

A PARTICIPATORY MARKET-DRIVEN APPROACH TO DEVELOPMENT AND EXTENSION

R.B. Murray-Prior¹

ABSTRACT

Small-scale farmers in developing countries must be able to compete in traditional and emerging markets arising from the globalised agri-business system if this is to occur. Spikes in food prices and recognition of their implications for global stability have led to concerns about the ability of the agricultural sector to meet the increasing demand for food. Small-scale farmers are disadvantaged in accessing markets and will remain in poverty unless they have motivation and the ability to adopt new farming systems to compete. They must improve productivity as well as volume, quality and consistency of supply, but their downstream customers must also be competitive, as economic development will only occur if the whole supply chain is competitive. Small-scale farmers must

collaborate to meet market requirements, but they lack the capacity to do so. Consequently, one focus for extension activities should be on facilitating the development of collaborative marketing groups of small-scale farmers, while developing other elements of the value chain. This paper proposes the development of an agri-business innovation system built around improving the competitiveness of small-scale farmer supply chains, using collaborative marketing groups of farmers where appropriate. It incorporates a pluralistic action-research process to provide relevant solutions to stakeholders and a dualistic agri-business systems framework to guide the analysis of the systems involved. It uses examples from research and development activities undertaken in South-east Asia and the South

Pacific to outline a process for undertaking such activities.

KEY WORDS: *VALUE CHAINS, COMPETITIVENESS, AGRIBUSINESS SYSTEMS, ACTION LEARNING, ACTION-RESEARCH*

¹ School of Management, Curtin Business School, Muresk campus, PMB 1, Northam, WA 6401, Australia.



INTRODUCTION AND OBJECTIVES

The increase in food prices since 2008 have forced national governments, non-governmental organisations (NGOs) and international organisations (World Bank and the Food and Agriculture Organization of the United Nations) to reassess the need for increased investment in agriculture (Viatte *et al.*, 2009; Nelson *et al.*, 2010). Increasing population, a decline in investment in agricultural productivity and the pressures of climate change have contributed to an apparent looming shortfall in food production in the short and medium-term. High food prices have led to social unrest in some countries and this will be a continuing problem with consequences for all nations if it is not addressed.

While increased investment is part of the solution, the way these investments are made requires better co-ordination and a more integrated approach both upstream and downstream from the production sector (Viatte *et al.*, 2009). In many countries, improvements in productivity and food production will need to come from small-scale farmers, since they are a large part of the population, live on and farm large areas of arable land, and will therefore form a major part of the supply base. However, to do so they will need to be able to compete in traditional and emerging institutional markets arising from the globalised agri-business system that is providing food and fibre to growing urban markets. These ‘value-

driven’ markets are supplying the growing middle and richer classes who are demanding year-round supply of their favourite products, with specific attributes, including food safety, at a stable yet reasonable price (Murray-Prior *et al.*, 2006). In the globalised environment, institutional markets such as supermarkets require consistent and regular (often large) supply of specific quality products, frequently with traceability systems in place.

Most small-scale producers supply the ‘price-driven’ wet markets, but have difficulty accessing the ‘value-driven’ institutional markets. To compete and remain competitive, small-scale farmers must improve volumes, quality and consistency of supply, as well as productivity. However, small-scale farmers in developing countries have a number of internal constraints (‘very small-scale production, poverty, high levels of illiteracy, ill-health and low social and political status and power’) and external constraints (‘poor transport infrastructure leading to high transport and handling costs; expensive and limited access to physical inputs, credit and information; inferior technology; ... and lack of government and institutional support’) that make it difficult for them to compete in these markets (Murray-Prior, 2007b). Consequently, since small-scale farmers must combine their produce to achieve the volume and consistency of supply required by institutional markets, they need to collaborate – but they lack the capacity to do so. Just as importantly, their downstream customers in

their supply chains must also be able to compete with other (often sophisticated) supply chains.

