



**Australian Government**

**Australian Centre for  
International Agricultural Research**

# Project proposal

*project*

## **Rehabilitating Cocoa for Improved Livelihoods in the South Pacific**

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*project number*      PC/2008/046

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*proposal phase*      Full proposal

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## 1 Project outline

<b>Project number</b>	PC/2008/046
<b>Project title</b>	Rehabilitating Cocoa for Improved Livelihoods in the South Pacific
<b>ACIAR program area</b>	Pacific Crops
<b>Proposal stage</b>	Full proposal Phase 2
<b>Commissioned organisation</b>	Secretariat of the Pacific Community
<b>Project type</b>	Bilateral, large
<b>Geographic region(s)</b>	Pacific
<b>Country(s)</b>	Vanuatu (75%), Solomon Islands (10%), Samoa (10%) and Fiji (5%)
<b>Project duration</b>	3 1/2 years
<b>Proposed start date</b>	1 January 2011
<b>Proposed finish date</b>	30 June 2014
<b>Time to impact</b>	Category 1

### 1.1 Funding request

		<b>Amounts</b>	<b>Totals</b>
<b>Year 1 (10/11)</b>	Pay 1	\$203,832	\$203,832
<b>Year 2 (11/12)</b>	Pay 2	\$79,982	\$206,744
	Pay 3	\$126,762	
<b>Year 3 (12/13)</b>	Pay 4	\$78,040	\$206,292
	Pay 5	\$128,252	
<b>Year 4 (13/14)</b>	Pay 6	\$77,472	\$223,724
	Pay 7	\$146,252	
<b>Total</b>			<b>\$840,592</b>

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### 1.3 Project summary

Smallholders in the Pacific islands have relatively limited options for commodities that they can produce and export competitively to improve incomes and replace their traditional dependence on the declining copra industry. Cocoa is one crop that the islands either are producing with some success or have done so in the past. It is currently the 3rd and 4th most important export earner for Solomon Islands and Vanuatu, providing an important source of livelihoods for 20% and 25% of households respectively. Samoa used to export comparable quantities though currently its many smallholders produce only for the domestic beverage market; Fiji still has considerable plantings but negligible production. An ACIAR scoping study, PC(HORT)/2006/109 on *The potential for increasing the value of cocoa industries in Solomon Islands, Vanuatu, Fiji and Samoa*, concluded that all four countries could increase production substantially with concomitant livelihood benefits. Productivity can be increased through integrated pest and disease management, while quality can be improved through attention to fermentation and drying. It is also proposed that Pacific island producers could develop a comparative advantage by focusing on higher-value certified organic or single-origin markets - which also offer farmers increased incentives to intensify management - though this strategy is currently being pursued only in Vanuatu. In the longer term, there may be opportunities to develop even higher-value, fine-flavour cocoa niche markets in which the Pacific Islands may have a sustained comparative advantage. Experiences in Papua New Guinea and elsewhere suggest, however, that smallholders do not readily respond to economic signals through increased production and that they may be unable or unwilling for various reasons to adopt the intensification technologies on offer.

The proposed project builds on previous experiences, especially in PNG, of introducing intensified production technologies and of understanding the livelihood strategies of smallholders, by combining these two research approaches in the diversified market environment of Vanuatu, where cocoa producers have a choice among three different market chains for cocoa (conventional, single origin/fair-trade, and organic markets - each served by a producer organization (CGA, ACTIV, VOCSA) offering different incentives and levels of support). In addition, most growers have the possibility of switching attention to other commodities such as copra, kava, or root crops. The work on intensification in Vanuatu will be set in context by studies in all four partner countries to understand current market chains and explore (from both an economic and genetic resources perspective) opportunities to access higher value markets.

Within the broader development goal of helping rural communities in the Pacific islands to diversify their livelihood options, the specific aim of this project is therefore to understand how development organizations can help growers improve the returns obtained from cocoa through higher productivity, better quality and access to niche markets. Specific objectives will be to:

1. Evaluate the opportunities (in all four target countries) for smallholder cocoa growers to enter into higher value niche markets;
2. Introduce, evaluate and disseminate (only in Vanuatu) best-bet crop management practices within conventional, single origin/fair-trade and organic supply chains;
3. Evaluate and further disseminate (also in Vanuatu) existing best practices for improved quality of cocoa; and
4. Evaluate and recommend (in all four countries) best practices for selection, conservation and dissemination of improved germplasm, in support of current and potential market objectives.

Within the project team, the Secretariat of the Pacific Community (SPC) will take responsibility for researching Objective 1 and for overall project coordination. CABI will be responsible for participatory research and training in cocoa rehabilitation and integrated pest

and disease management (Objective 2), as well as in fermentation and drying for improved quality (Objective 3), working with the three producer groups and the Vanuatu Ministry of Agriculture; CSIRO will provide expertise in rodent management while SPC will assess returns to labour of the proposed measures. Mars Inc and SPC will work with national research organizations to assess available genetic resources and develop appropriate conservation and dissemination strategies (Objective 4). SPC will take responsibility for drawing together the overall lessons and recommendations for cocoa industry development and smallholder livelihood strategies.

The three cocoa producer networks in Vanuatu and the relevant Ministry will all benefit from access to improved production technologies and participatory training approaches; and will take responsibility for immediate dissemination to additional smallholders. The investigation of cocoa farmer livelihood strategies will help to inform the development of the Melanesian Well-Being Index. In addition the findings on technology adoption in the context of livelihood strategies will help inform the development of national agricultural extension approaches, as well as donor agricultural project design. The evaluation of national cocoa genetic resources in relation to industry development strategies will provide an incentive for their conservation and better deployment. Presentation of results at national and regional workshops of SPC (beyond this project) will encourage the adoption of improved practices and niche market access among other Pacific island countries.

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## 2 Justification

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### 2.1 Partner country and Australian research and development issues and priorities

Cocoa is a major export commodity of the Solomon Islands and Vanuatu, the industry being respectively the 3rd and 4th most important export earner for these countries. In Solomon Islands some 20% of households are involved in cocoa production and in Vanuatu over 25%. A scoping study funded by ACIAR, PC(HORT)/2006/109 on *The potential for increasing the value of cocoa industries in Solomon Islands, Vanuatu, Fiji and Samoa*, concluded that production in both the Solomon Islands and Vanuatu could be significantly increased, with concomitant livelihood benefits – see Executive Summary from SRA Final Report in Appendix C. The residual cocoa industry in Fiji could also be expanded into a worthwhile small industry. In Samoa, once the Pacific's leading producer of high-quality cocoa, the export industry has been in decline since the 1960s and the scoping study concluded that it cannot now be revived; however, cocoa has cultural significance as a national beverage, *koko-Samoa*, and there is still a lively internal market to build on, as well as a largely undocumented export market to Samoans living overseas. The scoping study also identified the old *Trinitario* varieties of Samoa as an asset that could be exploited for fine-flavour cocoa, in Samoa and elsewhere, and one that urgently needs to be conserved.

Given these opportunities, the ACIAR scoping study recommended that a cocoa rehabilitation project for the Pacific should be launched, focussing on participatory research and training to improve productivity and quality. An AusAID-funded *Cocoa livelihoods improvement program* (CLIP) in the Solomon Islands has followed this route, with a strong emphasis on integrated pest and disease management (IPDM). Certainly, on-farm losses in Pacific countries can be excessive. The Vanuatu Ministry for Agriculture, Quarantine, Forest and Fisheries (MAQFF) has identified that in some cocoa producing regions of that country, up to 80% of cocoa pods are damaged before harvest, by rats and black pod disease (caused by the pathogen *Phytophthora palmivora*). By reducing these losses by just fifty per cent, ni-Vanuatu cocoa farmers could increase yields per thousand trees from current levels of 370kg to over 1 tonne.<sup>1</sup> Experience suggests that such increases can be readily and immediately achieved by the application of basic principles of cocoa husbandry, especially pruning and crop sanitation.

This approach is based on the premise that smallholders have insufficient awareness of intensification technologies and/or insufficient economic incentives to adopt them - a view that is prevalent not just in the Pacific. For instance, the International Cocoa Organisation (ICCO) identifies the two major challenges facing smallholder cocoa growers world-wide as their adoption of new and improved cocoa management technologies designed to reduce pre-harvest losses, and therefore increase yields; and their ability and incentives to respond to new consumer market demands for chocolate that is of higher quality (fine flavour; high cocoa content) and is endorsed by a third party certification that guarantees the cocoa is produced under minimum social, economic and environmental conditions (Fair Trade; Organic; Rainforest Alliance, etc).

Most Pacific cocoa producers currently market only low-value, bulk cocoa. However, according to *Euromonitor*, in the five years up to 2008, growth in world chocolate markets has been mainly driven by single-origin chocolate which grew by over 20% *per annum* as

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<sup>1</sup> Given the dispersal of cocoa sub-holdings (the 2007 Agricultural Census reports that an average household cocoa sub-holding is 311 cocoa trees, spread over 2.6 hectares) it is not very informative to talk about yield per hectare

well as by organic certified chocolate (up by almost 20%) and dark chocolate (up by over 15%). All three of these new markets require increased attention to quality and use of fine-flavour varieties of cocoa to deliver the required taste profile. By accessing these markets, growers can expect to obtain a price premium of 10-20% - as well as participating in a market that tends to be more resilient to economic downturns.

Based on the ACIAR scoping study, McGregor (2009) concluded that, while generally buoyant cocoa prices offer sufficient incentive for the rejuvenation of the conventional cocoa trade in the Pacific, organic third party certification has offered Vanuatu's cocoa growers almost twice the return to labour that the conventional cocoa market has offered. He concludes and that this seems to have provided the organic growers with the right incentive to adopt new IPDM technologies, and move from 'foraging' to 'farming' cocoa.

On the other hand, experience in Papua New Guinea (PNG) and elsewhere in the Pacific has suggested that producers do not necessarily respond to economic signals in the conventional manner, by increasing production, but may even reduce production. Indeed a 'backwards-bending supply-curve' – where labour inputs are reduced in response to price rises, once an established minimum income level is reached – has been identified as one explanation for such reductions in the supply of palm oil in PNG.

