Model 6 - Coffee Crop Budget - With Project: Improved planting material, improved quality

Sustained Replanting, improved management, and certified parchment (1 ha.)

	Note	Unit	Unit Cost	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Labour Requirements													
Labour for pruning and drainage repairs	a	Pers. day		36	36	36	36	36	36	36	36	36	36
Sustained replanting 10%/yr.	b	Pers. day		20	20	20	20	20	20	20	20	20	20
Weeding		Pers. day		24	24	24	24	24	24	24	24	24	24
Harvesting		Pers. day		0	45	58	103	109	109	109	103	90	77
Pulping		Pers. day		0	33	42	75	80	80	80	75	66	57
Fermenting, washing, drying		Pers. day		0	21	27	48	51	51	51	48	42	36
Marketing		Pers. day		0	14	19	34	36	36	36	34	30	26
Certification/bookkeeping/recording		Pers. day		24	24	24	24	24	24	24	24	24	24
Total Labour Requirements				**104**	**193**	**226**	**340**	**357**	**357**	**357**	**340**	**308**	**275**
Gross Income													
Coffee yield (kg green bean/ha)	c	kg		0	350	450	800	850	850	850	800	700	600
Coffee yield (kg parchment/ha)	d	kg		0	501	644	1,144	1,216	1,216	1,216	1,144	1,001	858
Farmgate value (parchment)	e	PGK/kg	4.50	0	2,102	2,896	5,148	5,470	5,470	5,470	5,148	4,505	3,861
Total Gross Income				**0**	**2,102**	**2,896**	**5,148**	**5,470**	**5,470**	**5,470**	**5,148**	**4,505**	**3,861**
Variable Costs													
Seedlings	f	PGK	0.5	1500	0	0	0	0	0	0	0	0	0
Certification		PGK	150	0	150	150	150	150	150	150	150	150	150
Bags		Bag	1.20	0	12	15	27	29	29	29	27	24	21
Transport		per bag	25.00	0	146	188	333	354	354	354	333	292	250
Tools and equipment		Lump sum		600	100	100	100	100	100	100	100	100	100
Total Variable Costs				**2100**	**408**	**453**	**611**	**633**	**633**	**633**	**611**	**566**	**521**
Net Cash Flow		PGK/ha		-2,100	1,694	2,443	4,537	4,836	4,836	4,836	4,537	3,939	3,340
Net Cash Flow per Person Day		PGK		-20.19	8.78	10.79	13.33	13.56	13.56	13.56	13.33	12.80	12.14
Value of Labour Used	g	Pers. day	5.00	520	964	1,132	1,701	1,783	1,783	1,783	1,701	1,539	1,376
Net Economic Benefit				**-2,620**	**730**	**1,311**	**2,836**	**3,054**	**3,054**	**3,054**	**2,836**	**2,400**	**1,964**

a/ Assume 2 ays/mth

b/ Sustained replanting of 10%/yr. or 200 trees/ha for 10 years. Increase density from 1500 to 2000 trees/ha.

c/ Yield of 850kg/ha./yr. green beans

d/ Based on green bean/parchment ratio of 0.70, standard loss of 30%

e/ Farmgate price for certified parchment 12.5% premium

f/ 2000 trees/ha. Replant 10% per year.