Consequently, one focus for extension activities should be on facilitating the development of collaborative marketing groups of small-scale farmers, while building relationships with and developing the market intermediaries required to deliver the product demanded by the various retail markets and consumers. Christoplos *et al.* (2011) define extension or rural advisory services using the Global Forum for Rural Advisory Services (GFRAS) definition ‘as consisting of all the different activities that provide the information and services needed and demanded by farmers and other actors in rural settings to assist them in developing their own technical, organisational, and management skills and practices so as to improve their livelihoods and well-being’. As they suggest, these services and information will not necessarily be provided by public-sector agencies. Neither will these services and information need to be provided only to small-scale farmers; other recipients may include all the actors in the supply or value chain from input supply to retailing and catering, even to consumers. In some cases, consumer education will be required to overcome issues such as incorrect perceptions about food safety (Murray-Prior *et al.*, 2010).

Thus, rural advisory or extension systems face a more complex and difficult environment than before, yet they have major issues to cope with,



including: constraints in the enabling environment, poor access to information, often inappropriate research and development findings, and low human capacity and resources for extension personnel. New, innovative and integrated approaches are necessary if these systems are to cope with the rapidly emerging challenges ahead.

This paper builds on the author's work experiences and research in both developing and developed economies, with both small-scale-producer-based supply chains and large commercial value chains, and also builds on ideas first presented to an Extension Summit on 'Bringing about change – promoting participatory agricultural extension in the Pacific' in Tonga (Murray-Prior, 2005). It outlines some key frameworks that can help provide a focus for extension in developing economies, built around improving the competitiveness of small-scale-producer supply chains, using collaborative marketing groups of farmers where necessary. By necessity, this must be a participatory process, which builds farmer and supply-chain capacity and develops and transfers knowledge and skills that enable chains to meet the demands of their various markets. In addition, an effective agricultural research for development (AR4D) approach must be linked to a collaborative extension–research relationship. The proposed agricultural development and extension approach combines elements of an agri-business systems framework, an agricultural innovation systems

approach, a dualistic model of 'price-driven' and 'value-driven' chains, a participatory action-learning process built around collaborative marketing groups, and a multiple-level action-learning process at the farmer-group, chain and industry-political levels. The agricultural development and extension approach links to an approach to conducting AR4D that is integrated into these elements. Due to space constraints, the discussion on each of these is brief.

MATERIALS, METHODS AND DATA SOURCES

An agri-business systems framework for value-chain analysis

Value-chain analysis was initially developed so that businesses could improve profitability by managing their activities more effectively (Hawkes and Ruel, 2011). It has also been applied to the analysis of agricultural value chains and to developing strategies for agricultural development (Anandajayasekeram and Gebremedhin, 2009; Hawkes and Ruel, 2011). Anandajayasekeram and Gebremedhin (2009) suggest that the approach has a number of uses, including: to improve the efficiency of vertical co-ordination, to map chain actors and their functions, and to provide 'an analytical structure to gain insights into the organisation, operation and performance of the chain'.

Work conducted in South-east Asia and the Pacific used an approach termed the 'agri-business systems model' (Murray-Prior *et al.*,

2003). This approach uses a soft systems framework (adapted from Checkland, 1999) to develop a model of the agri-business system that incorporates the particular supply/value chain or chains being analysed (see Figure 1). It starts with a mapping of the actors and activities involved in the chain. Further investigations are conducted of the management, information flows, logistics, relationships, marketing margins and other features of the chain. Data are collected on the agro-climatic–ecological environment for the chain, including the levels of natural and produced economic capital in the environment of the agri-business system. In addition, the socio-economic and political environments (context) for the chains are examined, particularly relevant elements of the enabling environment at the national, regional and local levels, and relevant elements of human and social capital in the chain. This approach focuses on the binding constraints to development of the chain (Murray-Prior, 2008) – as each constraint is addressed, other problems will become binding. In this sense, the model serves as a diagnostic tool to focus the investigations on the complete system in order to identify the priority problems that are constraining development of the system and to evaluate the interventions required to address these problems.

These interventions may involve a range of extension and development activities along the supply chain (facilitation and empowerment,



programmed learning, information access and technology development); research activities to address particular issues where solutions are required; and communication, advocacy and promotion of outcomes of the investigations that will lead to improvements in the enabling environment for the supply chains. The latter may include working with key institutions to alter their strategic directions and processes where this may improve their effectiveness in assisting development.