**The diversified agricultural market in Vanuatu, where cocoa producers have a choice among different market chains for cocoa (with different price incentives and support services), as well as the possibility of switching attention to other commodities such as copra, kava, or root crops, offers the present project a unique opportunity to investigate strategies for intensifying production, in the context of smallholders' differing livelihood options and incentive regimes.**

Much like other Pacific countries, Vanuatu's cocoa industry has until recently been largely dominated one buyer – Vanuatu Copra & Cocoa Export Ltd (VCCE) – purchasing cocoa of any quality at low farm-gate prices, through its network of buyers. However the Vanuatu Government recognized new opportunities to market better-quality cocoa to emerging, higher-priced niche markets, and so worked with donors to establish a range of alternative marketing and extension support opportunities for its farmers. Three different market chains are now operational, offering the project an opportunity to test cocoa production intensification strategies within each and compare the outcomes.

Under the Project for Organisation of Agricultural Producers for Associative Trading (POPACA), funded by the EU in Vanuatu between 2000 and 2008, 12 cocoa co-operatives were set up to manage cocoa hot air drying and fermentation units established on Malekula and Malo islands in Malampa province. The Cocoa Growers Association (CGA) was established as a non-profit organization to help these independent co-operatives to market their produce, and to provide extension support. However these co-operatives have faced severe difficulties improving the quality and productivity of their farmers.

The Vanuatu Organic Cocoa Growers Association (VOCGA) was established in 2000, with POPACA facilitating and funding the initial EcoCert organic certification in 2002, and with ongoing assistance from Kaoka, a French chocolate manufacturer. In 2009, VOCGA exported 349 tonnes of certified organic cocoa – almost a third of the total national production of 1150 tonnes. The VOCGA provides extension support to its 1200 members and its own co-operative network, and has managed to significantly increase the quality of that production. The VOCGA has set in place a cocoa replanting and rehabilitation plan, with the aim of increasing organic production to 500 tonnes by 2012.

The Association for Alternative Trade in Vanuatu (ACTIV), a non-profit marketing company that was launched in 2007, has focused on providing an alternative market for cocoa growers. In 2009 it marketed almost 400 tonnes of cocoa to niche buyers in Germany under its track and trace system. This falls short of a formal certification system and offers an 'intermediate' path, with lower costs for initial participation but a slightly lower price

differential than might be offered by a full 'Fair Trade' scheme. The success of the scheme so far suggests that farmers can be provided higher prices by linking them to buyers interested in purchasing non-certified 'ethical' and 'single origin' cocoa – suggesting that the story of where the cocoa comes from provides a sufficient marketing value-add without the need for managing third party certification. ACTIV has also embarked on providing extension support to its network of cocoa growers. In addition, the Vanuatu MAQFF maintains agricultural extension officers on Malekula and Malo islands, and is considering increasing the number of extension officers available.

In the ACIAR scoping study, McGregor et al. noted that Vanuatu's cocoa growers, much like cocoa growers elsewhere in the Pacific, are usually 'organic by default' in that they simply tend not to use chemical inputs in the production of cocoa. As a result, the major barriers to entering into production of cocoa for organic markets are the production of the required level of quality, and the management of quality control and product traceability systems. In this project, major elements of the intensification strategy (pruning, shade management, crop sanitation) will be similar for all farmers, regardless of the market they are supplying; however, some options will be suitable only for particular certification regimes. Subsequently, this project seeks to investigate what opportunities there are for additional farmers to access these certified markets, and whether or not encouraging third party certification among these growers will be an effective strategy for improving livelihoods (especially given the difficulties small-farmers face in establishing effective quality management, product traceability and other documentation systems in remote islands communities without significant support).

By working with these established organizations, the proposed project can rapidly deliver on the objectives of Pacific governments for their cocoa industries, as encapsulated, for instance in the Priorities and Action Agenda of Vanuatu. The project also supports, though in different ways, the priority accorded by the Solomon Islands government to developing cash and plantation crops and the recently launched campaign of the Samoan government to promote the production of cocoa and coffee. These aims are also in line with the ACIAR Annual Operational Plan for the Pacific countries (subprogram 1) of improving household incomes and food security through more productive and diverse farming systems – and specifically the development and adoption of integrated production management packages for fruit, vegetable and plantation crops.

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## **2.2 Research and/or development strategy and relationship to other ACIAR investments and other donor activities**

The project strategy builds on the priorities identified by the ACIAR scoping study PC/2006/109 (see Appendix C) of increasing the economic viability and returns to the cocoa industry through a combination of increasing on-farm productivity and increasing farm gate prices, by focusing on reducing pre-harvest losses and by increasing access to premium cocoa prices. However, the current project design goes beyond these recommendations by researching the adoptability of intensification measures in the context of the range of economic incentives available to producers and their own livelihood strategies.

Since the scoping study was conducted, the AusAID-funded CLIP project, mentioned above, has been launched in Solomon Islands, addressing the major production and marketing issues in that country. The project proposed here will complement the AusAID investment by researching strategies for intensifying production in the more diversified cocoa industry in Vanuatu. Links will be maintained with CLIP (as recommended by the design mission for that project) for conserving, characterizing and exchanging improved planting materials (an effort that also brings in Fiji and Samoa). The project will set this in its broader market context by comparing opportunities for accessing higher-value niche markets (across all four countries).

The context of the study will be provided by initial market studies to be conducted by the Secretariat of the Pacific Community (SPC) (Objective 1). These will characterise the current markets and market incentives available to farmers in Vanuatu (providing the foundation for the work on intensification and improving quality, Objectives 2 and 3) as well as looking ahead to evaluate opportunities in all four partner countries for accessing higher-value niche markets for certified or fine-flavour cocoa (thus also guiding the germplasm deployment strategies to be developed under Objective 4). This work will complement studies of cocoa value chains to be conducted under the Pacific Agribusiness Research-for-Development Initiative (PC/2008/044, Objective 1) and will help to guide investments in cocoa industry development to be made by the European Union-funded project on Increasing Agricultural Commodity Trade in the Pacific (IACT), to be led by SPC.

In Vanuatu, this project will test strategies for introducing new technologies for intensifying production and improving quality, through Farmer Participatory Research and Training (FPRT). CABI will focus on techniques for reducing pre-harvest losses (especially to rats and black pod), working with the CGA, VOCCA and ACTIV, as well as the Vanuatu MAQFF (Objective 2).

As rat control has not been addressed in previous IPDM packages, new control measures for this serious problem will be researched. A particular challenge will be to identify rodent management practices that are compatible with organic certification and which place an emphasis on the use locally available materials. The CSIRO will carry out an initial diagnosis of the situation and then propose different techniques for reducing losses to rats that can be further tested and evaluated in the FPRT program.

The project team will be drawing information and rodent management strategies from ACIAR-funded research conducted by CSIRO in Southeast Asia, in particular *A systems approach to rodent management in upland environments in Lao PDR* (ADP 2004/016) and *Implementation of rodent management in intensive irrigated rice production systems in Indonesia and Vietnam* (ADP/2003/060). While the focus of these projects was on managing rodents in rice-based farming systems, many of the rodent management strategies that were trialled and recommended were considered as “Community Actions” and largely involved the use of time by farmers and to encourage a community approach to rodent management in diverse habitats (not just rice fields). These are some of the principles behind Ecologically-Based Rodent Management (EBRM) which encourages a systems approach to rodent management without having to rely on expensive and potentially dangerous rodenticides - an approach appropriate for Vanuatu, which would also suit the organic farming sector.

For management of black pod disease, CABI will draw on their experiences in PNG (PC/2006/114, working with the Cocoa and Coconut Institute Ltd (CCIL), University of Sydney and Mars Inc.) and elsewhere, as well as the results of other ACIAR-funded work in PNG (such as ASEM/2003/015, led by Uni. Sydney, with CCIL and Mars). On-farm sites will be established where different rodent and 'black pod' management practices can first be trialled and then can be later used as demonstration blocks. This approach has been found to be the most appropriate in Papua New Guinea (project ACIAR PC/2006/114).

CABI will also work with CGA, VOCCA and ACTIV (and commercial plantations/processors) to look at strategies for improved post-harvest handling related to quality, especially fermentation and drying (Objective 3). This will involve comparisons between the system of local drying in small-scale facilities owned and operated by farmer groups, largely established by POPACA, and the system of more centralised processing in larger facilities (a trend currently being driven by VOCCA); analysis will be followed by participatory training in best practices.

Extension workers already employed by VOCCA, CGA, ACTIV and the Vanuatu Government will be trained in sanitation practices, rat control, the selection of existing and improved cocoa planting materials and in processing requirements. Extension officers will be

taught how to conduct Training-of-Facilitators (TOF) and Farmer Field Schools (FFS) in these areas, thus reinforcing the impact pathway for this part of the research.

Recognizing that a critical factor limiting the effectiveness of intensification efforts is the scarcity of labour available to adopt labour-intensive technologies, such as heavy pruning and weeding, SPC will work with CABI, CGA, ACTIV, VOCCA and other local partners to determine the returns to labour of the new techniques introduced (based on a methodology piloted on cocoa in Fiji) and analyse what incentives farmers may have to implement them, in the context of their broader livelihood strategies. This analysis will provide insights into the livelihoods strategies of smallholder farmers in relation to their supply of labour to cocoa production, and provide an understanding of the reasons why some farmers are willing to contribute more labour to cocoa and cash crop production than others.

There are many ongoing or recently finished projects that provide a foundation for this work, especially on methodologies and understanding of farming systems and constraints. Projects ASEM/2004/047, ASEM/2004/017 and ASEM/2004/042 cover a range of activities in coffee from the management of the coffee green scale, quality management in postharvest processing, and enhancing profitability via price premium for quality in PNG. A common thread in these projects is the development of adoption pathways and related communication and dissemination strategies that emphasize farmer and stakeholder engagement as a key, and strategies towards achieving this have been developed.