Table 7 :PNG PPAP - Cocoa Aggregate Analysis

			Year																			
1.Benefits:-			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Without Project		Units																				
total area		ha.	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
yield wet beans		kg/ha	840	560	420	420	420	420	420	420	420	420	420	420	420	420	420	420	420	420	420	420
yield dry bean equiv.		kg/ha	300	200	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
production		'000 kg.	10920	7280	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460
Farm gate price wet bean		PGK/kg	1.65	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
value of production		PGK m.	18.018	10.2102	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765	7.65765
2. With Project - Replanting 5,000 ha.peaking at 25%/yr. 1/																						
Phasing Annual		ha.	400	600	1,000	1500	1500															
Cumulative		ha.	400	1,000	2,000	3,500	5,000															
	Block 1	Yield kg./ha	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400
		area in ha.	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
		production 000kg	0	201.6	504	672	840	952	952	896	672	560	0	201.6	504	672	840	952	952	896	672	560
	Block 2	Yield kg./ha	840	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680
		area in ha.	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
		production 000kg	504	0	302.4	756	1008	1260	1428	1428	1344	1008	840	0	302.4	756	1008	1260	1428	1428	1344	1008
	Block 3	Yield kg./ha	840	560	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240
		area in ha.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		production 000kg	840	560	0	504	1260	1680	2100	2380	2380	2240	1680	1400	0	504	1260	1680	2100	2380	2380	2240
	Block 4	Yield kg./ha	840	560	420	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400	**0**	504	1,260	1,680	2,100	2,380	2,380
		area in ha.	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
		production 000kg	1260	840	630	0	756	1890	2520	3150	3570	3570	3360	2520	2100	0	756	1890	2520	3150	3570	3570
	Block 5	Yield kg./ha	840	560	420	420	**0**	504	1,260	1,680	2,100	2,380	2,380	2,240	1,680	1,400	**0**	504	1,260	1,680	2,100	2,380
		area in ha.	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
		production 000kg	1260	840	630	630	0	756	1890	2520	3150	3570	3570	3360	2520	2100	0	756	1890	2520	3150	3570
	Total Production, '000kg.		3864	2441.6	2066.4	2562	3864	6538	8890	10374	11116	10948	9450	7481.6	5426.4	4032	3864	6538	8890	10374	11116	10948
	Price/kg	PGK/kg.	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
	Value of Production, PGK '000		6375.6	4028.64	3409.56	4227.3	6375.6	10787.7	14668.5	17117.1	18341.4	18064.2	15592.5	12344.64	8953.56	6652.8	6375.6	10787.7	14668.5	17117.1	18341.4	18064.2
3. With Project - Upgrading Management on 8,000 ha. peaking at 25%/yr.2/																						
Phasing Annual		ha.	1,000	1,500	2,000	2,000	1,500															
Cumulative		ha.	1,000	2,500	4,500	6,500	8,000															
	Block 1	Yield kg./ha	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120
		area in ha.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		production 000kg	840	1050	1400	1960	2100	2100	1680	1400	1260	1120	840	1050	1400	1960	2100	2100	1680	1400	1260	1120
	Block 2	Yield kg./ha	840	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260
		area in ha.	1100	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
		production 000kg	924	1680	2100	2800	3920	4200	4200	3360	2800	2520	2240	1680	2100	2800	3920	4200	4200	3360	2800	2520
	Block 3	Yield kg./ha	840	560	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400
		area in ha.	1100	1100	3,000	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production 000kg	924	616	2520	1155	1540	2156	2310	2310	1848	1540	1386	1232	924	1155	1540	2156	2310	2310	1848	1540
	Block 4	Yield kg./ha	840	560	420	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120	**840**	1,050	1,400	1,960	2,100	2,100	1,680
		area in ha.	1100	1100	1100	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		production 000kg	924	616	462	840	1050	1400	1960	2100	2100	1680	1400	1260	1120	840	1050	1400	1960	2100	2100	1680
	Block 5	Yield kg./ha	840	560	420	420	**840**	1,050	1,400	1,960	2,100	2,100	1,680	1,400	1,260	1,120	**840**	1,050	1,400	1,960	2,100	2,100
		area in ha.	1100	1100	1100	1100	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
		production 000kg	924	616	462	462	840	1050	1400	1960	2100	2100	1680	1400	1260	1120	840	1050	1400	1960	2100	2100
	Total Production, '000kg.		4536	4578	6944	7217	9450	10906	11550	11130	10108	8960	7546	6622	6804	7875	9450	10906	11550	11130	10108	8960
	Price/kg	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
	Value of Production, PGK '000		7484.4	7553.7	11457.6	11908.05	15592.5	17994.9	19057.5	18364.5	16678.2	14784	12450.9	10926.3	11226.6	12993.75	15592.5	17994.9	19057.5	18364.5	16678.2	14784
4. Total Project Benefits																						
Production	with project	'000kg	8400	7019.6	9010.4	9779	13314	17444	20440	21504	21224	19908	16996	14103.6	12230.4	11907	13314	17444	20440	21504	21224	19908
	without project	'000kg	10920	7280	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460	5460
	incremental	'000kg	-2520	-260.4	3550.4	4319	7854	11984	14980	16044	15764	14448	11536	8643.6	6770.4	6447	7854	11984	14980	16044	15764	14448
Value of Incremental Production																						
	with project	PGK m.	13.86	11.58	14.87	16.14	21.97	28.78	33.73	35.48	35.02	30.89	28.04	23.27	20.18	19.65	21.97	28.78	33.73	35.48	35.02	32.85
	without project	PGK m.	18.02	10.21	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66
	incremental	PGK m.	-4.16	1.37	7.21	8.48	14.31	21.12	26.07	27.82	27.36	23.23	20.39	15.61	12.52	11.99	14.31	21.12	26.07	27.82	27.36	25.19

Notes:

1/ Prior to replanting, the area continues to produce at the without project level. The replanting cycle begins again in year 11.

2/ After 10 years, the areas rehabilitated are replanted with new clones. Under the improved management model, infill with volunteer seedlings continues until new clones are planted starting in year 11.