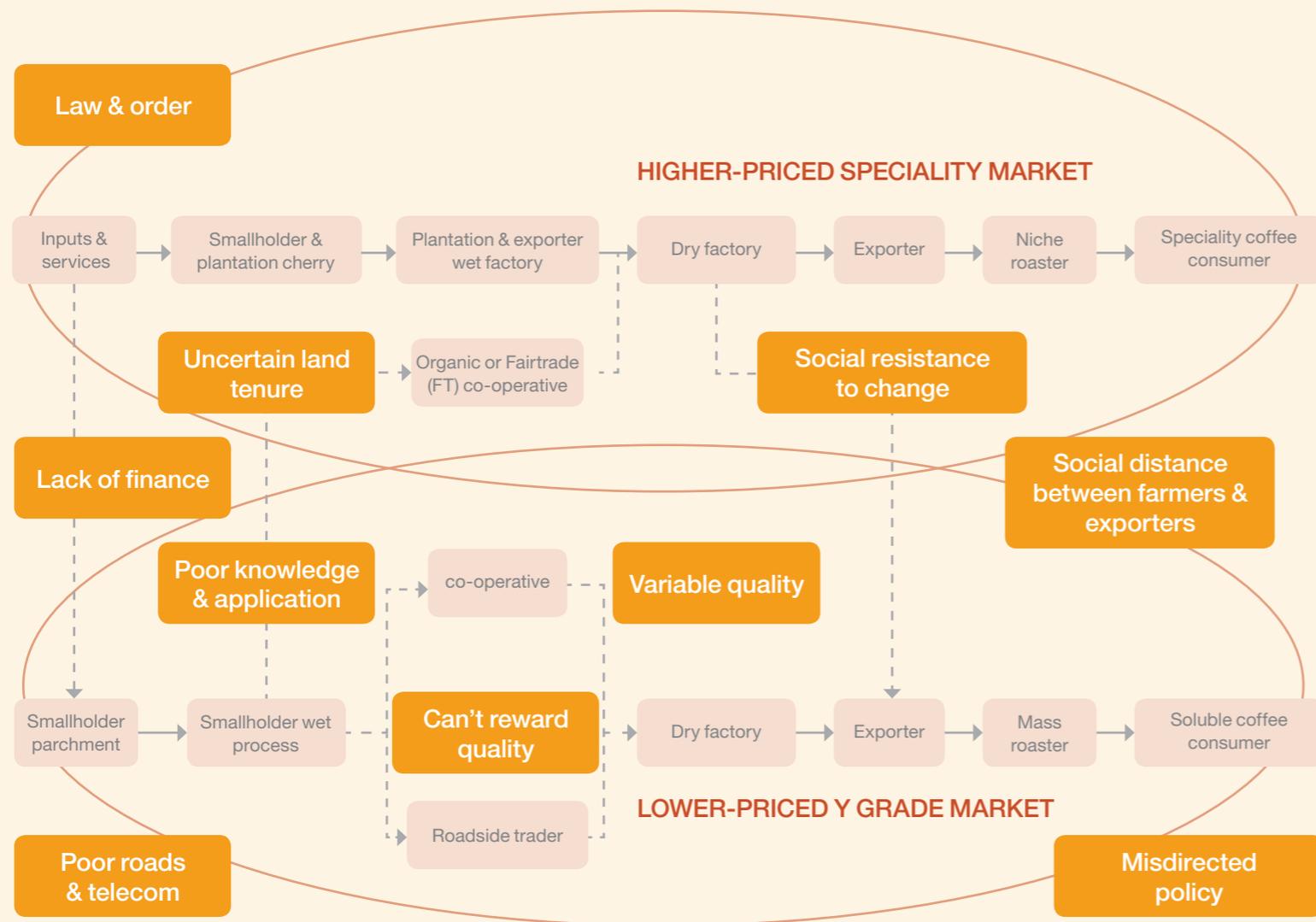
Concept of dualism

The concept of dualism was first propounded by Lewis (1954) to help with explaining and analysing developing economies emerging from colonial systems in which he identified two sectors, an ‘advanced’ capitalist sector and a ‘backward’ predominantly rural sector. The idea of analysing agri-business systems from a dualistic perspective was first developed by Murray-Prior and Ncukana (2000) when considering the issues faced by small-scale, resource-poor farmers in South Africa endeavouring to move from their traditional supply chains to supply the higher-price institutional markets supplied by the large, resource-rich farmers. If this concept is applied to the agri-business systems perspective outlined above, we can envision a ‘resource-rich’ agri-business sector supplying the ‘high-price’ value chains existing alongside a ‘resource-poor’ agri-business sector supply the traditional ‘low-price’ supply chains.

