LIVELIHOOD TRAINING IN THE ISLANDS REGION OF PAPUA NEW GUINEA: THE INTEGRATED AGRICULTURAL TRAINING PROGRAM

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INTRODUCTION

The traditional approach to agricultural extension in Papua New Guinea (PNG) has been based on transfer of technical knowledge. The origins of PNG extension programs lie in colonial structures developed by the Australian Government prior to national independence in 1975, and subsequently administered through national and provincial governments. More recently these programs have been supplemented for some crops, such as cocoa and coffee, by extension programs delivered by commodity-based research and development organizations. The overall approach taken by all of these extension organizations can be characterized as content-based and top down technology transfer.

In contrast, the Integrated Agricultural Training Program (IATP) described in this paper, and managed by the University of Vudal based in East New Britain Province (ENBP), has taken a deliberate farmer-centric approach with an emphasis on people, livelihoods, training and empowerment. The program was initially funded for three years by a major grant from AusAID, and developed with partnership assistance from UniQuest, the commercial arm of the University of Queensland. Since the end of 2004 the program it has been run totally by University of Vudal with funds provided by local stakeholders (local governments and course participants). Although initially restricted to East New Britain Province, delivery of programs on the Island of Lihir and on the main island of New Ireland commenced in 2006. Delivery will commence in the Bouganville Region in 2007. Some elements of the program have also been delivered in West New Britain Province.

CONTEXT

East New Britain Province

ENBP is located in the New Guinea Islands Region of PNG and is one of two provinces comprising the island of New Britain. The ENBP population in 2001 was approximately 250,000 with an annual population growth rate estimated at 4.2% per annum (NSO 2003). Most people live on the Gazelle Peninsula where the dominant ethnic group is the Tolai people and where living standards are high (>200 Kina per person per year) relative to most other regions of PNG (Hanson et al.2001:264). Most people living on the Gazelle Peninsula have road access to their villages. However there are also significant groups of people in the more remote regions of the province, such as in the Baining and in the Pomio districts, where villages can be several days travel by foot from the nearest road.

Agriculture

The people of the ENBP province practice three forms of agriculture. These are subsistence farming, semi-commercial smallholder farming, and plantation agriculture. Cocoa is the most important cash crop. Other established sources of income include copra, betel nut, vanilla, balsa and fresh food. A National Agricultural Research Institute survey (NARI 2001) reported that agricultural commodities exported from ENBP include cocoa, coconut, balsa, cardamom, vanilla, turmeric, black pepper, fruits and nuts. Banana is a key food crop grown in Rabaul, Kokopo and Gazelle districts. Pomio is mainly subsistence agriculture with taro and sweet potato being the food staples. The Baining people are known for their production of taro which is grown mainly as a subsistence crop.

Environmental stress on land resources in ENBP has been caused by farming practices, climate, increasing population, and volcanic eruptions. The high proportion of land in the Gazelle Peninsular devoted to plantations has resulted in a rapid modification of traditional farming methods, not only on the plantations themselves, but through land use pressure on the remaining land. Most of the land is held under customary ownership under a matrilineal system where the women own the land (Liu 2001: 26).

Government

There are four districts within ENBP each of which contains a number of Local Level Governments (LLGs). These in turn are broken down into wards. Councillors are elected in each ward to become members of the LLG. Each LLG has a Development Committee with a *'didiman'* (agriculture officer) who sits on the committees as a technical person. Budgets are allocated according to the priorities determined by the District Budget Priority Committee at the District level. Agriculture currently is a low priority in all districts except Pomio where it is given the second highest priority. The highest priorities in most districts are health, and education. The low ranking of agriculture significantly impacts on the allocation of resources available for agricultural extension.

The University of Vudal

University of Vudal was designated a university in 1992 and is one of four public universities in PNG. Its previous history was as a diploma granting institution administered by the Department of Agriculture and Livestock (DAL). Currently it offers diploma and degree programs in Tropical Agriculture, and a Master of Management. Further programs, particularly related to the natural resource sector, for example fisheries, are being developed. Vudal has national responsibilities for tertiary courses in tropical agriculture and draws its students from all over PNG. Most of the teaching faculty have postgraduate qualifications from either or both of University of Queensland in Australia or Lincoln University in New Zealand. Distinguishing features of the Vudal programs include an emphasis on applied agriculture, together with recognition that agriculture takes place within a broad socio-economic environment. Agriculture is not just soils, plants and animals but also the people and the livelihood decisions that they make.