Table 8 :PNG PPAP - Coffee Aggregate Analysis

				Year																		
1.Benefits:-				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Without Project		Units																				
total area		ha.		10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500
yield		GBE kg/ha		400	400	400	400	400	400	350	350	300	300	300	300	300	300	300	300	300	300	300
production		'000 kg.		4200	4200	4200	4200	4200	4200	3675	3675	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
constant price		PGK/kg		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
value of production		PGK m.		16.8	16.8	16.8	16.8	16.8	16.8	14.7	14.7	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
2. With Project - Replanting 5,000 ha. at 20%/yr. 1/																						
Phasing Annual		ha.		1,000	1,000	1,000	1000	1000														
Cumulative		ha.		1000	2000	3000	4000	5000														
	Block 1	Yield kg./ha		**0**	350	450	800	850	850	850	800	700	600	**0**	350	450	800	850	850	850	800	700	600
		area in ha.		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		production	000kg	0	350	450	800	850	850	850	800	700	600	0	350	450	800	850	850	850	800	700	600
	Block 2	Yield kg./ha		400	**0**	350	450	800	850	850	850	800	700	600	**0**	350	450	800	850	850	850	800	700
		area in ha.		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		production	000kg	400	0	350	450	800	850	850	850	800	700	600	0	350	450	800	850	850	850	800	700
	Block 3	Yield kg./ha		400	400	**0**	350	450	800	850	850	850	800	700	600	**0**	350	450	800	850	850	850	800
		area in ha.		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		production	000kg	400	400	0	350	450	800	850	850	850	800	700	600	0	350	450	800	850	850	850	800
	Block 4	Yield kg./ha		400	400	400	**0**	350	450	800	850	850	850	800	700	600	**0**	350	450	800	850	850	850
		area in ha.		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		production	000kg	400	400	400	0	350	450	800	850	850	850	800	700	600	0	350	450	800	850	850	850
	Block 5	Yield kg./ha		400	400	400	400	**0**	350	450	800	850	850	850	800	700	600	**0**	350	450	800	850	850
		area in ha.		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
		production	000kg	400	400	400	400	0	350	450	800	850	850	850	800	700	600	0	350	450	800	850	850
	Total Production, '000kg.			1600	1550	1600	2000	2450	3300	3800	4150	4050	3800	2950	2450	2100	2200	2450	3300	3800	4150	4050	3800
	Price/kg	PGK	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	Value of Production, PGK '000			7200	6975	7200	9000	11025	14850	17100	18675	18225	17100	13275	11025	9450	9900	11025	14850	17100	18675	18225	17100
3. With Project - Upgrading Management on 5,500 ha. at 20%/yr.2/																						
Phasing Annual		ha.		1,100	1,100	1,100	1,100	1,100														
Cumulative		ha.		1,100	2,200	3,300	4,400	5,500														
	Block 1	Yield kg./ha		**400**	550	650	700	700	650	600	550	500	450	**400**	550	650	700	700	650	600	550	500	450
		area in ha.		1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production	000kg	440	605	715	770	770	715	660	605	550	495	440	605	715	770	770	715	660	605	550	495
	Block 2	Yield kg./ha		400	**400**	550	650	700	700	650	600	550	500	450	**400**	550	650	700	700	650	600	550	500
		area in ha.		1100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production	000kg	440	440	605	715	770	770	715	660	605	550	495	440	605	715	770	770	715	660	605	550
	Block 3	Yield kg./ha		400	400	**400**	550	650	700	700	650	600	550	500	450	**400**	550	650	700	700	650	600	550
		area in ha.		1100	1100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production	000kg	440	440	440	605	715	770	770	715	660	605	550	495	440	605	715	770	770	715	660	605
	Block 4	Yield kg./ha		400	400	400	**400**	550	650	700	700	650	600	550	500	450	**400**	550	650	700	700	650	600
		area in ha.		1100	1100	1100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production	000kg	440	440	440	440	605	715	770	770	715	660	605	550	495	440	605	715	770	770	715	660
	Block 5	Yield kg./ha		400	400	400	400	**400**	550	650	700	700	650	600	550	500	450	**400**	550	650	700	700	650
		area in ha.		1100	1100	1100	1100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
		production	000kg	440	440	440	440	440	605	715	770	770	715	660	605	550	495	440	605	715	770	770	715
	Total Production, '000kg.			2200	2365	2640	2970	3300	3575	3630	3520	3300	3025	2750	2695	2805	3025	3300	3575	3630	3520	3300	3025
	Price/kg	PGK/kg	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20
	Value of Production, PGK '000			9240	9933	11088	12474	13860	15015	15246	14784	13860	12705	11550	11319	11781	12705	13860	15015	15246	14784	13860	12705
4. Total Project Benefits																						
Production	with project		'000kg	3800	3915	4240	4970	5750	6875	7430	7670	7350	6825	5700	5145	4905	5225	5750	6875	7430	7670	7350	6825
	without project		'000kg	4200	4200	4200	4200	4200	4200	3675	3675	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150
	incremental		'000kg	-400	-285	40	770	1550	2675	3755	3995	4200	3675	2550	1995	1755	2075	2600	3725	4280	4520	4200	3675
Value of Incremental Production																						
	with project		PGK m.	16.44	16.91	18.29	21.47	24.89	29.87	32.35	33.46	32.09	30.89	24.83	22.34	21.23	22.61	24.89	29.87	32.35	33.46	32.09	29.81
	without project		PGK m.	16.80	16.80	16.80	16.80	16.80	16.80	14.70	14.70	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60
	incremental		PGK m.	-0.36	0.11	1.49	4.67	8.09	13.07	17.65	18.76	19.49	18.29	12.23	9.74	8.63	10.01	12.29	17.27	19.75	20.86	19.49	17.21

Notes:

1/ Prior to replanting, the area continues to produce at the without project level. The replanting cycle begins again in year 11.

2/ After 10 years, the areas rehabilitated are replanted with new clones. Under the improved management model, infill with volunteer seedlings continues until new clones are planted starting in year 11.

Annex 10: Safeguard Policy Issues

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

Applicability of World Bank safeguards policies

1. The proposed Productive Partnerships in Agriculture Project (PPAP) aims at improving the livelihoods of smallholder cocoa and coffee producers through the improvement of the performance and the sustainability of value chains in cocoa- and coffee-producing areas. This would be achieved through strengthening industry coordination and institutions, facilitating linkages between farmers and agribusiness for the provision of technologies and services, and through the provision of critical public infrastructure.

2. Key outcomes would be that: (i) smallholder farmers adopt efficient, market responsive and sustainable production practices; (ii) demand-driven productive partnerships are scaled-up and sustained; and (iii) key infrastructure bottlenecks in the targeted value chains are addressed

3. The project will be implemented in core cocoa- and coffee-growing areas of PNG, where coffee and cocoa are an integral part of smallholder farming systems, and it will promote the adoption of good farming practices. Infrastructure rehabilitation works under Component 3 will be small scale (farm to market roads, pathways, footbridges, jetties) and the focus is on the rehabilitation of existing infrastructure. All of the potential adverse impacts associated with these activities would continue to be low intensity, minor and site specific impacts and lend themselves to readily available and already widely used mitigation measures. For these reasons, the PPAP has been assigned an Environmental Assessment (EA) Category "B", consistent with the requirements of the World Bank's Environmental Assessment Operational Policy OP4.01. The project triggers the following Safeguards policies:

    i. Environmental Assessment (OP4.01)
    ii. Pest Management (OP4.09)
    iii. Involuntary Resettlement (OP4.12)
    iv. Indigenous Peoples (OP4.10)

4. Consistent with the requirements of the Government of PNG and the World Bank's safeguards policy requirements, the National Department of Agriculture and Livestock (DAL) has prepared the following documents:

    i. Environmental Assessment (EA) – assessing the environmental issues in the cocoa and coffee industries in PNG;

    ii. Environmental and Social Management Framework (ESMF) – This contains the Screening Guidelines, the Environmental Management Plan (EMP) and the Beneficiaries Participation Framework (BPF) for the project activities;

    iii. The Integrated Pest Management Plan (IPMP); and

iv. The Compensation Policy Framework (CPF).