‘The existence of a highly developed ‘resource rich’ agribusiness system with its economies of size, complex systems of management, high standards of quality control may make it extremely difficult for members of the ‘resource poor’ sector to penetrate. The latter are also at a disadvantage when competing for resources whether the resources are physical, financial or human’ (Murray-Prior and Ncukana, 2000).

This concept has since been applied to analysis of vegetable and coffee supply chains in The Philippines and Papua New Guinea (PNG) (Murray-Prior *et al.*, 2004; 2008). In PNG, for example, the arabica coffee industry consists of a plantation sector supplying the higher-priced speciality markets and a small-scale-producer sector supplying lower-priced markets where much of the coffee ends up in instant coffee blends. A simplified model of this industry is outlined in Figure 1, which includes some of the constraints to improving the quality of arabica coffee produced in PNG, which would enable small-scale producers to achieve a higher price. Essentially, most of the coffee grown in the highlands of PNG, has pre-processing characteristics that make it potentially suitable to be made into the espresso coffees sold in restaurants and coffee shops around the world. However, in 2006 only about 25% of PNG coffee was sold into speciality markets, while 75% was sold into lower-priced markets (Murray-Prior *et al.*,

2008). If farmers were able to achieve the higher quality, their prices would potentially be at least one-third higher. The lower quality of the coffee produced by small-scale farmers is a result of the poor quality control in small-scale-producer wet processing operations – when small-scale-producer cherry (the red coffee fruit containing the coffee bean) is delivered to plantation style wet factories it achieves the higher price. A range of constraints, including law and order, poor infrastructure, misdirected policy, lack of finance and poor knowledge and skills, mean that this is a difficult problem to overcome. The lower prices discourage small-scale producers from investing in their coffee gardens, so their production systems give yields that are a fraction of their potential. Many of the technical solutions to the production and processing problems are known, so investment in more production research is not the immediate issue. What is required is an integrated approach by government, NGOs and coffee processors and exporters to develop partnerships among groups of small-scale farmers and chains with centralised mills or chains delivering to Fairtrade and organic markets. The use of the dualistic perspective in analysing this industry provides insights into what is required to develop the industry and, when combined with an agri-business systems model, helps overcome the blinkers that occur when viewing an industry from a disciplinary perspective.



Source: Murray-Prior (2007a, p. 197).

FIGURE 1: DUALISTIC AGRI-BUSINESS SYSTEMS MODEL OF COFFEE SUPPLY CHAINS IN PAPUA NEW GUINEA INCLUDING SOME OF THE CONSTRAINTS TO IMPROVING ITS COMPETIVENESS

Participatory action-learning

The International Centre for Tropical Agriculture (CIAT) has been working with groups of farmers using an approach that is market-orientated and takes a supply-chain focus to build the capacity of small-scale farmers so that they can become involved in competitive and sustainable supply chains (e.g., Wheatley *et al.*, 2004). The Catholic Relief Services (CRS) in the The Philippines have adapted the territorial approach of CIAT into their own eight-step clustering approach to agro-enterprise development (CRS-Philippines, 2007). The focus of these approaches is to take small groups of farmers through a facilitated capacity-building process that results in farmers collaboratively working to identify, investigate and negotiate with potential markets, and to develop their abilities to produce and deliver a product to these markets that meets the markets' demands in a sustainable manner. The University of The Philippines Mindanao and Curtin University (Perth, Western Australia) have been investigating the CRS process (Murray-Prior *et al.*, 2011) by working with about 30 cluster marketing groups in Mindanao with the aim of improving their access to markets and returns from the sale of their vegetable products. Clusters are either area-based, where neighbouring farmers combine to market one or more vegetables; or commodity-based, where farmers agree to plant a particular vegetable crop and combine their produce for sale. In 2010/11, this process led to an



average increase in income across groups of 74%. Some groups have been able to negotiate with and deliver to institutional markets such as supermarkets on a regular basis, while others have developed the skill and level of empowerment to identify and negotiate with new markets when they

have problems with their existing markets.