This project also builds upon the prior work investigating the socio-economic and customary factors affecting the livelihood strategies of PNG cocoa, coffee and oil-palm smallholders, for instance under project ASEM/2002/014 and additional research (Curry, Koczberski, Gibson 2001; Curry and Koczberski 2009; Curry, Koczberski, Omuru and Nailina 2007; Quirke, Harding and Warner 2007; Batt 2009 *et al.*). However the Vanuatu studies will offer new insights from this different environment and the comparison of market incentives.

Deployment of improved germplasm over the medium term potentially offers multiple potential advantages and strategy options - including the pursuit of higher yield, more resilient yield in the face of pests and diseases and the possibility of accessing higher value markets for fine flavour (though usually with a trade-off in reduced yields and greater disease susceptibility). The existing cocoa genetic resources available within the partner countries will be evaluated and characterized in relation to accessing niche market opportunities and other intensification strategies. In Vanuatu, the Vanuatu Agricultural Research and Technical Centre (VARTC) is already a source of improved planting material for farmers and the capacity of this institution will be strengthened through the project and through exchanges of material with Fiji. Fiji has a rich collection at Naduruloulou Research Station (managed by Department of Agricultural Research, Ministry of Primary Industries) but the collection is in urgent need of characterization and improved management (to be mediated through SPC). The existing collection at Nu'u Research station in Samoa also needs rehabilitation and enriching through the addition of traditional germplasm surviving on farmers' plots. Characterization of materials will be conducted in collaboration with a specialist from Mars (Australia) Pty Ltd and the possibility of introducing new breeding materials from the international quarantine collection at Reading University, UK, will be investigated (but probably not implemented during the current project).

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## 3 Objectives

Within the broader development goal of helping rural communities in the Pacific islands to diversify their livelihood options, the specific aim of this project is to understand how development organizations can help smallholders to improve the returns obtained from cocoa through higher productivity, better quality and access to niche markets. In pursuit of this aim, specific objectives will be:

**Objective 1: To evaluate the opportunities for small-holder cocoa growers (in Vanuatu, Samoa, Solomon Islands and Fiji) to enter into higher value niche markets**

The first objective will be achieved by carrying out an assessment of the cocoa commodity chain in the Solomon Islands, Vanuatu and Samoa and Fiji through literature reviews, and farmer, government and industry consultations. These assessments will be followed by an investigation of the capacities, and financial incentives, for each chain to move into market niches. Expected outputs will include recommendations on which groups in which countries would benefit from further assistance to access certified and fine-flavour market niches.

**Objective 2: To introduce, evaluate and disseminate best-bet crop management practices within conventional, single origin/fair-trade and organic supply chains (in Vanuatu)**

The second objective will be achieved by investigating the effectiveness and returns to effort of different IPDM and rat control techniques introduced to the three Vanuatu farmer networks (ACTIV, CGA and VOCCA) via Farmer Participatory Research and Training approaches. Farmers will be asked to keep a diary of their IPDM activities and, from focussed interviews and questionnaires, the optimal approach will be identified and further disseminated. Expected outcomes will include an increase in production and productivity (which may be different in various farmer groups). Key outputs will be an understanding of the most appropriate methods for improving yield among time-constrained cocoa growers, with different livelihood options and within different market chain environments.

**Objective 3: To evaluate and disseminate best practices for improved quality of cocoa (also in Vanuatu)**

The third objective will be achieved through an evaluation of the existing cocoa quality management systems of the three Vanuatu farmer networks (ACTIV, CGA and VOCCA) and provision of quality-control training, focussing on processing techniques (drying and fermentation), quality inspection through sample bean 'cutting,' and follow-up actions for improving quality. Sample quality will be assessed prior to and following quality-control training, to evaluate impact. Expected outcomes will include an increase in cocoa quality (which may be different in various farmer groups). Key outputs will be an understanding of the most appropriate methods for improving cocoa quality, within different market chain environments.

**Objective 4: To evaluate and recommend (in all four countries) best practices for selection, conservation and dissemination of improved germplasm.**

The fourth objective is to assess the existing germplasm collections in each of the focus countries (Vanuatu, the Solomon Islands, Fiji and Samoa), to evaluate the extent to which these are being disseminated in support of the existing industry, and whether they could support the development of niche markets (for higher quality cocoa). This assessment will establish multiplication processes and protocols for the most promising provenances. Expected outcomes will be the characterization and conservation of the most valuable cocoa genetic resources held by each country and a strengthened link between the collection and industry in Vanuatu. Key outputs will be recommendations for germplasm dissemination strategies for the partner countries, targeted towards the industry priorities of each.

Table of key research questions, by objective, showing where the research will be conducted and how/where the outputs will be used.

	Key research questions	Main knowledge outputs
Obj 1	Vanuatu, Solomon Islands, Samoa, Fiji	
	<p>What is the structure of the cocoa commodity chain and cocoa marketing in each focus country, and the role played by smallholder cocoa producers?</p> <p>What is the level of capacity of the major stakeholders in the cocoa chain (farmer groups; processors and exporters) to manage certification requirements?</p> <p>What opportunities are there for smallholder cocoa growers to move into higher-value markets?</p>	<p>In Vanuatu - understanding market relationships provides context for work with smallholders to intensify cocoa production.</p> <p>In all four countries - understanding of market opportunities will provide strategic guidance for cocoa industry development</p>
Obj 2	Vanuatu (conventional and niche market chains)	
	<p>What are the different livelihoods strategies pursued by cocoa farmers in the three cocoa farmer networks?</p> <p>What are the best-bet options for managing rats? (in organic and conventional production)</p> <p>What are the best-bet options for increasing cocoa productivity (including pruning, management of rats and black-pod, crop nutrition) for smallholders in conventional and niche market chains?</p> <p>What are the drivers for intensifying production and/or entering certification schemes, from a smallholder household livelihoods perspective?</p>	<p>Understanding of the best options for improving productivity and household income, including strategies for encouraging adoption, by producers in different incentive environments - will help to guide cocoa industry development in Vanuatu and intensification of other commodity-based industries elsewhere</p>
Obj 3	Vanuatu (conventional and niche market chains)	
	<p>What are the current quality issues affecting smallholder cocoa producers?</p> <p>What are the best-bet options for improving cocoa quality? (including fermentation and drying, locally or centrally)</p> <p>What are the returns to effort of these measures? (and any other constraints to adoption)</p>	<p>Understanding of the best options for improving quality, including strategies for encouraging adoption of new practices and providing extension support and quality control, will help to guide cocoa industry development in Vanuatu and intensification of other industries elsewhere</p>
Obj 4	Vanuatu, Fiji, Samoa, Solomon Islands	
	<p>What genetic resources are currently available in national collections?</p> <p>How can these best be deployed to smallholders to meet current industry needs?</p> <p>How could these resources be deployed to help smallholders develop higher-value markets?</p>	<p>Understanding of current industry needs, available genetic resources to meet those needs and current constraints on deployment will lead to recommendations for more effective characterization and deployment of resources, in support of current and future industry needs and aspirations to enter high-value markets.</p>

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## 4 Planned impacts and adoption pathways

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### 4.1 Scientific impacts

The major scientific impact of this project will be to identify the influence farmer livelihood strategies have on adoption rates of crop management technologies among Pacific smallholders. Agricultural production and productivity is declining in the Pacific, even as prices rise. This project will build upon prior research on Melanesian smallholders' livelihood strategies, to identify whether the low yields achieved by Vanuatu cocoa growers are the result of a lack of knowledge of crop management techniques (as proposed by the ACIAR scoping study), or the result of an unwillingness or inability to implement them. By investigating the incentives and constraints faced by smallholders in Vanuatu, this project will contribute towards the identification of more appropriate crop management methodologies, intensification strategies and extension approaches. This will contribute to the development of next-generation IPDM and FPRT approaches.

This project's investigation of ni-Vanuatu smallholder livelihood strategies, motivations and incentives structures will contribute towards the conceptualisation of Melanesian notions of well-being, and provide an important contribution to the development of the Melanesia Well-being Index which is being developed in Vanuatu as an alternative measure of national progress, to complement conventional measuring of GDP.

The investigation of backwards-bending supply curves amongst Melanesian smallholders will provide an important illustration of an alternative process of economic decision-making to the rational, utility maximizing assumptions of modern Microeconomic theory.

Research on rodent management will be novel from both the ecological context (in particular, with few species and low abundance of indigenous predators) and in seeking tactics that are both effective and compatible with organic certification.

Some valuable research results should result from evaluation of the germplasm resources in the focus countries, and the potential contribution of Pacific cocoa genetic varieties to fine flavour taste profiles.

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### 4.2 Capacity impacts

The major capacity impacts will be with the three partner farmer networks: ACTIV, CGA and VOCCA, whose participation in the identification of new, appropriate crop management methodologies will lead to an improvement in their extension services, especially in their understanding of how to use a range of participatory research and training approaches, as well as their understanding of the content itself (i.e. ecological approaches to pest and disease management). This project will also improve the crop management of smallholder farmers participating in the training, and growing and marketing cocoa within the farmer networks that are the focus of this project. Subsequently, Vanuatu's smallholder farmers will improve their capacity to produce higher quantities of good quality cocoa. In addition the participation of Vanuatu's agricultural extension officers in identifying new crop and pest management technologies will improve their capacity to provide extension services to farmers outside of these networks.

The identification of the livelihood strategies pursued by Vanuatu's smallholders, their motivations and notions of well-being will contribute to the capacity of Vanuatu National Statistics Office and Melanesian Spearhead Group to develop the Melanesian Well-being Index. The new information on the role of production for own consumption and production of

gifts for exchange will help improve the capacity of SPC to design and implement Household Income and Expenditure Surveys in the region.

Another major component will be the improved capacity of cocoa farmers in the focus countries to access high quality and fine flavour varieties of planting material from national cocoa germplasm collections - and, conversely, the capacity of the organizations managing these collections to evaluate their holdings of genetic resources and design active, needs-driven dissemination strategies. This will contribute to an improvement of the genetic material and productivity of the Pacific's cocoa trees.