DEVELOPING AND DELIVERING THE PROGRAM

IATP came about because of three coalescing factors.

   a) A desire at University of Vudal to become more involved in community education.
   b) A belief at University of Vudal that the existing extension programs were dysfunctional.

c) An opportunity to apply for substantial development funding from the AusAID PNG Incentive Fund.

The opportunity to apply to the PNG Incentive Fund was the result of a shift in AusAID policy away from top down Australian led identification and design of development projects to projects that were locally initiated. The University of Vudal was already working with UniQuest, the commercial arm of University of Queensland, in the implementation of a NZAID funded institutional strengthening program at the university. Accordingly, University of Vudal requested UniQuest to be a partner in the development phase of IATP.

Gaining stakeholder commitment and input was a fundamental starting point for project design and essential criteria for AusAID support. Therefore the University invited representatives from the community, comprising farmers, community leaders, research institutions, government agencies and non government organisations, to a three day participatory design workshop.

Training Needs Analysis

Once initial funding was obtained a detailed Training Needs Analysis (TNA) was undertaken. This involved focus group interviews conducted in the Gazelle, Kokopo and Rabaul districts, and across different farming systems. The TNA team did not physically visit Pomio district because of its remoteness. However, pilot interviews were held at the University of Vudal with key informants from Pomio. However, the trainings sessions conducted in district and the ensuing monitoring and evaluation of the program elicited specific training needs in certain locations.

A funneling question route was developed and used in the group interviews – working from the general level to the specific issues. The purpose was to provide a pathway of logic reflection for training needs rather than jumping straight to normative or ad-hoc responses. After involving the whole groups, the groups were divided into homogenous smaller groups such as extension officers, male and female leaders, male and female groups, and youth groups. Participants returned to the larger group for a plenary session where a group member reported back on the major training needs (Coutts et al, 2002).

Most of the identified training needs related to specific content about crop production, livestock production and business management. However, on further reflection some Vudal staff identified the importance of placing the modules within an overall sustainable livelihoods framework. The final outcome was agreement to focus on 16 training modules covering agricultural production, business management and livelihood planning. Some of these modules focus on the needs of subsistence farmers, others focus on smallholders, and a small number, such as computer use, focus on the needs of commercial enterprises. (See Appendix 1 for a complete list).

Although only identified at a late stage of the design phase, the two-day Sustainable Livelihood and Decision Making Module has subsequently become the introductory module which all trainees attend. Both this and all the other modules are presented within an adult and action learning framework. There is a strong focus on both participation and respect for local knowledge to encapsulate the actual needs of the farmers (Chambers, 1997, 2005)

Module development and delivery

Most modules were developed by an overseas content specialist working in conjunction with a local counterpart, typically from the University of Vudal or local level government, plus direct input from farmers and local extension staff. Each module was then tested in a pilot course and a further phase of development undertaken. Mele, Salahuddin and Magor, (2005) argue that in any development initiatives involving farmers they should be considered as partners, not just recipients or beneficiaries, thus, local farmers in are fully involved in the process of module development. For each module there is both a trainers' manual and a participants' workbook.

Trainers were then identified, with no individual trainer being assigned to more than three modules and most to only one or two. Apart from the Head Trainer, none of the trainers were full time. Trainers included local agricultural officers already employed through the provincial budget who took on this role as part of their revised extension duties. Other trainers include University of Vudal staff, and staff from the National Agricultural Research and Cocoa and Coconut Research Institutes. Private trainers

increasingly were retired agricultural officers. In all cases trainers were trained in adult and action learning principles prior to course delivery.

Modules are delivered in the villages either in *pidgin* or local languages. Facilities and accommodation were constructed at University of Vudal for course participants but these have been used for other purposes. It was recognized early on that the courses should go to the participants rather than bringing the participants to the courses.