5. The Environmental Assessment (EA) carried out by Government has identified the potential environmental impacts of the project as follows:

    a. Component 2- Productive Partnerships. Some environmental impacts are likely to be associated with farming practices in the cocoa and coffee sectors. For cocoa, the main issue would be the management of the Cocoa Pod Borer pest and the fermentation process of the cocoa beans. The Cocoa Pod Borer would continue to be managed through an Integrated Pest Management approach which involves a combination of effective low technology traditional farming practices and the optional use of chemical insecticides where the issue is more pervasive. Cocoa fermentation processes would also result in the production of some organic waste as the main content of liquid waste which would have to be effectively disposed of. With regards to coffee, the main environmental issues are associated with significant water use and the subsequent generation of contaminated liquid waste in the processing of the coffee beans. Finally, there is a potential threat from the Coffee Berry Borer and some management measures may be required if it materializes.
    b. Component 3-Market Access Infrastructure. The infrastructure rehabilitation works would include mostly feeder roads and pathways linking farms to markets and buying points, but may also include other small scale infrastructure such as jetties and storage facilities, and assembly and consolidation of loading points. The environmental impact would be minor and mostly associated with the civil works activities during construction.

6. The EA contains a description of the geography of the project area and the other bio-physical and social data, an analysis of the potential environmental impacts and corresponding descriptions of the required mitigation measures. It also presents a summary of the consultations held during the Environmental Assessment process.

7. The ESMF includes a description of the screening process that project activities will undergo to determine their individual environmental and social impacts; which activity would be in-eligible for financing under the project; who will do the screening, review and approval of the screening results and how it will be carried out; and how the monitoring of sub-project activities will be carried out. The ESMF also contains proposed capacity building measures of the relevant institutions with responsibility for environmental management of this project.

8. For public-private partnership activities funded under Component 2, the ESMF requires that these activities be subject to a due diligence process to ensure their compliance with PNG and with World Bank safeguards requirement. Where such compliance is lacking, Government will agree with the private sector partner on a plan to ensure compliance with all those requirements, to be developed as part of the screening and appraisal process of the individual public-private partnership proposal. The appraisal will be the responsibility of the PMUs with support from the Technical Appraisal Committee (TAC).

9. Specific investments in infrastructure under Component 3 will only be identified following the selection of individual Component 2 project activities. Once the scope of a Component 2 investment is agreed, the potential market access infrastructure interventions can be identified and undergo the same environmental and social screening processes as those activities funded under Component 2.

Institutional arrangements for implementation of the ESMF

10. The institutions with responsibility for environmental management under PPAP are:

    a. The Project Coordinating Unit (PCU) at the national level who would have overall responsibility for environmental monitoring at the project level, which will include monitoring of cumulative impacts;

    b. The two Project Management Units (PMUs) at the industry (cocoa and coffee) level will have overall responsibility for the implementation of the ESMF and ensuring compliance with its provisions. The Component 2 Coordinator in each PMU will be the person responsible for activities under that component, and will be assisted by the Technical Appraisal Committee (TAC) for the environmental and social appraisal of subprojects. The Transport Planner/Senior Engineer will be responsible for environment management for Component 3;

    c. The Cocoa Board is in the process of revising major legislation that governs its operations, and has stated their keen interest to incorporate environmental requirements into the licensing requirements in the revised act. The Cocoa Board will be provided with TA to support them in this task.

11. The EA found that the capacity of the implementing agencies (DAL, Cocoa Board and CIC) will need to be strengthened to ensure that the ESMF is adequately implemented for all PPAP activities. An Environment Specialist (ES) will be recruited by the PPAP in year 1 to build the capacity of the PCU and the PMUs to monitor the implementation of the ESMF. The ES will carry out year 1 screening processes with his/her counterparts, provide capacity building for other relevant staff in the implementing agencies and at provincial level (such as provincial environmental officers), conduct information sessions for potential partners under Component 2 and develop a training program to address any further capacity building needs under the project.

Pest Management (OP4.09)

12. The IPMP provides the guidelines to be applied under the PPAP for all activities involving pest management in the cocoa and in the coffee sectors. In the cocoa sector, it builds on the practices already successfully implemented to manage the CPB and provides additional guidance to exclude the use of banned pesticides.

13. Recognizing that an intrinsic part of any successful IPM approach requires strong and effective knowledge management across farmers, extension and research communities, other supporting institutions and policy makers, the IPMP includes training, support services and dissemination of information that will be funded during the project implementation.

Social Assessment and Potential Social Impacts

14. The Social Assessment carried out by Government has identified the potential social impacts of the project as follows:

    a. Component 2:
        i. Improved livelihoods for small-scale farmers in the project areas which in turn will contribute to improved social outcomes;
        ii. A possible increase in social vice as a result of increased incomes, for example, an increase in alcohol abuse leading to increased rates of domestic violence, STIs, and HIV/AIDS; an increase in the production of home brew leading to violence and sexually transmitted diseases which have a particular effect on women and girls.

    b. Component 3:
        i. Minor loss of, or damage to, economic trees and crops resulting from road rehabilitation;
        ii. In exceptional cases, minor land acquisition (both temporary and permanent) resulting from road rehabilitation.

15. In addition, the project will be undertaken in project areas where indigenous peoples, as per OP 4.10, are present and to which they have collective attachment.

16. The measures put in place to mitigate the negative impacts of the project are detailed in the Compensation Policy Framework (CPF) and the Beneficiaries Participation Framework (BPF) both of which are elements of the Environmental and Social Management Framework (ESMF).

17. There is no separate Indigenous Peoples Plan (IPP) as the majority of project beneficiaries are characterized as indigenous peoples. As described below, elements of an IPP are included in the project design.

Indigenous Peoples - OP 4.10

18. The project triggers OP 4.10 on Indigenous Peoples as most of the communities in the project area fulfill the characteristics of indigenous peoples as per paragraph 4 of OP 4.10. The project has integrated the following aspects of an IP Plan in design and preparation:

    a. **Free, prior and informed consultation leading to broad community support (during preparation):** As part of the Social Assessment, numerous meetings were conducted with community representatives, local level government representatives, grower associations and cooperatives, youth and women's groups, extension workers,

the private sector, and other relevant stakeholders in East New Britain and Eastern Highlands Province.[29] A sample of locations presenting similar conditions to those eventually expected to be covered under the project was used.

There were two rounds of consultations during project preparation. During the first phase the specific details of the project design were unknown. Consequently, the consultations referred to the project in general terms in an effort to balance both transparency and to avoid raising expectations. During the second phase of consultations, when the project design was better defined, consultations were held in the field and with key national and industry agencies, potential private sector partners, and smallholder cocoa and coffee grower representatives.