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## 4.3 Community impacts

### 4.3.1 Economic impacts

Direct economic benefits can be estimated at this stage only for Vanuatu (where most project activities are concentrated). For Vanuatu, restoring cocoa production to its 1997 levels (i.e. just over 1,200 tons) would lead to it providing 10% of the country's total export earnings, up from around 6% at present. The ACIAR-funded scoping study (PC/2006/109) has proposed that a readily achievable target would be to increase Vanuatu's production to 5,000 t p.a. over five years and to 7,000 t p.a. within 10 years. The economic impact at community level of such a change would be significant as over 30% of rural households produce cocoa, rising to over 80% in some of the main cocoa producing areas (with figures suggesting a slight upward trend over recent decades). At a national level it was estimated in 2007 (national agricultural census) that some 8,500 households grow cocoa, with an average holding of just over 2 ha.

Smallholder farmers are likely to benefit most, financially, from the project as many activities require labour rather than additional inputs. Family labour should result in increased yields and hence profit; of course, with plantations using hired labour, extra work will result in higher costs, but compensated for with higher yields. Poor farmers and hired labour will receive higher incomes to protect livelihoods. The processing and exporting areas of the product chain will obtain benefits from the extra yield to be processed and sold. Margins should be maintained although again there would be additional costs from processing greater quantities of cocoa.

The project will seek to boost production by measures that increase the productivity of existing plantings and reduce losses. Initial analysis conducted by the Vanuatu Government indicates that losses to pests and diseases (principally black pod and rats) are as high as 80% of production in infested areas. Current yields (of saleable beans) are on average 370kg per 1000 trees. Experience elsewhere has shown that it should be possible to increase yields 'immediately' (within a season) by 50% in most holdings, (i.e. from about 400 grams of cocoa per tree to 600 grams). A plan for cocoa sustainability in PNG (where yields are currently similar under comparable management regimes) tabled in 2007 suggested that intensified management can increase productivity five-fold (i.e. from 500g to at least 2.5 kg per tree) - a figure broadly corroborated by subsequent experience in ACIAR-funded projects. This still leaves further potential for increase towards the optimal yields achievable on research stations for these varieties under the same climate of at least 4 kg per tree.

Many assumptions are involved in trying to translate expected yield increases into potential economic gains. However, current prices of around US\$3000 per tonne of cocoa, roughly translate into a 'farm gate' price of Vt180 (\$1.95) per kilo for dried and fermented cocoa beans. Thus a smallholder with 1000 trees, producing 400g per tree, could currently expect an income of Vt72,000 (currently US\$780) per year from sale of cocoa. Immediately achieving a yield of 600g per tree would raise this to Vt108,000 (US \$1,170) while an achievable yield of 2.5kg per tree could offer an income Vt450,000 (US\$4,880), though evidently with a likely increase in the cost of purchased inputs.

Improved processing increases the percentage of high quality cocoa, which attracts 10-20% higher prices. Moving from marketing bulk cocoa to third party certified or 'niche market' cocoa, such as certified organic and fine flavour offers growers a further premium of between 18 and 30%. In addition, own marketing of cocoa will increase the proportion of the FOB price retained by farmers (estimates in Vanuatu for the organic niche is that farmers moved from retaining 65% to approximately 80% of FOB by doing own marketing). More detailed figures are not available at this stage but will be documented, wherever possible, by the project as the confidence of growers and exporters is gained.

Benefits will be obtained quickly: practices such as improved pruning, removal and destruction of diseased material and control of rats have an almost immediate effect on the developing crop. The same is true for improved fermentation processes. Considering the deficit in well-fermented beans, the market should be available to take up the extra yield. In addition, there is a growing market for well-dried and fermented 'quality' beans produced by small-holders. These benefits should begin to be seen within one year.

Benefits from new, specialised markets will take longer to be realised, but should be noticeable by the end of the project term.

The impact of introducing improved germplasm and especially the introduction of appropriate germplasm and development of niche markets for fine-flavour cocoa will take considerably longer. The contribution of this project will be to indicate the feasibility and potential benefits of such a strategy and will leave future projects to take the necessary actions.

Although the project will work directly with only 300 farm households (100 in each market chain) it is anticipated that the spread of adoptable best practices should be relatively rapid, for a number of reasons. Firstly, because Vanuatu already has the foundation of a system for extension of knowledge and provision of inputs, especially in the organic sector and through the actions of private sector entities and farmer associations; the second reason being that the project will be working directly with the three farmer networks, as well as the national agricultural extension department in Vanuatu, who collectively work with more than  $\frac{3}{4}$  of the farmers in Vanuatu; and the third, that cocoa production in Vanuatu is relatively concentrated with over 80% of producers living in one Province (Malampa), and 60% on one island (Malekula).

The likely benefits beyond Vanuatu are hard to estimate because the conditions prevailing in each Pacific island country are different. The results might be most directly applicable in Fiji, where producers have a similar range of livelihood options but, in the absence of appropriate market arrangements and government policies, only some 150 households are currently producing cocoa (though, according to the ACIAR scoping study, there may be abandoned plantations of between 5,000 and 10,000 ha that could be rehabilitated). In Solomon Islands, some 13,000 households are (or could be) involved in cocoa production, with existing plantations estimated at between 10,000 and 15,000 ha. In this case, quasi monopolistic market conditions result in the country's considerable current production (4,500 t p.a.) mostly being sold as bulk cocoa (though improved quality has resulted in erosion of the price/quality differential with PNG noted at the time of the scoping study). Conditions in Samoa are different again, with bulk cocoa production having fallen away from significant production in the 1960s (5,000 t p.a.) to zero at present but with many households still producing the national beverage (*koko samoa*) and the possibility, identified by the ACIAR scoping study of developing both this product further and niche markets for fine-flavour beans.

In this broader context, the role of the present study will be to conduct linked feasibility studies (niche markets, value of certification, available genetic resources...) which, combined with the results on best strategies for promoting intensified management (in the context of different incentive regimes), will provide a basis for further policy dialogue between SPC, national partners and other research-and-development organizations. Economic impacts from these project findings will only accrue much later, from actions that this policy dialogue may stimulate.

### 4.3.2 Social impacts

Cocoa in Melanesia is significant as one of a currently rather narrow range of viable options for diversifying incomes, especially in the face of declining returns from copra (for crude coconut oil) and, in the case of Fiji, the volatile sugar market. In Samoa, the crop has additional cultural significance. While the importance of cocoa as a source of cash income has fluctuated (in response to cocoa prices, government policy and the attractiveness of alternative crops, such as kava, vanilla, taro etc), the trees tend to survive through periods of neglect and adverse weather (especially cyclones) so that the crop remains available for rapid rehabilitation when need arises. The results of this project should provide more detailed insights into the role played by cocoa in the livelihood strategies of smallholders and the means to mobilize this option more effectively. Until such information is available, it is hard to describe or evaluate the likely social impacts of the project.

In other regions, negative health and social impacts have been associated with cocoa production, due to inappropriate use of toxic agrochemicals and 'child labour'. These issues have not been reported from Melanesia though the IPDM techniques advocated by the project will minimize (or render negligible) possible any negative health effects from pesticides or rodenticides.

Evidently cocoa farming in the Pacific employs largely family labour, including women and children, and the possible impacts (positive and negative) on these segments of the community will need to be monitored carefully. Other ACIAR-funded research (especially ASEM/2002/014) has documented a change in gender roles as cocoa production is intensified (from 'foraging' to 'farming'), as reported by Curry, Koczberski, Omuru and Nailina (2007). This project will further investigate the changes in farming behaviour and social impacts that result from altered returns to labour in a slightly different environment.

### 4.3.3 Environmental impacts

Cocoa in the Pacific islands tends to be grown as part of mixed plantings with other tree crops (coconut, breadfruit) and, especially in Vanuatu, in association with food crops and beverage crops (taro, sweet potato; kava, coffee). This project will promote the rehabilitation of mixed-crop cocoa gardens and is not expected to stimulate the planting of mono-crop cocoa or clearing of forest for cocoa plantation. As such, the environmental benefits of this land use (minimal erosion, carbon retention, use of crop diversity) are expected to be maintained or enhanced. The IPDM techniques encouraged under this project will discourage the use of pesticides and other chemicals. A range of non-chemical rodent management strategies, including ecosystem based rodent management (EBRM) will be evaluated through this project, thus avoiding or reducing the use of rodenticides. Other complementary strategies such as encouraging indigenous predators will be considered.

Given that the returns to labour for organic production are higher, and the success that organically certified farmers (under VOCCA) have had with increasing production and maintaining production quality, this project will tend to encourage the farmer networks to move towards organic certification or other certification schemes encouraging good agricultural and conservation practices.

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## 4.4 Communication and dissemination activities

The primary users of the information from the project include stakeholders such as farmers, extension officers (commercial and public sector) and exporters/processors. A secondary group of stakeholders include the partner farmer networks (ACTIV, CGA and VOCCA), as well as the Vanuatu national agricultural extension services, throughout Vanuatu.

Working with farmers through hands-on and participatory training with special emphasis on discovery learning relating to technology developed in the project, is the key method of

dissemination and adoption. Hands-on discovery learning enables all social strata, including women and youths, to learn easily because the approach is farmer-centric and practical. Farmers can immediately apply what they learn and see the benefits - resulting in strong motivation, enthusiasm and interest to pass on their learning. These benefits should be passed on through the adoption of these participatory methods as mainstream extension approaches by the partner farmer networks..

Wherever appropriate, participatory research will be conducted on plots that can also serve as demonstration plots for explaining the results to additional farmers and extension workers. The project will also consider the use of rural radio, local television broadcasting and press stories to communicate some of the simpler project messages to a wider audience within Vanuatu.