The Participative Approach

Small group discussions blended with concrete practical exercises are at the heart of the program (Pretty et al (1995). For example, a practical group exercise in the Sustainable Livelihood Planning and Decision Making module is village mapping. This exercise requires course participants to draw three maps of their village. Map one shows how their village was 10-15 yrs ago, map two shows the present state of their village, and the third shows how they would like their village to be in 10-15 years time. Interactions, reflections and generalisations are generated from these practical exercises as course participants discuss, argue and learn amongst themselves. The value of this particular exercise is that the course participants are able to clearly see the changes that have occurred in their villages, and most importantly, the factors contributing to these changes. Map three is a visionary map of their village in the future. This is a powerful map because it stimulates the course participants to start thinking about the changes that will shape their future. The take home message for them as a village is that they may have to identify some of the social and environmental factors that are contributing to the changes in their villages and they may have to devise a plan to minimise some of the bad factors. On some occasions participants have cried openly as they reflect on what they have done and what they need to do. Some ward councilors who were course participants have incorporated their third map in their 5 year ward plans.

The Monitoring and Evaluation Process

There are six levels of internal evaluation plus periodic external evaluation. All modules are evaluated at the time of training by the participants, both as a group and as individuals. Trainers are also expected to evaluate both themselves and their

fellow trainers as part of an open and ongoing cycle of improvement. Subsequent to module delivery, a sample of participants (typically 10%) is visited in their village. This occurs first at six weeks to assess immediate changes that have been made and again at three months to assess short term livelihood impacts. Ripple impacts also investigated at this time by interviewing community members who did not undertake the IATP course. This involves focus groups as well as individuals. Ward and/or community case studies are then undertaken at nine months to assess future needs and any problems that have arisen. Further evaluation of impacts and needs occurs at one year and two years.

OUTCOMES

The program has trained more than 5000 rural smallholder male and female farmers as at the end of 2006. External evaluations focus on the effects on particular households and villages as indicators of livelihoods changes. It is evident that significant impacts are occurring. For example, Coutts (2004) reported that a participant who undertook a module on managing village chickens said:

"*The training really teach me a lot on how to look after chicken; learning how well we can best look after our local chicken to sell for money and for food; given me good ideas; small poultry cages will definitely reduce the buying of tin fish from the shops. But, we have to keep a watch on the chickens and feed them all the time.*"

A participant on a sustainable livelihood and decision making course said:

"We have never experienced a training course like this. We cried because the course has helped us see ourselves in our community. A lot of the social and environmental problems we are facing now were caused by us".

A participant on a basic record keeping course said:

"It doesn't matter how much money you make if you are not using it to benefit your family – it's wasted. We need this course to be conducted in every village; this course is useful because it will help me budget and plan; and this course is a good course because it introduced me to new ideas that I can use".

The internal evaluation conducted in 2005 indicated more detailed stories of change that was occurring. Four of these are presented here. All names have been changed to preserve anonymity.

Short Story One

Paul Vitata attended the Livelihood and Basic Book Keeping Modules conducted by IATP in 2005. After the training Paul decided to introduce a recording system for his family. Paul's recording system shows monthly income and expenses for his family. He is using an exercise book to record income and expenses and a lever arch folder for filing receipts and invoices. This is what Paul's wife had to say regarding the learning from their records *"we used to have regular arguments about lack of cash to meet our basic needs. Our daughter missed school many times because we could not afford her bus fares every day. However, now as a result of keeping records these arguments have ceased and our daughter has not missed a single school day"*. Paul said their set of records is helping them control their unwise spending.

Paul has also established a cash flow budget on copra and cocoa which are his main sources of income. Accordingly, he has been able to see where prices are falling and rising when he does his monthly summary.

Paul said the training he attended was timely, as he has been appointed treasurer of a local co-operative society. He is being tasked with drawing up a development plan for the society. Paul stated that the topic of Strengths Weaknesses, Opportunities and Threats (SWOT) analysis covered in the Livelihood Planning and Decision making would help him in his new role as the treasurer of the local cooperative.

Paul has not kept what he has learnt to himself and his family. He has been able to conduct two half day course on bookkeeping. The first was for the Youth and Sunday school leaders in his village and the second one was for the Youth Leaders in the local area.

Paul has recommended that training on basic book keeping is a must for his people as some of them are earning money every fortnight from oil palm just like people who are on wages. This will assist families to see and check on their expenses and avoid unwise spending, and to spend more money in improving their livelihoods. According to Paul there is need for follow up training to assist in what he has been

able to do both in his village, especially the training of youths. There is a big demand for such training.