The Social Assessment notes that: (i) there was interest and engagement with the team undertaking the Social Assessment. However, in coffee growing areas (Eastern Highlands Province) the people nearer town were reticent to engage with the team carrying out the Social Assessment because they were less willing to spend time on a survey which would yield little personal benefit; (ii) smallholders and communities were interested in voicing their opinions; and (iii) interviewees were keen to understand the potential that PPAP could have on their agricultural activities. The Social Assessment notes particularly that in cocoa growing areas where the cocoa pod borer infestation is widespread, growers were keen to understand the potential support from the project.

The Social Assessment does not document any opposition to the project as emerging from the consultations. Government has indicated that it believes there is broad community support for the project. Consultations carried out by the task team during pre-appraisal and appraisal also indicated broad support for the goals and design of the project. In addition, because the exact location of project activities is not specifically known at this stage due to the demand-driven nature of the project, the project has built-in opportunities for community consultation to ensure broad community support once the specific location of activities will be known (see point b below).

b. **Free, prior and informed consultation leading to broad community support (during implementation):** Given the demand-driven nature of the project, the National Department of Agriculture and Livestock has prepared a Beneficiaries Participation Framework (BPF) which lays out the process for community consultation during the project cycle. The BPF outlines participation strategies for implementation and management and monitoring and evaluation. It ensures that communities will:

- Have information on the detail of PPAP activities and processes;
- Be assisted to contribute ideas for appropriate changes so that PPAP activity outcomes are effective and sustainable;

[29] The Social Assessment notes that gathering information in the Autonomous Region of Bougainville (ARB) was limited by social and security constraints (the ARB is a post-conflict region still facing insecurity and significant travel constraints in the central and southern regions).

- Have access to a transparent PPAP Call for Proposals process;
- Be assisted through a needs assessment process to determine specific support requirements;
- Enter into formal agreements (with mutual responsibilities) with the PPAP before activities begin;
- Be assisted to develop implementation schedules to manage local implementation of activities;
- Be assisted to implement activities specific to the support agreed;
- Be trained and assisted to carry out monitoring of activities; and
- Be assisted to provide an evaluation of activities after they have been completed.

These elements have been integrated into the Project Implementation Manual.

c. **Measures to ensure social and economic benefits:** The project recognizes that there are communities within the project area that may be vulnerable to exclusion from project benefits because of their geographic location and their distance from markets. Indeed, lack of market access is directly correlated with high levels of poverty in the project areas. The project design pays particular attention to groups that may be vulnerable to exclusion from project benefits and will explicitly target these groups. These include:

- Farmer groups and communities with limited access to information, production innovations and markets. These disadvantages often coincide with geographic remoteness such as the remote areas of the Highlands.
- Farmers in cocoa growing areas whose livelihoods have been significantly impacted (negatively) by the cocoa pod borer and who cannot find alternative income sources.
- Female laborers and farmers who are often invisible stakeholders despite their key roles in managing household resources, providing much-needed labor, providing income through gardening (especially during the off-season), and as potential agents for diversification of farming systems.
- Young farmers who, like women, are often invisible stakeholders.

The PPAP is addressing these challenges by incorporating measures to provide benefits and mitigate potential adverse effects of the project to these groups. Measures include in *Component 1* - paying attention to gender balance among service providers and extension workers; in *Component 2* - providing support to low-capacity groups in preparation of proposals, ensuring that outreach efforts reach women's groups, including engagement with women as a criteria in the project selection process, encouraging proposals that actively integrate women – such as budwood nurseries and diversification of farming systems; in *Component 3* - financing the rehabilitation of existing transport links that *provide access between smallholder farming communities and marketing or processing points.* These improvements will also facilitate extension services.

Additional measures to strengthen the inclusiveness of project activities include: (i) the use of a mix of communication channels to increase outreach and awareness about opportunities under the project (radio programs and brochures in Tok Pisin, use of NGO networks, and public and private networks at the local level); (ii) support from qualified local service providers trained by the project; and (iii) specific focus of M&E activities on inclusiveness and evaluation of project governance processes during implementation, for adjustments to processes as needed.

d. **Culturally-appropriate grievance mechanisms:** The project design incorporates a grievance mechanism that is reflective of group cultures and includes key community members as relevant, such as community leaders, local authorities, etc. These are detailed in the Project Implementation Manual.

Involuntary Resettlement - OP4.12

19. The project will not finance any activity that requires involuntary resettlement. However, there may be need for minor land acquisition related to road upgrades under Component 3, or damage to assets, specifically economic crops and trees may be damaged. Under Component 2 (Productive Partnerships), any activities requiring land use, such as rehabilitation and expansion of existing nurseries, the establishment of satellite nurseries and budwood gardens, and the improvement of processing and storage facilities will be voluntary in nature and will take place within existing facilities. The Project Implementation Manual details the process for due diligence that will be required as a prerequisite for approval of these sub-projects. Under Component 3 (road rehabilitation), sub-projects may possibly result in temporary land use, minor land acquisition, or damage of crops and economic trees.

20. A Compensation Policy Framework (CPF) has been prepared which details the key principles for land use and compensation for damaged assets. These principles include:

    a. Consultations with, and support from, communities as a first step in sub-project preparation;
    b. No financing for subprojects that require voluntary or involuntary resettlement or damage to physical assets;
    c. Minimize land acquisition and damage to assets through appropriate design of infrastructure rehabilitation works;
    d. The provision of minor land acquisition only when land is offered by the community, voluntarily; and
    e. Protection of sites of social, sacred, or religious value or sites of potential heritage value.

21. In addition, the CPF includes guidelines on:

    a. Conducting due diligence for works undertaken within existing facilities to ensure that there are no legacy compensation claims or disputes;

b. Undertaking and documenting representative community consultations to obtain support for the use of communal land (this consultation would include community members, community leaders, and local authorities);
c. Preparing compensation plans; and
d. Management arrangements and responsibilities.