The mode of disseminating the results of this project beyond the farmers engaged in the research, will be through the three farmer networks identified in this project, in addition to Vanuatu's national extension service, by involving them and their extension staff at all stages of the research. In addition the research team will have regular meetings with the research assistants engaged within each network, and with the national extension service, to discuss progress and problems encountered in the research, as well as preliminary results,

For project partners, in addition to regular electronic communication on immediate issues, research progress and administrative matters will be formally reviewed at site meetings and discussions to enable project partners to identify findings of practical importance and to quickly incorporate them into existing cocoa policies.

The project will also communicate its activities and findings to the wider research and policy community through local and national media and through journal publications and relevant conferences. The project findings will have wider implications beyond Vanuatu because the relationship between socio-cultural factors and technology adoption (certification and IPDM) will be of relevance to small-holder, mixed crop production systems elsewhere in the Pacific and the developing world.

In addition, research results will be disseminated through project reports (especially to project partners and funding organizations), and technical publications. Because of the varied nature of stakeholders and the different conditions prevailing in partner countries, a formal end-of-project workshop is not anticipated. Rather the project findings will be used in various forms by SPC, ACIAR and other partners in the context of strategic discussions with national and international partners, as a basis for further policy actions or research-and-development interventions.

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## 5 Operations

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### 5.1 Methodology

#### **Objective 1: To evaluate the opportunities for small-holder cocoa growers to enter into premium (fine flavour; third party certified) niche markets**

Activity 1.1 SPC will document the structure of the cocoa industry in Vanuatu, Samoa and the Solomon Islands through the contracting of short-term consultancies in these three focus countries, to identify the different commodity chains and priority market opportunities

A1.2 SPC will identify the opportunities and constraints for accessing 'niche' markets (third party certified, premium small-holder, fine flavour and single origin) markets for each chain in each country, drawing upon both the available literature ( agricultural census') key person interviews and observation to, assess the prospect for improving small-holder livelihoods by accessing these new market opportunities.

A1.3 Drawing upon the available literature, key person interviews and observation, SPC will assess the capacity of the three Vanuatu cocoa farmer networks - VOCCA, ACTIV and CGA - to assist their farmers to implement the product traceability and quality management systems required to meet the requirements of niche markets.

#### **Objective 2: To evaluate and disseminate best management practices (crop management including IPDM) through participatory procedures within both conventional and organic supply chains**

Activity 2.1 CABI will assess the current level of farmers' awareness and understanding of cocoa pests and diseases and the possible IPDM methods such as cultural, biological and chemical control, and basic time management strategy, by helping to interview 100 farmers in each of the Vanuatu cocoa farmer networks (VOCCA; ACTIV and CGA), holding farmer focus groups and key person interviews with extension officers. Detailed household information on agronomic and farm management practices and household labour strategies will be collected. Selection of households will be based on the typology of households, and is likely to use the following criteria: household size, age of household members, number and size of cocoa plots; distance from road; access to processing facilities; past participation in training.

A2.2 CABI, with assistance from the CSIRO, will explain and demonstrate a range of IPDM methods for control of Black Pod (*Phytophthora palmivora*) such as phytosanitation, use of resistant varieties, rational pesticide use (RPU) (where appropriate) and rats as well as more general techniques such as pruning and shade management to members of each farming network through Farmer Field Schools

A2.3 CABI and CSIRO, with assistance from the SPC, will establish trial plots for a selection of different IPDM methods (eg. intensive pruning; ringbarking; unmanaged; gliricidia branches; gliricidia leaves mixed with coconut meal; organic poison; half coconuts; biocontrol; no measures) and allocate a sample selection of farmers with diaries to record their labour inputs for each of the methods over the trial period. 30 households will be invited to participate in a time allocation survey over 28 consecutive days during three periods of differing farming intensity, and demands on household budgets (January, June and Oct-Nov)

A2.4 SPC will assess the appropriateness of each method by comparing the impact on reducing pre-harvest losses with the labour inputs required for each IPDM trial method

A2.5 Raise quarantine awareness of the Cocoa Pod Borer (*Conopomorpha cramerella*) as a potential production constraint through presentations to appropriate stakeholders.

A2.6 SPC, with assistance from CABI and CSIRO, will evaluate farmer adoption of new IPDM technologies through field observation, farmer focus groups, farmer interviews and key person interviews with extension officers

**Objective 3: To evaluate, implement and disseminate best practice for improved quality of cocoa.**

Activity 3.1 SPC will document VO CGA, ACTIV and CGA's current cocoa farmer profiles, access to effective processing (fermentation and drying) facilities, and evaluate each networks system for addressing and improving product quality (if any) , marketing arrangements,

A3.2 CABI will take a survey sample of the cocoa being marketed by each of these three networks and identify what drying, fermentation and other processing problems could be impacting upon quality

A3.3 Alongside IPDM training, CABI will demonstrate methods to improve cocoa quality to each of VO CGA, ACTIV and CGA farmers, such proper processing techniques (drying and fermentation), quality inspection through sample bean 'cutting,' and establish follow actions for improving quality for each network.

**Objective 4: To establish best practice for selection, conservation and dissemination of germplasm.**

Activity 4.1 Evaluate and review germplasm resources in countries in relation to opportunities to increase productivity and supply niche 'fine flavour' markets. A recognised expert in cocoa genetic resources (Smilja Lambert of Mars, Inc.) will visit the key collections (VARTC in Vanuatu, Naduruloulou in Fiji and Nu'u in Samoa), and make limited on-farm visits, to review with national staff the diversity of cocoa varieties held (carrying out on-the-spot evaluation where possible or recommending further tests) and will help national stakeholders (industry and government) to outline a national germplasm strategy in relation to goals (increasing productivity, developing fine flavour niche markets etc).

A4.2 Mars will catalogue, conserve and evaluate selected valuable germplasm in protected collections. The cocoa genetic resources expert will also train national curators and support staff in methods for cataloguing and maintaining holdings of cocoa germplasm, as well as basic evaluation methods (for productivity, bean quality etc.) to be carried out in the collection, over the life of the project and beyond).

A4.3 Establish multiplication processes and protocols for superior germplasm. To be carried out in collaboration with a cocoa specialist at CLIP (John Konam), this activity will involve some experimental validation (in Solomon Islands or Vanuatu) of strategies for introducing improved germplasm (whether selected for productivity or quality attributes) into existing plantations, through direct seeding, top-grafting, side-grafting etc. This may also include participatory on-farm selection of the best material already present. Results of these experiments in the form of recommendations will be available to project partners for implementation towards the end of the project and beyond.

A4.4 Facilitate the dissemination of priority and improved germplasm to farmers. The genetic resources expert (and possibly CLIP cocoa specialist) will advise VARTC on means to strengthen and improve the existing efforts to disseminate superior planting material from the VARTC collection to the farmer groups that are partners in the project. This will include development of a clear strategy, evaluation of the materials available (including possible germplasm exchanges with Fiji) and advice on the most cost-effective methods of dissemination (budwood, seed, etc.)

A4.5 Evaluate the impact of the dissemination of priority and improved germplasm to farmers. This activity will assess the effectiveness of existing dissemination efforts in terms of improving productivity and/or quality and will thus form the basis for improving the effectiveness of such efforts (including methods for ongoing monitoring).

## 5.2 Activities and outputs/milestones

### Objective 1: To evaluate market opportunities for adding value to cocoa products

No.	Activity	Outputs/ milestones	Due date of output/ milestone	Risks / assumptions	Applications of outputs
1.1	Document cocoa supply chain (Van, SI, Samoa)	Production of value-chain analyses of Vanuatu, SI and Samoa cocoa industries	Yr 1. Month 6	Limited availability of information restrict analysis	Information fed into drafting of industry analysis (Van, Samoa and SI)
1.2	Evaluate appropriateness of added value markets in each country	Provision of recommendations on value-added market opportunities for each country (Van, SI, Samoa)	Yr 1. Month 9	Limited availability of information restrict analysis	Selection of best bet options for improving producer returns
1.3	Document the VCOGA, ACTIV and CGA cocoa management and the administrative practices, and the risks and opportunities they face moving into niche markets	Case study outlining VCOGA, ACTIV and CGA organisational structure and management activities and capacities for managing internal control systems and traceability systems	Yr 1. Month 6	Farmers and staff from VCOGA, ACTIV and CGA are willing to provide factual information	Information fed into draft of recommendations for each national industries best bet for improving cocoa farmer livelihoods

### Objective 2: To evaluate and disseminate best management practices (crop management including IPDM) through participatory procedures within both conventional and organic supply chains

No.	Activity	Outputs/ milestones	Due date of output/ milestone	Risks / assumptions	Applications of outputs
2.1	assess the current level of farmers' awareness and understanding of cocoa pests and diseases	Production of participatory survey of farmer concerns	Yr 1 Month 6  Yr 1 Month 6	That farmers will report facing relative consistent production constraints Access to suitable farms and farmers	Information fed into drafting of industry analysis (Van, Samoa and SI)

2.2	demonstrate a range of IPDM methods for control of Black Pod ( <i>Phytophthora palmivora</i> ) such as phytosanitation, use of resistant varieties, rational pesticide use (RPU) (where appropriate) and rats as well as more general techniques such as pruning and shade management to members of each farming network through Farmer Field Schools	Production of participatory survey of farmers' current management practices	Yr 1 Month 6  Yr 1 Month 6 + Yr 2 Month 9	Farmers currently use IPDM techniques	Information fed into drafting of industry analysis (Van, Samoa and SI)
2.3	Establish trial plots to for each crop management processes FPT activity	Production of participatory survey of farmers' labour inputs into IPDM	Yr 1 Month 9  Yr 1 Month 6 + Yr 2 Month 6 Yr 3 Month 9	Farmers currently use IPDM techniques; farmers can keep accurate diaries of their labour inputs	Selection of best bet options for improving producer returns
2.4	assess the appropriateness of each IPDM trial method by comparing the impact on reducing pre-harvest losses with the labour inputs required	Documented change in farmer practices	Yr 2 Month 6  Yr 2 Month 6 + Yr 3 Month 6	Farmers are willing to integrate new materials	Information fed into draft of recommendations for each national industry's best bet for improving cocoa farmer livelihoods
2.5	Raise quarantine awareness of CPB as production constraint FPT activity	Documented improvement in farmer awareness	Yr 2 Month 9  Continuous at each FPT event	That increased awareness leads to change in practices	
2.6	Validate best IPDM management practices FPT activity	Production of participatory survey of farmer practices	Yr 2 Month 12  Yr 3 Month 12	That farmer surveys will provide sufficient information required for validation	Information fed into draft of recommendations for each national industry's best bet for improving cocoa farmer livelihoods