Short Story Two

Cecilia Bubu attended the Livelihood Planning and Decision Making and Basic Book Keeping modules conducted in February 2005. According to Cecilia the two modules she attended were timely as she has been having difficulties trying to properly keep records of money for her family trade store and a cocoa fermentory.

Cecilia has been able to establish a personal budget for her family. She has two manila folders, which she is using to file invoices and receipts. Apart from the manila folders she also uses a book to record her financial transactions. She said she is now able to control and manage the family expenses quite effectively.

Asked if she was facing any constraints in keeping her records, she said "*the biggest constraint I am facing is that every now and then I am being requested to allocate money for customary purposes obligated by my family*". *Being a woman, it is hard to say no*". Second she said because she is single and has no husband and children to worry about, she has the time to ensure she records what she has to, but may be a married woman might not have the time. In addition, she said, if families realize the importance of records to their family lives like what is happening to me and my parents now, they will be forced to keep good records.

Short Story Three

Johnson Bula attended the Sustainable Livelihood Planning and Decision Making and Record Keeping and Basic Book Keeping modules in 2005. After the course Johnson started keeping a set of records for his young family; he showed the monitoring team records of income and expenses. According to Johnson, prior to keeping records of income and expenses, his family always runs out of money, but now that they are keeping records they have cash almost everyday. He said he has been able to control unwise spending. His wife was quick to agree with him by saying that their records are clearly showing them their trend of spending on weekly basis.

Johnson has taught his wife Relvy on record keeping and now she has an exercise book which she is using to keep her own records. She commented by saying, *"My record book has been borrowed many times by women in their village to copy the format she is using. What I have learnt from her husband seems to be a topic of discussion among the village women.* Johnson said *"if I don't share what I have learnt I am afraid God might charge me for keeping such knowledge to myself and my family".* Therefore, apart from teaching his wife, Johnson has also shared the knowledge with his congregation members in his church and has assisted in establishing a recording system for his congregation.

Johnson said he roughly used the SWOT to set up a home bakery for his wife. They now have a drum oven which his wife is using to bake buns for home consumption and for sale.

The topic on resources and village mapping has made him think about how the whole village is using their land. According to him a lot of children are being born but not being planned for. He said he has been able to talk more about these matters to his congregation members especially about the need for family planning.

Short Story four

Mathew Solo is a subsistence farmer from a remote area of the Pomio district. He attended the module on Land Use and Soil Fertility Management. Mathew is applying terracing and cover cropping techniques he learnt in the module. He has planted cowpea as a cover crop on terrace lines in his food garden. With the help of logs and cover crop in his garden, which is located in a slightly sloppy area he said not much soil from his garden is being washed down to the foot of the hill. His bananas, taros and vegetables seem to be growing well. He said normally he would clean sweep a garden area before crops were planted but now that method of gardening has changed. He is no longer burning before planting. He said he is expecting a good harvest from his garden.

According to Mathew the knowledge on nutrition gained from the course is also helping him and his wife to ensure they eat good food every day. He noted that in the last couple of months none of his children has visited the health clinic. He suggested

that this may be due to the nutritious food they are having. He requested regular visits or back up support by DPI officers to strengthen what he has learnt.

SPINOFFS

The involvement of staff from the Division of Primary Industry in the province as trainers has seen an increase in time spent in their role as extension officers from 20%-60% over a 2 year period. M&E data indicate that a nearly defunct extension service in the province is being invigorated.

The Provincial Administrator, who was interviewed about his opinion of the project said:

> *'The program is working well, having come at a time when there was a lot of anxiety and people saw the need for skills, information and empowerment'.*

He was very happy for the provincial government officers to be involved in the program because it provided resources for them to do their jobs and to help the communities.

The Regional Coordinator of the Department of Agriculture and Livestock reported:

> *"For me, this is the first time to see good collaboration between different organisations…IATP management has made it possible for different organisations to work together*."

An extension officer reported:

> *"IATP is doing what we are supposed to be doing. It is doing it more systematically. We see our involvement as a way of doing our jobs for which we have no resources. Our involvement is an opportunity for refresher training and new thinking. IATP activities are now being included in our annual work plan."*

The program has opened up opportunities for the university academic staff to be involved in rural training, hence improving their facilitation skills, and becoming more exposed to the realities of village livelihoods. Consequential outcomes have

been enrichment of the teaching program and more opportunities to place students in village based internships.