Annex 11: Project Preparation and Supervision

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

	Planned	Actual
PCN review	04/28/2008	04/28/2008
Initial PID to PIC	09/08/2008	10/28/2008
Initial ISDS to PIC	09/08/2008	11/12/2009
Appraisal	12/10/2009	14/10/2009
Negotiations	02/25/2010	
Board/RVP approval	04/08/2010	
Planned date of effectiveness	06/30/2010	
Planned date of mid-term review	01/30/2013	

Key institutions responsible for preparation of the project:

National Department of Agriculture and Livestock (NDAL) with assistance from the Government Project Preparation Team (PPT)
PNG Coffee Industry Corporation Ltd (CIC)
PNG Cocoa Board

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Marianne Grosclaude	Task Team Leader	EASNS
Cristiano Nunes	Procurement Specialist	EAPPR
Agnes Albert-Loth	Sr. Financial Management Sp.	EAPFM
William Mandui	Operations Officer	EASNS
Robert O'Leary	Senior Finance Officer	CTRFC
Sheila Braka Musiime	Senior Counsel	LEGES
Marta Molares-Halberg	Lead Counsel	LEGES
Olga Hoxon Rizo	Program Assistant	EASER
Tanya Tokaplen	Team Assistant	EACGF
Gitanjali Ponnambalam	Team Assistant	EACNF
Patrick Labaste	Lead Agriculture Economist	EASER
James Orehmie Monday	Sr Environmental Engr.	EASER
Shobha Shetty	Senior Economist	EASER
Erik Johnson	Senior Operations Officer	EASNS
Angela Nyawira Khaminwa	Social Development Specialist	EASER
Daniele Giovannucci	Consultant	EASNS
Smilja Lambert	Cocoa Research Manager	Mars Inc.
John Lowsby	Consultant	EASNS
William Cuddihy	Consultant	EASNS

Bank funds expended to date on project preparation:

1. Bank resources: US$ 203,734
2. Trust funds: US$ 202,301
3. Total: US$ 406,305

Estimated Approval and Supervision costs:

75. Remaining costs to approval: US$ 186,000
76. Estimated annual supervision cost: US$ 85,000

Annex 12: Documents in the Project File

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

1. **Background documents and studies:**

Coffee Strategic Plan 2008 to 2018, Policy Statement – August 2008

Coffee Strategic Plan 2008 to 2018, Implementation Plan – August 2008

National Agriculture Development Plan - 2007-2011 – September 2008

PNG Taxation & Customs Guide for Aid Organizations – November 2008

Draft Report on Coffee Sector Value Chain Analysis Report (Konishi) – February 2009

Final Report Cocoa Strategic Plan (Mars), June 2009

Coffee report and proceedings of June 09 workshop (Giovannucci), July 2009

2. Project documents:

Project Information Document – April 2008

Letter from the GoPNG confirming project concept – April 2008

Project Information Document – October 2008

Social Assessment (November 2009)

Procurement Plan, February 2010

Cost tables, February 2010

Component 1, 2 and 3 Implementation Manuals (February 2010)

Procurement Manual (February 2010)

Financial Management Manual (February 2010)

Monitoring and Evaluation Manual (February 2010)

ESMF (February 2010)

Compensation Policy Framework (February 2010)

IPMP (February 2010)

Environmental Assessment (February 2010)

Annex 13: Statement of Loans and Credits

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P079140	2008	PNG-Smallholder Agriculture Development	0.00	27.50	0.00	0.00	0.00	26.50	0.05	0.00
P102396	2008	PG Mining Sector Inst Strengthening TA 2	0.00	17.00	0.00	0.00	0.00	15.34	0.00	0.00
P004397	2002	PG-ROAD MAINT. & REHAB	40.00	37.31	0.00	0.00	0.00	31.68	-6.63	14.68
		Total:	40.00	81.81	0.00	0.00	0.00	73.52	- 6.58	14.68

PAPUA NEW GUINEA
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

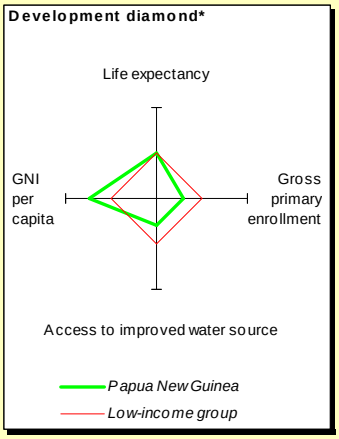
		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2005	PNG MicroFinance	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00
	Total portfolio:	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2005	PNG MicroFinance	0.00	0.00	0.00	0.00
	Total pending commitment:	0.00	0.00	0.00	0.00

Annex 14: Country at a Glance

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project

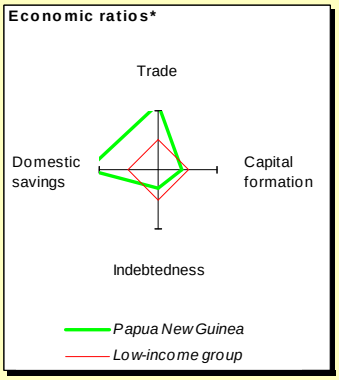
POVERTY and SOCIAL	Papua New Guinea	East Asia & Pacific	Low-income
2007			
Population, mid-year *(millions)*	6.3	1,914	1,296
GNI per capita *(Atlas method, US$)*	850	2,180	578
GNI *(Atlas method, US$ billions)*	5.4	4,174	749
Average annual growth, 2001-07			
Population *(%)*	2.3	0.8	2.2
Labor force *(%)*	2.7	1.2	2.7
Most recent estimate (latest year available, 2001-07)			
Poverty *(% of population below national poverty line)*	..	..	..
Urban population *(% of total population)*	13	43	32
Life expectancy at birth *(years)*	57	71	57
Infant mortality *(per 1000 live births)*	54	24	85
Child malnutrition *(% of children under 5)*	..	13	29
Access to an improved water source *(% of population)*	40	87	68
Literacy *(% of population age 15+)*	..	91	61
Gross primary enrollment *(% of school-age population)*	55	110	94
Male	60	111	100
Female	50	109	89



