

Building social resilience through understanding capacities of smallholder farming in Papua New Guinea

Palaniappan G¹, Chambers B², Bonney, L³, Simeon L⁴, Hopa, S⁵. **Birch C³**

¹ Tasmanian Institute of Agricultural Research, University of Queensland Gatton (4343) Australia; gomathy.palaniappan@utas.edu.au

² University of Canberra, Canberra (2601) Australia

³ Tasmanian Institute of Agricultural Research, Sandy Bay (7005) Australia

⁴ Pacific Adventist University, Port Moresby, Papua New Guinea

⁵ Central Province Administration, Port Moresby, Papua New Guinea

Keywords: smallholder farmers, appreciative inquiry, rapid supply chain appraisal, community

Introduction

The Papua New Guinea economy is in transition to a semi-commercial/commercial farming system. However, the majority of the population of PNG practice subsistence farming (Mopafi 2004). To accommodate change, understanding the capacity of farming communities to adapt and be socially resilient is essential (Adger 2000). We are implementing a project to increase vegetable production in Central Province (CP) for Port Moresby (PoM) markets (ACIAR 2010, Birch et al 2009) in partnership with Fresh Produce Development Agency (FPDA), National Agriculture Research Institute (NARI), Pacific Adventist University (PAU), Central Province Administration (CPA) and Greenfresh (GF), of PNG. Here, we discuss strengths and weakness of smallholder farming in several locations in CP in terms of adaptation to change and social resilience.

Methods

To gauge capacity for change and social resilience, we used the Appreciative Inquiry (AI) framework (Cooperrider et al 2003) and Rapid Supply Chain Appraisal (RSCA, Collins and Dunne, 2008). These elicit current vegetable farming realities and ideas for change within communities or contexts. Use of AI engages the community, builds trust among members and encourages sharing of knowledge (Raymond 2006). The method is cyclic and has four layers - the 4-Ds: Discovery, Dream, Design and Destiny. During initial interviews, we used the first two – Discovery and Dream – and asked participants to name the best and most problematic things about vegetable growing and to envision the future (Table 1). In a follow-up workshop with participants (often run on gendered lines), Dreams provide the entry point for exploring Design, which encourages thinking about strategies to improve vegetable growing, and Destiny, which encourages them to implement actions and provide feedback to the community (Watkins and Mohr 2001). This paper reports on the Discovery and Dream components undertaken with smallholder farmers in several locations in CP, chosen because of the (i) need to enhance socio-economic conditions (Birch et al, 2009) (ii) potential to improve vegetable production identified in consultation with the stakeholders and small farmers; and (iii) climatic conditions favourable to increase vegetable production for PoM. Thus, Bautama (Hiri district), Rigo–Koiari (Rigo district), (lowland areas SE of PoM) and Tapini (Goilala district, Highlands NW of PoM) were chosen. A collaborative approach to cross-cultural research is an important value underpinning AI/RSCA methodology, and was evaluated by our PNG partners for cultural appropriateness. We then decided to use focus groups instead of individual interviews, and constructed focus group questions (Table 1)

with our PNG partners facilitating development of their research skills (Reason and Bradbury 2008).

Table 1: Matrix of AI and RSCA

Appreciative Inquiry (AI) Process		Rapid Supply Chain Appraisal (Collins and Dunne, 2008)			
		Value creation	Product	Communication	Chain governance
Discovery (The best of what is...)	1. What has worked well for you in growing crops in your village?	<ul style="list-style-type: none"> What are you most proud of in growing crops? 	<ul style="list-style-type: none"> What is it that has worked well for you in growing crops in your village? 	<ul style="list-style-type: none"> Who was responsible? (Identification of the leader) How did you know what to produce? How did the group make the decisions? 	<ul style="list-style-type: none"> What has been the greatest achievement of the cooperative since it was formed? What made this possible? What happened to achieve success? Why did this work so well?
	2. What have been your successes in marketing horticultural products?	<ul style="list-style-type: none"> What do buyers see as being different or good about your produce? 	<ul style="list-style-type: none"> What has worked well for you in marketing crops in your village? 		
Dream (What might be...)	3. What dreams (ideas) do you have for the future, given your successes in horticulture?	<ul style="list-style-type: none"> How might you get the best prices? 	<ul style="list-style-type: none"> What might your produce look like when you harvested it? What might your produce look like when it arrived at the buyers? 	<ul style="list-style-type: none"> How might you find out what the buyers wanted? How might you find out what the transporters wanted? How might you make sure that everybody in your group knew what to do? 	<ul style="list-style-type: none"> How might you make sure (motivation) everyone in the family/village/cooperative did what they needed to do for everyone to be more successful?

Smallholder participants (men, women and young people) were contacted by FPDA to confirm their availability. Focus groups of men and women were conducted separately at each locality, in groups of 4 to 15, allowing both men and women to present their views. Questions were asked by Australian and PNG researchers in English and a local language e.g. *Tok Pisin, Motu*. Responses were recorded by the interviewer in English and accuracy was

confirmed. A reflection process was included to ensure arrangements for and execution of interviews remained appropriate (Reason and Bradbury 2008), and to explore reasons for any differences among data from each interviewer.