**Objective 3: To evaluate, implement and disseminate best practice for improved quality of cocoa.**

No.	Activity	Outputs/ milestones	Due date of output/ milestone	Risks / assumptions	Applications of outputs
3.1	Identify improved cocoa processing techniques and associated infrastructure FPT activity	Production of participatory survey of processing techniques and equipment	Year 1 Month 9  Y 1. Month 6 + Continuous to Y3 Month 12	That farmer practices will change in ways that can be observed and documented	Information fed into draft of recommendations for each national industry's best bet for improving cocoa farmer livelihoods
3.2	survey the cocoa being marketed by each of these three networks and identify what drying, fermentation and other processing problems could be impacting upon quality	Production of evaluation document	Year 1 Month 12	That farmer practices will change in ways that can be observed and documented	Information fed into each farmer network and to national extension authorities
3.3	Demonstrate methods to improve cocoa quality, to each farmer network, through establish follow-up actions for improving quality for each network.	FPT provided to each network	Year 2 Month 6	That farmer and network practices can easily be changed through the demonstration of new techniques	New techniques and basic quality control adopted by each network

**Objective 4: To establish best practice for selection, conservation and dissemination of germplasm**

No.	Activity	Outputs/ milestones	Due date of output/ milestone	Risks / assumptions	Applications of outputs
4.1	Evaluate and review germplasm resources in countries	Production of national germplasm availability document	Year 1 Month 12	Limited availability of information restrict analysis	National partners will use information for planning their germplasm acquisition and dissemination strategy
4.2	Catalogue, conserve and utilise selected valuable germplasm in protected collections	Improved conservation and utilisation of germplasm	Year 3 Month 12	That national systems for protecting and disseminating germplasm are able to improve capacity	Secure holdings of appropriate germplasm will underpin national cocoa development efforts
4.3	Establish multiplication processes and protocols	Processes and protocols established and functioning	Year 3 Month 12	That national systems for protecting and disseminating germplasm are able to improve capacity	Dissemination strategies and methods will underpin national cocoa development efforts

4.4	Facilitate the dissemination of priority and improved germplasm to farmers	Processes and protocols established and functioning	Year 4 Month 3	That there is demand for germplasm from farmers; that countries have pre-existing and effective farm extension facilities for germplasm distribution	Dissemination strategies and methods will underpin national cocoa development efforts
4.5	Evaluate the impact of the dissemination of priority and improved germplasm to farmers, by assessing the number of new cocoa plants and seedlings distributed and planted	Improved utilisation of germplasm by farmers	Year 4 month 12	That there is demand for germplasm from farmers; that countries have pre-existing and effective farm extension facilities for germplasm distribution	Farmer utilization of productive germplasm contributes to national production targets

## 5.3 Project personnel

### 5.3.1 List of participants involved in the project

#### *Australian commissioned and collaborating organisations (or IARC)*

Name	Sex (m/f)	Agency and position	Discipline and role in project	Time input (%)	Funding
Inoke Ratukalou	m	Secretariat of the Pacific Community (SPC)	Director, Land Resources Division; overall coordination of resources	5	SPC
Tim Martyn	m	Secretariat of the Pacific Community (SPC)	Resource Economist, Value chain studies	50*	ACIAR
Sanfred Smith	m	SPC, Field Officer	Farm Business Advisor, livelihood strategies and certification	5	SPC
Sarah Thomas	f	CABI UK, Senior Scientist	Plant Pathologist, IPDM, farmer training and research. Knowledge management	6 2	ACIAR CABI
Barbara Ritchie	f	CABI-UK, Plant Health Specialist	Farmer training and research, Knowledge management	25	ACIAR
Smilja Lambert	f	Mars Inc.	Research Manager and germplasm specialist; characterization of varieties for fine flavour and other desirable characteristics; advise partners on conservation strategy	5	Mars Inc.

\* Time covered by project is less in first payment period, as it is initially contributed by other SPC sources

\*\* Expertise on ecologically-based rodent management is provided by Peter Brown, CSIRO, and is important to the project; however, average time supplied over the life of the project is less than 5%, so this work is sub-contracted under the SPC budget.

### Partner country institution(s) or collaborating IARC

Name	Sex (m/f)	Agency and position	Discipline and role in project	Time input (%)	Funding
François Japiot	m	Vanuatu Senior adviser, Ministry of Agriculture, Quarantine, Forestry and Fisheries	Cocoa agronomist, oversee Minagri work in Vanuatu	5%	Govt of Vanuatu
Pierre Chanal Watas	m	Executive Director, VOCCA, Vanuatu	Oversee VOCCA work	5%	VOCCA
To be identified	m/f	Field Coordinator, VOCCA, Vanuatu	Extension, lead participatory research and extension in organic chain	50%	ACIAR
Marie-Vianney Melteras	F	VARTC, CEO	Oversight of VARTC activities	5%	VARTC
To be identified	m/f	Field Coordinator, VARTC, Vanuatu	Genetic resources, lead GR conservation and use in Vanuatu	50%	VARTC
Basile Malily	M	Manager, Cocoa Growers Association	Oversight of CGA activities	5%	CGA
To be identified	m/f	Field Coordinator, VOCCA, Vanuatu	Extension, lead participatory research and extension in conventional cocoa chain	50%	ACIAR
Sandrine Wallez	F	Manager, ACTIV	Oversight of ACTIV activities	5%	ACTIV
To be identified	m/f	Field Coordinator, ACTIV, Vanuatu	Extension, lead participatory research and extension in 'fair trade' cocoa chain	50%	ACIAR
John Konam	M	Cocoa Livelihoods Improvement Project, Solomon Islands	Plant pathologist, test germplasm introduction strategy	5%	AusAID
Fato Alo	M	Technical Assistant, N'u Research Station, MAF, Samoa	Maintenance of cocoa collection, evaluation and propagation	20%	MAF, Samoa

### 5.3.2 Description of the comparative advantage of the institutions involved

The Secretariat of the Pacific Community (SPC) was established by the 22 Pacific Island countries and territories in 1947 and is now well established as the region's leading technical, advisory, training and research organisation. SPC has a regional mandate for agricultural development and this is implemented through its Suva-based Land Resources Division (where the ACIAR Pacific Crops office is located). The Facilitating Agricultural Commodity Trade (FACT) project is a multi-million dollar EU-funded project dedicated to facilitating an improvement in export outcomes for Pacific producers. FACT has worked with cocoa farmers and processors in Fiji, the Solomon Islands, Vanuatu and Samoa, helping them to identify new certified market opportunities and opportunities in value-added niche markets, such as single origin and fine flavour

CABI has extensive global experience with all aspects cocoa husbandry and the value chain from farmer to shipper. CABI has undertaken extensive research into pest and disease

identification and control (including biocontrol strategies), rational pesticide use and rodent control. Farmer training needs and promulgation of knowledge in suitable and appropriate formats is one of CABI's strengths. CABI has authored many discovery learning manuals for farmers and trainers, one of which deals directly with cocoa and is available in English and French. The manuals are written by staff who have considerable experience in working with farming communities (including the two staff mentioned above). CABI has produced farmer training videos on topics such as proper cocoa tree pruning, especially important when rehabilitating neglected gardens. The videos have been produced in English with some local language translation. CABI has extensive experience in the field of training of trainers using formal and informal methodologies and direct farmer training using discovery-based formats especially where farmers literacy and numeracy may not be high. More generally, CABI has on-ground experience in pest and disease issues and management in the South Pacific region including Vanuatu.

The Vanuatu Organic Cocoa Growers Alliance (VOCGA) was established 2000 with the assistance of funding from the French Government, under the Producer Organization Project (POP1). Since then it has worked extensively with cocoa farmers in Malekula and Malo, with assistance from the French chocolate manufacturer KAOKA, to enable them to access a high-quality, value-added organic cocoa niche. VOCGA operates as an umbrella apex marketing cooperative under which there are ten primary cooperatives that supply organically certified dry cocoa beans. Each primary cooperative operates one or more centralized fermentaries. There is now 25 such processing facilities in the VOCGA network. VOCGA now has a total of 1,205 members. The 1205 VOCGA shareholders are village based small holders who supply wet beans to the processing cooperatives, who then process the beans and send them to Kaoka in France. In 2010, Kaoka launched a single-origin chocolate bar using organic cocoa supplied by the VOCGA.

The Cocoa Growers Association (CGA) was established as a result of the POPACA agricultural development program funded in Vanuatu by the French Government and European Union. The CGA buys cocoa from non-organic co-operatives on Malekula, Epi and Ambae islands.

Alternative Communities' Trade in Vanuatu (ACTIV) was officially registered as a charity in 2008 and in a relatively short time has become a major marketer of Vanuatu cocoa, exporting almost 295 tonnes in 2009 (approximately 30% of total production). As a charitable organisation, ACTIV charges takes only small 5% marketing premium from the FOB price, which enables it to offer a farm gate prices which rivals and surpasses the price for organic cocoa. ACTIV manages a track and trace system which enables it to sell on to 'ethical' processors and retailers in Germany, Australia and the US. ACTIV also provides training and extension support to its network of growers in Epi, Malo, Santos, Malekula and Ambae.

The Vanuatu Agricultural Research and Technical Centre (VARTC) VARTC is the national research centre for coconut, coffee, cocoa and livestock in Vanuatu. More recently root/tuber crops, nuts and breadfruit have been added to the research programme. VARTC contributes to the economic development of Vanuatu by selling improved plant materials (including cocoa) and cattle, providing training in agriculture and breeding, conducting research and providing scientific and technical information.