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

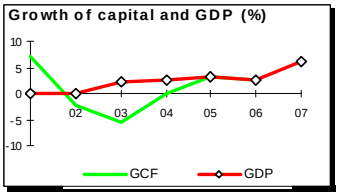
	1987	1997	2006	2007
GDP *(US$ billions)*	3.1	4.9	5.6	6.3
Gross capital formation/GDP	20.5	21.1	19.8	..
Exports of goods and services/GDP	43.2	49.2	83.9	..
Gross domestic savings/GDP	14.0	20.2	40.8	..
Gross national savings/GDP	6.1	17.6	35.8	..
Current account balance/GDP	-13.9	-5.4	5.3	..
Interest payments/GDP	4.9	2.0	1.1	..
Total debt/GDP	72.4	52.5	30.0	..
Total debt service/exports	24.8	20.4	6.4	..
Present value of debt/GDP	..	..	27.3	..
Present value of debt/exports	..	..	33.3	..

	1987-97	1997-07	2006	2007	2007-11
(average annual growth)					
GDP	5.8	1.1	2.6	6.2	..
GDP per capita	3.1	-1.3	0.4	4.2	..
Exports of goods and services	7.6	6.7	-11.7	..	..



STRUCTURE of the ECONOMY

	1987	1997	2006	2007
(% of GDP)				
Agriculture	32.9	37.0	35.7	..
Industry	34.9	31.4	45.2	..
Manufacturing	10.4	9.7	6.1	..
Services	42.4	31.6	19.1	..
Household final consumption expenditure	63.6	60.6	47.1	..
General gov't final consumption expenditure	22.4	19.3	12.1	..
Imports of goods and services	49.7	50.1	62.8	..



	1987-97	1997-07	2006	2007
(average annual growth)				
Agriculture	5.3	1.0	0.8	..
Industry	9.1	2.0	3.2	..
Manufacturing	3.9	-0.8	5.0	..
Services	2.8	-1.2	4.6	..
Household final consumption expenditure	2.3	-3.5	49.4	..
General gov't final consumption expenditure	3.0	0.9	-1.6	..
Gross capital formation	3.2	3.5	2.6	..
Imports of goods and services	0.0	5.0	6.9	..

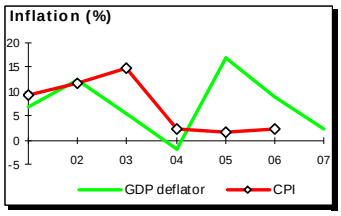
Note: 2007 data are preliminary estimates.

This table was produced from the Development Economics LDB database.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

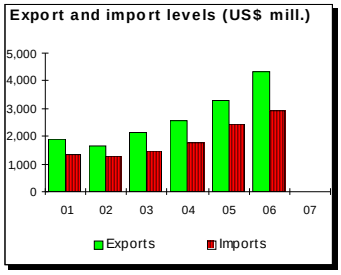
PRICES and GOVERNMENT FINANCE

	1987	1997	2006	2007
Domestic prices				
(% change)				
Consumer prices	3.3	4.0	2.3	..
Implicit GDP deflator	8.0	8.4	8.9	2.4
Government finance				
(% of GDP, includes current grants)				
Current revenue	22.9	31.2	36.9	..
Current budget balance	-3.4	5.9	16.4	..
Overall surplus/deficit	-7.5	-0.5	7.4	..



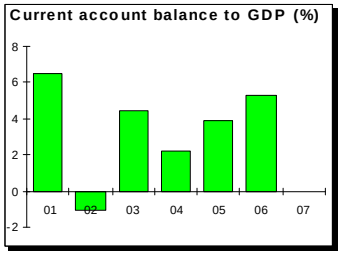
TRADE

	1987	1997	2006	2007
(US$ millions)				
Total exports (fob)	1,259	2,184	4,310	..
Gold	466	501	998	..
Copper	310	177	1,414	..
Manufactures	..	..	216	..
Total imports (cif)	1,292	1,972	2,916	..
Food	203	244	722	..
Fuel and energy	145	208	300	..
Capital goods	390	763	1,229	..
Export price index *(2000=100)*	..	116	203	..
Import price index *(2000=100)*	..	112	126	..
Terms of trade *(2000=100)*	..	104	161	..



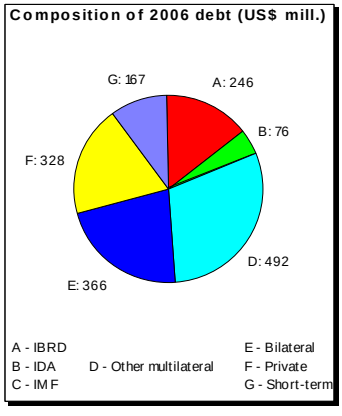
BALANCE of PAYMENTS

	1987	1997	2006	2007
(US$ millions)				
Exports of goods and services	1,306	2,561	4,557	..
Imports of goods and services	1,462	2,698	4,028	..
Resource balance	-157	-137	529	..
Net income	-177	-324	-585	..
Net current transfers	-105	197	352	..
Current account balance	-438	-264	297	..
Financing items (net)	457	60	363	..
Changes in net reserves	-18	204	-660	..
Memo:				
Reserves including gold *(US$ millions)*	440	380	1,425	..
Conversion rate *(DEC, local/US$)*	0.9	1.4	3.1	3.0