Results and Discussion

As AI focuses on community strengths (Watkins and Mohr 2001; David and Michel 2004), it provides information on building the capacity of smallholder farmers and mitigating their vulnerability during social and economic change. However, negative institutional arrangements and structural issues may emerge and have to be explored by for example RSCA. Both strengths and weaknesses will influence processes of capacity building and adaptation to change. Key words repeated around growing and marketing of vegetables (themes) were identified but not ranked at this stage. Positive themes were around food security, family labour and farming commitment, whereas negative themes were clustered around inputs, transport, markets, services and socio-cultural constraints.

Strengths that favour the community capacity to adapt to change and resilience

- (i) *Food Security* of farmers who grow food for the family and relatives, with surplus produce sold to meet family expenses e.g. school fees, and to improve diet through purchase of rice, meat, tea and sugar (also reported earlier for PNG in Mueller et al. 2001).
- (ii) *Family members (including children) labour* contribute to farming, with women playing a vital role in selling produce in the market for cash to spend on family needs. This confirms reliance on family labour over costly hired labour. However, the disadvantage is the potential for delays in work due to absenteeism for social commitments or illness (Allen 1996).
- (iii) *Desire of participants including majority of youth to remain in farming* – confirms that small scale farming with cash crops can be an attractive alternative to migrating to the cities, with youths wishing to expand their farms rather than migrating. However, concern that urban migration was reducing the farming workforce had been found in an earlier study (Birch et al 2009), and could be regarded as a weakness or even threat.

Weakness that constrain community capacity to adapt to change and resilience

- (i) Limited availability and cost of inputs and knowledge gaps constraining production – in particular that most available vegetable seeds were not developed for local environments so crops did not perform well, lack of irrigation infrastructure necessitating laborious hand watering, lack of tools for soil preparation and limited knowledge of pest and disease control.
- (ii) Poor access to markets, transport and support services and distance from research and extension services are major constraints that weaken linkages and limit resilience (Mopafi 2004).
- (iii) Socio cultural constraints such as lack of individual land ownership, the absence of trust, inequality for women in production and marketing, intensive management of labour and the high priority of cultural obligations (Mopafi 2004) may also constrain cropping decisions and compromise production and community unity, and thereby resilience.
- (iv) Post harvest constraints include difficulties with cash and selling small amounts of produce, lack of storage facilities and lack of knowledge about post-harvest preservation and packaging.

The strengths of subsistence farming predominantly relate to on-farm activity, perhaps founded in long established socio-cultural norms, while the weaknesses relate largely to inadequacy and unreliability of off-farm services with the exception of inadequacy of knowledge of technical and marketing aspects. The last mentioned point needs to be

addressed through extension and education, while the off-farm weaknesses can only be addressed through major redesign of the systems involved. On-farm strengths will be enhanced by overcoming on- and off- farm weaknesses to improve the comparative economic strength of rural and urban communities.

References

- ACIAR 2010 Increasing vegetable production in Central Province, Papua New Guinea to supply Port Moresby markets. <http://aciar.gov.au/project/SMCN/2008/008>
- Adger W. N. 2000 "Social and ecological resilience: are they related?" *Progress in Human Geography* **24**(3): 347-347-364.
- Allen W D 1996 "Family illness and temporary work absence." *Applied Economics* **28**(9): 1177 - 1180.
- Birch C J, Bonney L, Doyle R, Sparrow L 2009 Sustainable Vegetable Production in Central Province, Papua New Guinea. Australian Centre for International Agricultural Research, Canberra, ACT.
- Collins, RJ and Dunne, AJ 2008. "A rapid supply chain appraisal approach for agribusiness development projects", *Acta Hort (ISHS)*, vol. 794, pp. 73-80.
- Cooperrider, D, Whitney, D and Stavros J. M. 2003. *Appreciative Inquiry Handbook*. Bedford Heights, OH: Lakeshore Publishers.
- David L C, Michel A 2004 Introduction: Advances in Appreciative Inquiry - Constructive Discourse and Human Organization. *Constructive Discourse and Human Organization*. L. C. David and Michel, A. Emerald Group Publishing Limited. **1**: 11-34.
- Mopafi I 2004 Papua New Guinea Strengthening agricultural support services for Small farmer. R. Sharma. Tokyo, Asian Productivity Organization: 227-240.
- Mueller I, Vounatsou P, Smith T, Allen, BJ 2001 "Subsistence agriculture and child growth in Papua New Guinea." *Ecology of Food and Nutrition* **40**(4): 367 - 395.
- Raymond L C, 2006 "Building social capital through the use of an appreciative inquiry theoretical perspective in a school and university partnership." *International Journal of Educational Management* **20**(3): 173-182.
- Reason P, Bradbury H 2008 *The Sage handbook of action research : participative inquiry and practice*. 2nd Aufl. Los Angeles ; London, SAGE.
- Watkins, J M, Mohr, BJ 2001 *Appreciative inquiry: Change at the speed of imagination*. San Francisco, Jossey-Bass.

Acknowledgement

The financial support of the Australian Centre for International Agricultural Research for this research is gratefully acknowledged.