CSIRO Sustainable Ecosystems has had a strong and active involvement in leading rodent management research and extension projects in Australia and Southeast Asia for 20 years. The group is at the forefront of the development of the concept of Ecologically-Based Rodent Management. While this was developed to manage mouse plagues in Australia and manage rodents in lowland irrigated rice crops in Southeast Asia (Vietnam, Indonesia), research was undertaken also in lowland rainfed systems (Myanmar/Burma) and diverse upland farming systems (Lao PDR). These research projects were supported by ACIAR funding.

Mars Australia is a part of Mars, Incorporated that is a private, family-owned company founded in 1911 and employing 70,000 associates at more than 300 sites, including more

than 130 factories, in about 75 countries worldwide. Headquartered in McLean, Virginia, U.S.A., Mars, Incorporated is one of the world's largest food companies, and one of the largest cocoa users globally. Mars Cocoa Sustainability program has been working for more than 10 years on ways of assisting small cocoa farmers to increase production and sustain communities, especially with breeding program for improved planting materials and best methods to control pests and diseases. Mars Australia has been a collaborator in ACIAR projects in Indonesia, PNG and Pacific since 2001 and is active in the Asia Pacific region, giving support to the regional needs for cocoa sustainability.

### 5.3.3 Summary details of the role of each participant involved

Inoke Ratukulou is the acting Director of SPC's Land Resources Division. His main role in the project is to assure resource mobilization within SPC (across the different projects and departments involved) and assure management, reporting and administrative support.

Tim Martyn is an Economist with the Land Resources Division of the Secretariat of the Pacific Community. He has been working as an agribusiness advisor to the cocoa and coffee small-holders in the Pacific, focussing on improving producer returns through the adoption of third party certification as a means to accessing market niches, and investigating the returns to labour of extension methodologies. He is currently working with three coffee farmer networks in PNG, and has previously worked with Fiji cocoa farmers in Tailevu, on Viti Levu. He is collaborating with Professor David Zilberman of University of California, Berkeley, with professor Reardon of Michigan State and with Professor Randy Stringer of the University of Adelaide on economic modelling of Melanesian smallholders' adoption of new technologies. Having previously worked in the International Trade Department of the Department for International Development and Dairy Australia, Tim also has experience in economic analysis and trade facilitation.

Sanfred Smith is an experienced farm production and business advisor, having previously worked for the Fiji Ministry of Agriculture, taking home the Fiji Public Service award for his assistance to the dalo and yaqona farmers of Taveuni and Rabi. He is currently employed by the SPC Facilitating Agricultural Commodity Trade (FACT) project, developing farm business plans and assisting small-holder farmers to obtain organic and Fair Trade (FLO) certification. He is a trained NASA auditor, and Information Officer for FLO. He has extensive knowledge and practical experience of improving small-holder farmer livelihoods by assisting small-holders to effectively farm as a business.

Sarah Thomas is the co-ordinator for Commodity-themed projects based at CABI Europe-UK. Trained as a pest & disease management specialist she has 12 years' of plant pathology experience and has focussed her research on the biological control of cocoa diseases in Latin America. Sarah has experience of running international projects and their implementation; she is also the co-editor of the USDA-funded newsletter *GRO-Cocoa*.

Barbara Ritchie is based at CABI Europe-UK and has extensive experience in plant health, quarantine and SPS gained over 40 years. One of CABI's most experienced trainers and facilitators in plant health, laboratory management and foundation level identification of plant pathogenic fungi and bacteria, she has written and co-authored many training manuals, including one on discovery learning with cocoa as well as peer-reviewed papers and book chapters. Her international experience is extensive through a wide range of projects involving plant health, field and laboratory practical training; she visited Vanuatu as part of a consultancy undertaken for SPC during 2000 – 2002 in upgrading Pacific island nation skill capabilities. Barbara has experience working with many crops including cocoa, coffee and oil palm and is an international expert on the global movement of oil palm germplasm.

Pierre Chanel Watas is the Director of the Vanuatu Organic Cocoa Growers Alliance. He has extensive experience working with cocoa growers in Malekula and Malo, and has received extensive training on IPDM and quality improvement from KAOKA. He is currently employed by KAOKA to oversee the production and quality control systems of VOCCA.

Sandrine Wallez is the founding Director of ACTIV. She has extensive experience of working with community organisations and farmers in Vanuatu, and of marketing agricultural produce and handicrafts through niche 'ethical' and 'organic' channels. She is committed to reducing the pre and post-harvest losses faced by Vanuatu's cocoa growers and delivering them the highest farm gate price possible, by operating a non-profit marketing and extension support service.

Basile Malily has been the Manager of the Cocoa Growers Association (CGA) based at the Commercial Center, Litz-Litz, Malekula, since it was formed in 2005. The CGA is an umbrella organization with membership drawn from individual cocoa farmers, cocoa producers' organizations / cooperatives and cocoa plantations. Basile has extensive experience of marketing Vanuatu cocoa, and working with the Ministry of Agriculture to disseminate improved cocoa germplasm and provide extension support to growers.

Marie Melteras is CEO of VARTC and an agricultural researcher in her own right. She has been a recipient of John Allwright and John Dillon fellowships from ACIAR and now, as CEO of Vanuatu's leading agricultural research and development institute is responsible for both the scientific and budget strategy. She will oversee all VARTC's inputs to the project, with an emphasis on germplasm conservation and strategies for supplying improved materials to the industry.

Francois Japiot is an Advisor to the Department of Agriculture within the Vanuatu Ministry of Agriculture, Quarantine, Forestry and Fisheries. He was previously the Director of the EU funded project known as a Projet d'Organisation des Producteurs Agricoles pour la Commercialisation Associative (POPACA). He has extensive knowledge of the cocoa industry in Vanuatu, having worked for the Ministry for more than 10 years.

Dr. Peter Brown is a Senior Research Scientist with CSIRO Sustainable Ecosystems. He has 18 years experience with developing research projects to manage rodent pests in Australia and Southeast Asia (Vietnam, Indonesia, Myanmar and Laos). He has a strong track record in leading and managing multi-institutional, multi-location, international agricultural projects in developing countries. He has extensive experience with training researchers, extension staff and farmers, and in building and fostering partnerships between research and extension agencies and farmers. He has >65 scientific publications.

Smilja Lambert has had 17 years experience in cocoa research, technology and development with Mars Inc., initially in Bahia, Brazil, and for the last 10 years based in Australia and working in Indonesia, Papua New Guinea, Philippines and Vietnam. She is the leader of research and development for Mars sustainability projects in Asia/Pacific region including many field trials on selecting and evaluation of farmers clones in Sulawesi and Vietnam. She is also leading Regional Cocoa Breeding group including cocoa breeders from Indonesia, Malaysia, Philippines, Vietnam, PNG and India. She is also involved in ACIAR cocoa projects in Asia Pacific (Indonesia, PNG) including the ACIAR scoping project that gave suggestions for this current project. Smilja would be mainly involved in the area of Pacific cocoa germplasm conservation and characterisation as well as provide connection with global cocoa research and industry.

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## 5.4 Intellectual property and other regulatory compliance

The project will comply with ACIAR standard conditions. Methodologies for increased production and improved quality are well established and will not compromise IP rights. Dissemination outputs will be public domain. Germplasm transfer is not anticipated in the project, only the collation of information of such germplasm and hence no genetic resource issues will arise.

## 5.5 Travel table

### *PART A Commissioned Organisation or IARC*

<b>Trip no.</b>	<b>Person or position</b>	<b>Estimated date of travel</b>	<b>From / to</b>	<b>Purpose</b>	<b>Duration (days)</b>
1	Tim Martyn	Payment period (PP) 1	Fiji-Vanuatu	Introduce farmer diaries; conduct stakeholder interviews;	14
2	Sarah Thomas	PP 1	UK-Vanuatu	Training, Farmer research, farmer material preparation	14
3	Barbara Ritchie	PP 1	UK-Vanuatu	Farmer research and training, farmer material preparation	30
4	Tim Martyn	PP 2	Fiji-Solomon Islands	Consult industry and CLIP stakeholders on implementation of industry assessment and niche opportunity strategy document recommendations	7
5	Tim Martyn	PP 3	Fiji - Samoa	Consult industry and government stakeholders regarding implementation of industry assessment and niche opportunity strategy document recommendations	7
6	Barbara Ritchie	PP 3	UK-Vanuatu	Farmer research and training, farmer material preparation	14
7	Tim Martyn	PP 4	Fiji –Vtu	Cocoa supply chain analysis and niche market access assessment; mid-term review - farmer diaries and interviews	7
8	Barbara Ritchie	PP 4	UK-Vanuatu	Farmer research and training, farmer material preparation	14
9	Tim Martyn	PP5	Fiji – Solomon Islands	Consult industry and CLIP stakeholders on implementation of industry assessment and niche opportunity strategy document recommendations	7
10	Barbara Ritchie	PP 6	UK-Vanuatu	Farmer research and training, farmer material preparation	30
11	Sarah Thomas	PP6	UK-Vanuatu	Training, Farmer research, farmer material preparation	14

12	Tim Martyn	PP6	Fiji – Vanuatu	Cocoa supply chain analysis and niche market access assessment; mid-term review - farmer diaries and interviews	7
13	Tim Martyn	PP7	Fiji-Samoa	Consult industry and government stakeholders regarding implementation of industry assessment and niche opportunity strategy document recommendations	7
13	Sarah Thomas	PP8	UK-Vanuatu	Training, Farmer research, farmer material preparation	14
14	Barbara Ritchie	PP 8	UK-Vanuatu	Farmer research and training, impact assessment	30
15	Tim Martyn	PP 8	Fiji-Vanuatu	evaluation of producer adoption of technologies and increased productivity synthesis of results	7