It is essentially a participatory action-learning process, since the farmers are taken through the various stages of the action-learning cycle (Kolb, 1984; McGill and Beaty, 2001), including planning, conducting activities, observing, reflecting and

developing knowledge. Collaborative or cluster marketing groups such as these provide an ideal means for identifying the binding constraints and problems that limit the involvement of small-scale farmers in delivering to the emerging higher-value institutional markets. They are also organised and receptive to information that meets these needs, because they can see the economic gains they can make and consequently the impact of the activities is much greater. Part of the process is to link the groups to local extension and development services (both public and private), which means opportunities exist to train these personnel in both the process and the technological innovations developed. Consequently, these groups are ideal conduits for technology development, technology transfer and capacity-building activities.

A multiple-level action-learning process

A number of authors (Murray-Prior, 2007a; Anandajayasekeram and Gebremedhin, 2009; Davis, 2010; Christoplos *et al.*, 2011; Hawkes and Ruel, 2011) have argued for development interventions in agriculture to occur along the supply chains and to include the services supporting these supply chains. Conceptually, this can be thought of as occurring at multiple levels: the farmer-group, chain, and industry and political levels (Figure 2). Focusing just on farmers is fraught with problems, because many of the binding constraints exist beyond the farm gate. A supply-

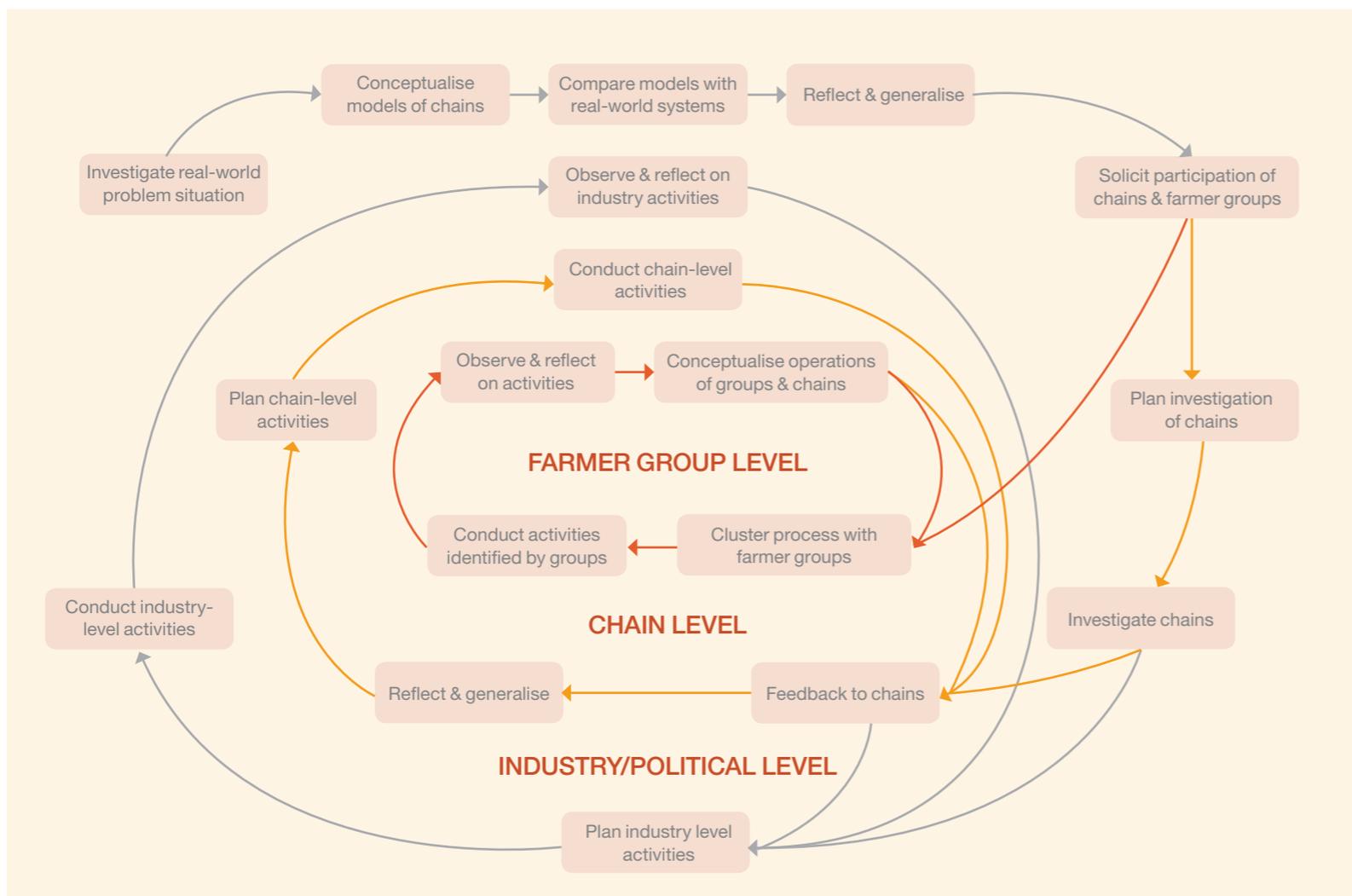


FIGURE 2: MULTIPLE-LEVEL ACTION-LEARNING PROCESS FOR INDUSTRY DEVELOPMENT AND INNOVATION



chain focus also identifies the need for interventions along the chain, including with people such as supermarket buyers, who often lack understanding of the issues faced by farmers and need to be taken through an education process so they can interact with farmers to develop solutions to supply problems as they arise, rather than simply blaming farmers when problems arise.

In the agri-business systems framework, the farmer and chain levels are obviously within the system. Some elements of the industry and political level could also be viewed as being inside the system, in which case elements outside the system can be regarded as the socio-economic and political environment (context) of the chains and would include elements of the enabling environment, most likely at the national level (depending on the scale being addressed). The industry/political level incorporates the business development services (BDS) that support the operations of the chain (Anandajayasekeram and Gebremedhin, 2009). These services include financial services, infrastructure services, production and storage services, marketing and business services, and the appropriate policies and regulatory services. As these authors indicate, the important role of BDS in fostering development has often been neglected or has been assumed to be present or to develop with the industry. When poorly developed BDS are a serious constraint to development, this assumption is itself a constraint to development.