A Landcare Program being implemented in three areas of the province is a direct spin off of IATP. It was conceived following delivery of the Land Use and Soil Fertility Management module in a community where the population density was high with a major soil problem. One of the practical exercises the course participants did during the course was soil management action plans which they could apply in their communities to tackle the problem of soil erosion. Three local level governments subsequently requested assistance from the University through IAPT to assist in implementing their action plans. Based on this request and particularly backed up by the action plans, a proposal for funding was prepared and approved by the Papua New Guinea Agricultural Innovations Grant Facility. The Landcare program is an example of a community driven initiative.

LESSONS LEARNT

Stakeholder analysis:

There were four main institutional stakeholders (a research organisation, two government departments and the University of Vudal) involved in the design and implementation of the IATP. It became evident that these organisations brought with them different views and expectations. For example, the research organisation had a strong view of being the expert in vanilla and cocoa production, and the government agencies were expecting the program to provide resources so that they could function effectively. There were also some tensions associated with the University of Vudal securing funding for activities, which some people in the other organisations believed were not a function of a university. A stakeholder analysis if undertaken at the outset may have uncovered these expectations, views and feelings. This omission led subsequently to the program management having to tactfully deal with some disgruntled individuals within these organisations.

Understanding of community needs is vital in livelihoods training

Insufficient recognition was given to the diversity in people's culture, subsistence and commercial activities. For example the program conducted the module on Basic

Record Keeping in a remote community in Pomio district was inappropriate. Evaluation data collected following training in this community clearly indicated that this community did not need the training. If a participatory rural appraisal had been undertaken at the outset then it would have become evident that increasing protein in the people's diet was the major need for this community. This insight subsequently led to the development of the module on Managing Village Poultry. Therefore, understanding the local context is a key factor in designing and delivering adult education programs (Clinton, 2007).

Creating and enhancing linkages between stakeholders

IATP has demonstrated that networking with multiple stakeholders can lead to effective provision of extension and information service delivery in livelihood training in PNG. The program has benefited greatly from synergies of private and public trainers working and learning together in training teams. Experience has also shown that considerable effort needs to be put into managing the relationships between the stakeholders to ensure that all parties have a sense of program ownership.

CHALLENGES

IATP faces two major challenges associated with program sustainability. The first relates to financial sustainability. The second relates to expertise in program management, including management of the stakeholder network that has established the program.

Financial Sustainability

The program has had no external aid funding since the end of 2004. For training within ENBP there is now total reliance on funding from participants. Fees for a 2 day course range from 10 kina (about $NZ5) for courses focusing on subsistence and smallholder agriculture to 200 kina for the computer course. Even the 10 kina fee is a major issue for subsistence farmers. For programs delivered in other provinces most of the funding comes from local governments in those provinces.

This reliance on stakeholder funding (participants and LLGs) can be useful in ensuring that the programs do remain focused on stakeholder needs. However, there

are challenges in charging sufficient funding to ensure not only operational funding but also development funding to meet changing needs.

One helpful factor has been that the program has only had to meet the delivery costs of trainers already employed by LLGs in ENBP and not their salary costs. Linkages with NGOs have also been helpful. For example, the Cocoa Growers Savings and Loans Society (a micro credit provider) in ENBP has made it mandatory for its clients to include training as a component of their loans.

Program Management

The IATP has only five full time employees. These are program manager, a head trainer, a monitoring and evaluation officer, and two office staff. Accordingly, the program is highly vulnerable to the loss of key staff members who would be particularly difficult to replace.

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Appendix: IATP Training Modules
1. Sustainable Livelihood and Decision Making
2. Land Management and Soil Fertility Management
3. Basic Record Keeping
4. Small Enterprise Record Keeping and Decisions
5. Vanilla Enterprise
6. Small farm Business Analysis
7. Cocoa Enterprise
8. Balsa Enterprise
9. Managing Village chickens
10. Commercial Poultry
11. Savings and Credit
12. Marketing and Supply Chain Management
13. Computer Use
14. Managing Village Piggery
15. Commercial Piggery
16. Agro Forestry