### ***PART B Australian Collaborating Organisation/s***

<b>Trip no.</b>	<b>Person or position</b>	<b>Estimated date of travel</b>	<b>From / to</b>	<b>Purpose</b>	<b>Duration (days)</b>
1	Peter Brown	PP 1	Australia - Vanuatu	Assess and Introduce pest control methodologies	14
2	Smilja Lambert	PP 2	Australia-Fiji and Samoa	Assess cocoa germplasm collection and systems for propagation and protection	14
3	Peter Brown	PP 3	Australia - Vanuatu	Mid-term review of rodent control field trials	7
4	Smilja Lambert	PP 4	Australia – Solomon Islands	Assess system for dissemination. Recommend dissemination methodologies	7
5	Smilja Lambert	PP 5	Australia - Vanuatu	Assess system for dissemination. Recommend dissemination methodologies	7
6	Peter Brown	PP 5	Australia-Vanuatu	Assessment of impact of rat control trials	7
7	Peter Brown	PP 7	Australia - Vanuatu	Evaluation and assistance with implementation of most appropriate rat control methodologies	14

8	Smilja Lambert	PP 7	Australia – Fiji and Samoa	Evaluation of impact of cocoa germplasm propagation and dissemination	14
9	Smilja Lambert	PP 8	Australia – Solomon Islands	Evaluation of impact of cocoa germplasm propagation and dissemination	7
10	Smilja Lambert	PP8	Australia - Vanuatu	Evaluation of impact of cocoa germplasm propagation and dissemination	7

*PC = partner country, A = Australia*

### **PART C Overseas Partner Organisation/s**

No partner organization travel foreseen at this time

## 6 Appendix A: Intellectual property register

Enquiries concerning completion of this form should be directed to [contracts@aciarc.gov.au](mailto:contracts@aciarc.gov.au)

### 6.1 Administrative details

<b>Project ID</b>	PC/2008/046
<b>Project title</b>	Rehabilitating Cocoa for Improving Livelihoods in the South Pacific
<b>Assessment provider</b>	Inoke Ratukalou
<b>If not Australian project leader, provide title</b>	
<b>Date of assessment</b>	30 June 2010

### 6.2 Categories of intellectual property and brief description

#### *Plant or animal germplasm exchange*

<b>Does the project involve:</b>	<b>Yes</b>	<b>No</b>
provision of germplasm by Australia to a partner country?		X
provision of germplasm from a partner country to Australia?		X
provision of germplasm from or to an IARC or another organisation and a project participant?		X
use of germplasm from a third party		X
material subject to plant breeders/variety rights in Australia or another country?		X

If "yes" to any of the above, for each applicable country provide brief details of the material to be exchanged:

If the germplasm exchange can be finalised before the project commencement, provide a Materials Transfer Agreement.

If the specific germplasm to be exchanged cannot be identified until after project commencement, indicate the type of material likely to be exchanged.

<b>Country</b>	<b>Details of plant or animal germplasm exchange</b>

#### *Proprietary materials, techniques and information*

<b>Does the project involve provision (from one party to another) of:</b>	<b>Yes</b>	<b>No</b>
research materials or reagents (e.g. enzymes, molecular markers, promoters)?		X
proprietary techniques or procedures?		X
proprietary computer software?		X

If "yes" to any of the above, for each applicable country provide:

brief details of the materials or information, the organisation providing, and the organisation receiving the materials

a copy of any formal contract between the parties.

<b>Country</b>	<b>Details of proprietary materials, techniques and information</b>

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**Other agreements**

Is any aspect of the project work subject to, or dependent upon:	Yes	No
other materials-transfer agreements entered into by any project participant?		X
confidentiality agreements entered into by any project participant?		X

If "yes" to any of the above, for each applicable country provide:

brief details of the agreements and conditions

a copy of any such agreement before project commencement.

Country	Details of other agreements

**6.3 Foreground, background and third party Intellectual Property**

This includes, but is not limited to patents held or applied for in Australia and/or in partner countries and/or in third countries. For example, Foreground IP includes any new germplasm, reagents (such as vectors, probes, antibodies, vaccines) or software that will be developed by the project.

**Foreground IP (IP that is expected to be developed during the project)**

Ownership of or rights to Foreground IP other than as detailed in the ACIAR Standard Conditions must be approved by ACIAR.

	Yes	No
Is it expected that there will be Foreground IP?		X

If "yes",

for each applicable country provide brief details of the IP and who will have rights to use the IP (e.g. Commissioned Organisation, Australian collaborating organisation/s partner countries).

If a patent, give details of patent status (provisional, application, granted), priority date and designated countries.

Country	Details of foreground IP

**Background IP (IP that is necessary for the success of the project but that has already been created and is owned by parties to the project)**

Any agreements in place regarding Background IP should be provided to ACIAR prior to project commencement.

	Yes	No
Is it there Background IP?		X
If "yes", are there any restrictions on the project's ability to use the Background IP?		
would there be any restriction on ACIAR or the overseas collaborator claiming their rights to IP for the project based on the Background IP (refer ACIAR Standard Conditions)?		

If "yes", for each applicable country provide brief details of:

the source of the Background IP.

whether the Commissioned Organisation and/or Australian collaborators and/or developing country collaborators own it.

any conditions or restrictions on its use.

Country	Details of background IP

**Third Party IP (IP that is owned by or licensed from other parties)**

Agreements governing the use of third party IP can be related to research materials, research equipment or machinery, techniques or processes, software, information and databases.

	Yes	No
Is there any relevant Third Party IP that is essential to the project?		X
If "yes", would there be any restriction on ACIAR claiming its rights to IP for the project (refer ACIAR Standard Conditions)?		

If "yes", for each applicable country provide brief details of:

the source of the Third Party IP.

the applicable country/ies, the circumstances/agreement/arrangement under which the IP is to be obtained or used by the project partners (for example, material transfer agreement, germplasm acquisition agreement, confidentiality agreement, research agreement or other arrangements).

any conditions or restrictions on its use.

Country	Details of third party IP

**Other contracts, licences or legal arrangements**

	Yes	No
Are there any other contracts, licences or other legal arrangements that relate to the project?		X

If "yes", for each applicable country provide brief details.

Country	Details of other contracts, licences or legal arrangements

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## 7 Appendix B: Budget

See excel workbook for complete Phase 2 budget

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## 8 Appendix C: Supporting documentation

This section is only required for FULL PROPOSAL

Documents attached:

Letters of support

Letters of approval

Curricula vitae

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### 8.1 PC/2006/109 The potential for increasing the value of cocoa industries in Solomon Islands, Vanuatu, Fiji and Samoa: Executive Summary

The Solomon Islands and Vanuatu have the realistic potential to become substantial cocoa exporters. This is based on the following considerations:

- good agronomic conditions;
- cocoa is already well established amongst smallholders;
- a favourable pest and disease status;
- the existence of large areas already planted that can be readily rehabilitated;
- a quick production response can be achieved by appropriate rehabilitation techniques;
- a strong fermentation tradition amongst cocoa farmers;
- high demand throughout the South-East Asian region for good quality fermented cocoa;
- a demonstration from Solomon Island and Vanuatu cocoa farmers that they are responsive to incentives and willing to learn;
- the availability of reasonable planting materials within these countries;
- good market prospects, with the price of cocoa still reasonably high despite the global recession; and,
- the global experience of cocoa as a driver of rural development.

For the Solomon Islands, increasing the production of quality cocoa is identified as a high priority for improving rural livelihoods and promoting economic recovery in a post conflict environment.

The scoping study established the following production and quality targets:

- a production target - 10,000 tonnes in five years and 15,000 tonnes in ten years
- a quality target - reduce the differential between Solomon Islands and PNG cocoa prices by 25 percent in five years, and 75 percent in ten years

Vanuatu has a realistic prospect of increasing exports to some 5,000 tonnes/annum over a 5-year period. It is plausible that 1,000 tonnes of this could be organically certified. The achievement of this target would make cocoa Vanuatu's second most important export industry, after copra.

The economic viability and returns to both industries could be significantly increased by a combination of:

- increasing on-farm productivity; and,
- increasing export prices.

There is scope to increase export prices through improved quality, as well as more efficient and competitive marketing. There is an even greater opportunity to increase smallholder yields by improving management practices.

For Fiji, a future industry exporting 200 to 300 tonnes of cocoa is envisaged. However, major supply constraints will have to be resolved first. There is a need for Fiji, and the cocoa industries in the wider Pacific islands region, to capitalise on the genetic material available at the Naduruloulou Research Station.

The realistic export market opportunities for Samoan cocoa lie in two streams:

- Expanding the export of koko Samoa to Samoan communities abroad.
- Developing niche markets for speciality cocoa beans.

The successful exploitation of these markets could still represent a sizeable export industry, in the order of several thousand tonnes.

The projections of realistic cocoa production of the four cocoa industries are summarised as:

	Current annual production (tonnes)	Projection 5-years (tonnes)	Projection 10-years (tonnes)
Solomon Islands	4,500	10,000	15,000
Vanuatu	1,000	5,000	7,000
Samoa	500-1,000	2,000	3,000
Fiji	20	200	300

In the Solomon Islands, an AusAID-funded Cocoa Livelihoods Improvement Project is expected to commence during the course of 2009. Key collaborative roles have been identified for ACIAR/SPC in two areas of applied research:

- Piloting an extension program based on the Integrated Pest and Disease Management (IPDM)/Farmer Field School methodology.
- Improving the quality and availability of planting material.

For Vanuatu farmers to take full advantage of identified opportunities, there is need to significantly increase smallholder productivity and to increase the efficiency and competitiveness of the marketing system. Overall, there is an urgent need for Vanuatu to reinvest in cocoa research and extension.

The recommendations for ACIAR/SPC involvement in the Samoan cocoa industry are in two broad areas:

- The characterisation and conservation of traditional Samoan Trinitario germplasm.
- The introduction of IPDM techniques to farmers to increase the productivity and profitability of growing cocoa.

For Fiji the recommendations for ACIAR/SPC involvement in the cocoa industry are:

- Ongoing support for the Namau IPDM pilot demonstration and its expansion to other locations.
- An evaluation of the cocoa germplasm at the Naduruloulou Research Station.