EXTERNAL DEBT and RESOURCE FLOWS

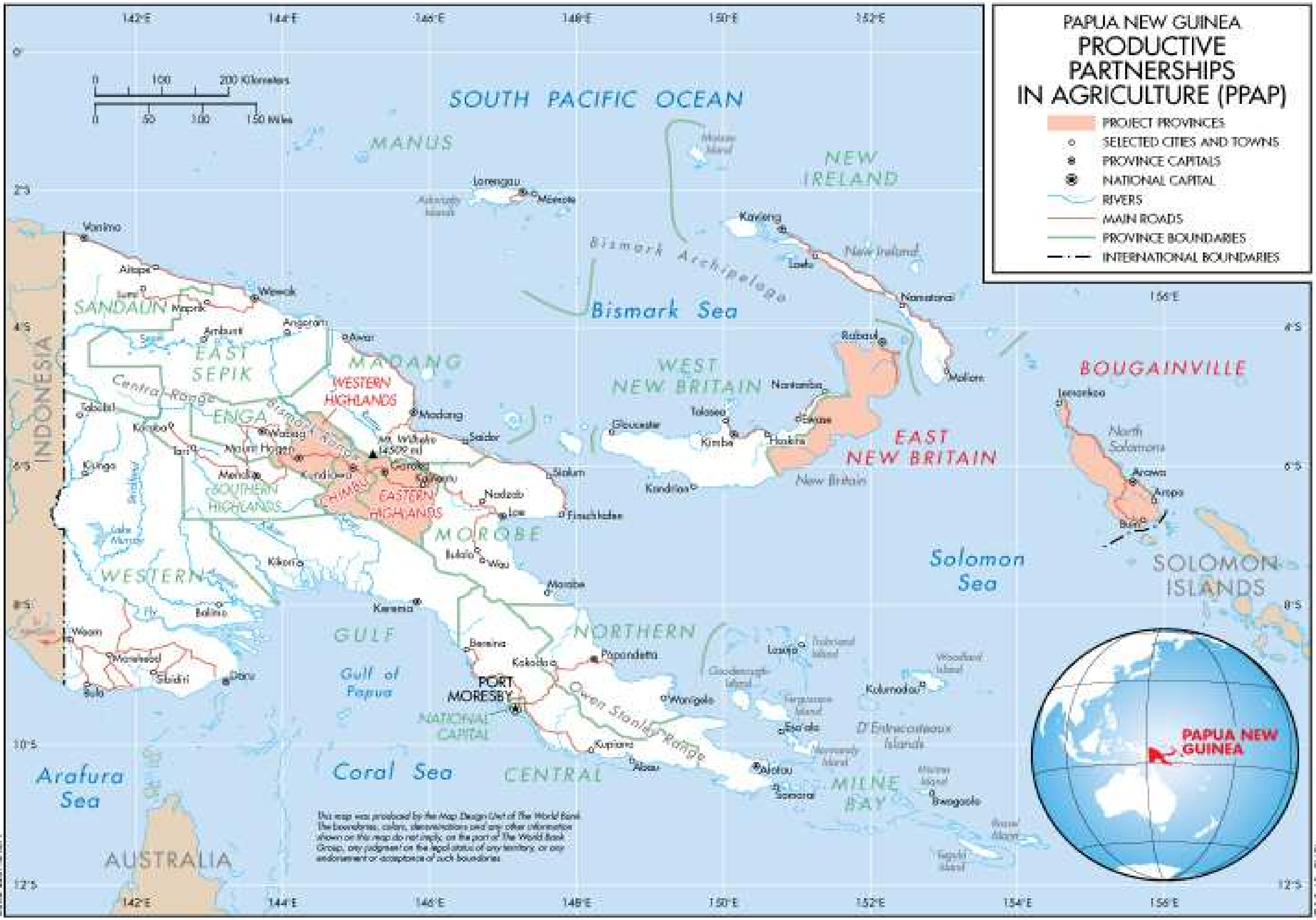
	1987	1997	2006	2007
(US$ millions)				
Total debt outstanding and disbursed	2,276	2,590	1,675	..
IBRD	148	269	246	183
IDA	116	101	76	73
Total debt service	356	532	294	..
IBRD	19	47	37	93
IDA	1	3	4	4
Composition of net resource flows				
Official grants	271	187	118	..
Official creditors	109	-5	-51	..
Private creditors	7	105	-110	..
Foreign direct investment (net inflows)	93	29	32	..
Portfolio equity (net inflows)	0	0	0	..
World Bank program				
Commitments	74	0	0	37
Disbursements	33	48	19	12
Principal repayments	10	31	28	81
Net flows	23	18	-9	-70
Interest payments	11	19	13	16
Net transfers	12	-1	-22	-86



Note: This table was produced from the Development Economics LDB database. 9/24/08

Annex 15: Maps

PAPUA NEW GUINEA: PNG Productive Partnerships in Agriculture Project


PAPUA NEW GUINEA
PRODUCTIVE PARTNERSHIPS IN AGRICULTURE (PPAP)
PROJECT PROVINCES
SELECTED CITIES AND TOWNS
PROVINCE CAPITALS
NATIONAL CAPITAL
RIVERS
MAIN ROADS
PROVINCE BOUNDARIES
INTERNATIONAL BOUNDARIES
0 100 200 Kilometers
0 50 100 150 Miles
SOUTH PACIFIC OCEAN
MANUS
NEW IRELAND
Bismark Archipelago
Bismark Sea
WEST NEW BRITAIN
EAST NEW BRITAIN
BOUGAINVILLE
SANDAUN
EAST SEPIK
MADANG
WESTERN HIGHLANDS
ENGA
SIMBU
EASTERN HIGHLANDS
SOUTHERN HIGHLANDS
MOROBE
WESTERN
GULF
Gulf of Papua
NORTHERN
NATIONAL CAPITAL
CENTRAL
MILNE BAY
Solomon Sea
SOLOMON ISLANDS
Coral Sea
Arafura Sea
INDONESIA
AUSTRALIA
PORT MORESBY
Lorengau
Vanimo
Aitape
Wewak
Angoram
Madang
Mt. Wilhelm 14,509 m
Rabaul
Kavieng
Namatanai
Kimbe
Kokopo
Lae
Goroka
Mount Hagen
Mendi
Wabag
Kundiawa
Kerema
Daru
Popondetta
Alotau
Arawa
Buin
Kieta
D'Entrecasteaux Islands
Owen Stanley Range
Central Range
PAPUA NEW GUINEA
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
NOVEMBER 2009
IBRD 37362