RESULTS AND DISCUSSION

Anandajayasekeram and Gebremedhin (2009) and Hawkes and Ruel (2011) propose the integration of value-chain analysis and approaches for agricultural development, while the former also suggest this be integrated with the research and development process to create a dynamic agricultural innovation system. Van de Fliert *et al.* (2010) suggest that many innovations are not adopted because: they are not suited to the conditions of the farmer; there are physical and institutional separations and poor linkages among the research, development and extension agencies; there is a focus on single innovations rather than a range of innovations that include traditional practices; and there is a lack of ownership over all stages of the AR4D process by the relevant stakeholders. Davis (2010) and Christoplos *et al.* (2011) call for new institutional arrangements for extension that are pluralistic, and market- and demand-driven, while the latter also call for a collaborative relationship between research and extension, and for extension to be involved in designing and implementing research so that it is based on real needs and demands and develops implementable solutions to problems. Also, as indicated in the introduction to this paper, rural advisory services are facing an increasingly complex operating environment, while at the same time lacking many of the relevant innovations, skills, knowledge and resources required to operate

effectively in that environment.

We need to find models that integrate the relevant stakeholders involved with particular supply chains in an integrated research–development–extension process. Such a process should address the complexity of the operating environment, while integrating the knowledge and skills of people including experimental scientists, economists, policy-makers, market specialists, rural advisers, business and farmers who have different world views, research approaches, communication approaches and reward systems. Therefore, while multidisciplinary teams are required, an effective research process is necessary to integrate the various discipline-based research projects. An initial stage of this process is to identify the problems from a ‘systems or holistic perspective, not from a disciplinary perspective’ (Murray-Prior, 2007a). A pluralistic framework was developed and implemented by Murray-Prior *et al.* (2004), based on the idea of a meta-methodology to deal with complex problems (Mingers and Brocklesby, 1996; Jackson, 1999). It uses a soft systems approach derived from Checkland (1999), ideally implemented through a participatory process with the relevant stakeholders, to develop an initial understanding of the system in order to identify the binding constraints. It then follows the learning cycle implicit in the soft systems methodology. Murray-Prior *et al.* (2004) define this process to include six steps:



- (1) Analyse the system with the stakeholders to develop a rich picture of the system and to identify the binding constraints
- (2) Structure the constraints into researchable problem statements and determine what methodologies are appropriate to research each of the problems
- (3) Formalise understanding of the problem, which may involve hard and soft systems research on the problems
- (4) Verify understanding with reality, which involves comparing and discussing the findings from the various methodologies among the research team and then discussing them with the stakeholders
- (5) Debate desirable and feasible change
- (6) Take action to improve the situation.

An additional step would be to incorporate an evaluation process, which could be completed after step 6, but which would preferably be designed from the outset of the project.

The advantage of this framework is that it researches the key issues relevant to the stakeholders, while allowing researchers to work within their disciplinary paradigms, using their theories, methods and techniques so that they can publish within their disciplines and contribute to the development of theory. However, because the team is multidisciplinary and involves a range of world views, the researchers find their conclusions challenged by other disciplines,

including where different methodologies have been used to investigate elements of the same problem (Murray-Prior *et al.*, 2003). Consequently, a far richer and more relevant suite of solutions can arise from the process.

Ideally, such a pluralistic action-research process would be combined with development and extension activities conducted with collaborative marketing groups of small-scale farmers and their associated chains and business-development services – essentially an action-research process working in harness with a multi-level action-learning process. Such an approach would have a number of advantages, including the following.

- A participatory process would be in place to involve chain stakeholders and their BDS in identifying and prioritising key constraints; those that require research and development solutions, those that require learning or capacity-development activities, and those that require advocacy action to overcome constraints in the BDS and the enabling environment.
- The problem of inappropriate solutions would be reduced and links improved between research, development and extension.
- Extension workers would enhance their capacity and prestige through being involved in the research process, thereby providing them with relevant knowledge and skills.
- Part of the extension process would be to develop communication strategies to scale-up

and scale-out. Involvement of local government, industry and NGOs in the process would improve this process and lead to more successful and dynamic programmes.

- Researchers would be helped to see the relevance (or irrelevance) of their research to the broader system and enhance their systems thinking and abilities to communicate outside their disciplines.
- The process would be ongoing, where reflection on learning activities and experiences could be evaluated and used to revise research, development and extension priorities and activities.

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

The challenges inherent in a globalised world economy, with potential food shortages due to increasing population, and the increasing difficulty of getting large leaps in productivity via production research, mean that new approaches are required to deal with the complex issues involved. With the need for small-scale farmers to be part of the solution to these problems and the constraints they face in meeting the challenges involved, new approaches are required to develop agri-business innovation systems that can respond quickly to emerging challenges. No longer will it be appropriate to use models that take a linear approach to addressing the problems and rely on



people working independently in their disciplinary silos. New, innovative and integrated approaches are required. In this paper a framework is outlined that incorporates the following.

- A multi-level, participatory action-learning process based around the development of collaborative marketing groups of small-scale farmers and their associated supply chains and BDS, involving them in identifying binding constraints to development, enhancing their ownership of solutions, building their capacity to implement the solutions, and integrating them with AR4D.
- A pluralistic action-research process that focuses its research on clearly identified and relevant priorities from their key clients, yet still enables researchers to work within their disciplinary areas where this is necessary.
- A dualistic agri-business systems model that is used to guide analysis of the constraints in the development of supply and value chains to improve understanding of their operations from a systems perspective.

This approach goes some way to address the call by many for an integrated approach to AR4D that also acknowledges the important role of extension or rural advisory workers in this process.

ACKNOWLEDGEMENTS

Much of the research that led to the development of these ideas was funded by the Australian

Centre for International Agricultural Research. I would also like to acknowledge the ideas obtained and developed through writing joint papers and through discussions with my colleagues from the Department of Agribusiness at Curtin University, the School of Management of the University of The Philippines Mindanao, and the PNG Coffee Industry Corporation. Most of their names are mentioned in the joint publications in the reference list.

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