

Market Chain Development in Indonesia: Experiences with the Participatory Market Chain Approach, Farmer Business School and Business Development Services

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Chain Approach, Farmer Business School and
Business Development Services



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This publication is dedicated to the memory of Mieke Ameriana (IVEGRI researcher), an active and dedicated member of the project team in Indonesia, until her untimely death on July 9, 2009.

Abstract

Beginning in 2002, the Participatory Market Chain Approach (PMCA) was developed and applied to promote pro-poor innovation in potato market chains in the Andes of South America. From 2005 to 2007, it was used in market chains for potatoes, sweet potatoes, and vegetables in Uganda. From February 2008 to June 2009, building on an applied research project to stimulate technological innovation, the PMCA was introduced to upgrade market chains for fresh and processed potatoes in West Java, Indonesia. This was the first full application of the PMCA in Asia. After formal completion of the PMCA exercise, the project team provided business development services to participants who sought to continue the development of new products or new market arrangements. After completing the PMCA exercise and based on earlier work in Indonesia with “Farmer Field Schools” (FFS), the project team also developed and applied a “Farmer Business School” (FBS) approach to strengthen the entrepreneurial and business-development capacities of farmers and farmer organizations. The present study analyzes the introduction, adaptation, implementation, and outcomes of the PMCA in Indonesia. It also documents the development and application of the FBS, and compares the PMCA with the FFS and FBS approaches. Outcomes of the PMCA include several new potato-based products that have been successfully marketed in Indonesia. Perhaps more importantly, the PMCA has strengthened relations among market chain actors and agricultural service providers, which build the basis for future collaboration and partnership for innovation. Within the fresh-potato market chain, relations have been strengthened primarily toward the production end of the chain. In contrast, the processed-potato market chain has been strengthened mainly toward the consumption end of the chain. The study adds to the previous state of knowledge, based on experiences with the PMCA in the Andes and Uganda. The Indonesian case provides particularly rich information on issues of farmer empowerment and business development after completion of the PMCA. The report closes with suggestions for institutionalizing and scaling up the PMCA and for future study of the approach and its outcomes.

Abbreviations

ACIAR	Australian Centre for International Agricultural Research
BDS	Business Development Services
CAPAS	Center for Agrifood Policy and Agribusiness Studies (in Indonesia)
CGIAR	Consortium of International Agricultural Research Centers
CIAT	International Center for Tropical Agriculture (by its acronym in Spanish, Centro Internacional de Agricultura Tropical)
CIP	International Potato Center (by its acronym in Spanish, Centro Internacional de la Papa)
CV	Commanditaire Vennootschap (Dutch acronym denoting a company that provides its owners with limited liability)
DAFWA	Department of Agriculture and Food in Western Australia
FBS	Farmer Business School
FFS	Farmer Field School
FIELD	Farmers' Initiatives for Ecological Livelihoods and Democracy (Indonesian NGO)
ICASEPS	Indonesian Center for Agricultural Socio Economic and Policy Studies
INA	Indonesian-Netherlands Association
IVEGRI	Indonesian Vegetable Research Institute
LPTP	Lembaga Pengembangan Teknologi Pedesaan / Institute for the Advancement of Rural Technology (in Indonesia)
MCA	Market Chain Actor
PMCA	Participatory Market Chain Approach
R&D	Research and Development
SME	Small and Medium Enterprises
UNESCAP – CAPSA	United Nations Economic and Social Commission for Asia and the Pacific - Centre for Alleviation of Poverty through Sustainable Agriculture
UPWARD	Users' Perspectives With Agricultural Research and Development

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- Uus Kusnawan: Processor in Garut
- Hendra and Dedi: Processors in Garut
- Farmers and processors in Garut
- Erlismiati: Processor and restaurant owner in Bekasi
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Market Chain Development in Indonesia: Experiences with the Participatory Market Chain Approach, Farmer Business School and Business Development Services

1. INTRODUCTION

In South-East Asia, as elsewhere, agriculture is changing rapidly in response to rising incomes and the increasing dominance of supermarkets in urban areas, the on-going revolution in information technology, and the integration of markets for high-value products of agricultural origin (Reardon et al., 2009). Increasingly, the livelihoods of small farmers are influenced by the demands of market intermediaries, food industries, and urban consumers – both at home and abroad. In modernizing agricultural markets, small farmers are often at a disadvantage in comparison to larger commercial farmers, who benefit from economies of scale and better access to market information, services, technology, and capital (Wilkinson and Rocha, 2006). Market intermediaries frequently find it difficult to acquire dependable sources of high-quality agricultural products in the volumes required to supply large domestic and foreign supermarkets. This is particularly the case of perishable produce, such as vegetables, that are produced on small farms scattered throughout mountainous areas in West and Central Java in Indonesia.

Farmer groups and cooperatives can play important roles in assembling produce, financing farm operations, and aiding small farmers improve their production and post-harvest practices (Shepherd, 2007; Markelova et al., 2008). However, small-farmer organization is only part of the solution. Innovations in market chains, including both the development of new products and new market relationships, can increase the benefits of small farmers from participating in rapidly emerging high-value markets.

Numerous market/value-chain approaches have been developed to foster pro-poor market development (Folke et al., 2010; Humphrey and Navas-Aleman, 2010). However, there has been little systematic analysis of their use and results. This paper intends to contribute to knowledge on the application and results of market-chain approaches by analyzing the introduction, use, and results of one such approach – the Participatory Market Chain Approach (PMCA) – in West and Central Java, Indonesia. The paper also describes how Business Development Services (BDS) and a Farmer Business School (FBS) approach were developed to complement the PMCA. The FBS is partly based on the Farmer Field School (FFS), a group-based learning process that was developed in the late 1980's to reduce use

of pesticides and improve the sustainability of rice production in Indonesia, and which subsequently has been widely applied on a range of crops in Asia, Africa, and Latin America (CIP-UPWARD, 2003).

The specific objectives of the present study are: to assess how the project team balanced the fidelity of PMCA implementation and creative adaptations to tailor the approach to fit the local needs and circumstances; to compare the emerging outcomes of the PMCA application with the expected outcomes; to describe new R&D approaches (FBS) developed by the project team to complement the PMCA; to identify key issues for institutionalizing and scaling up use of the PMCA; and to suggest priorities for future work with the PMCA.

After this Introduction, Section 2 describes the main features of the PMCA and its applications in the Andes and in Uganda. Section 3 presents the objectives and the methods employed in the present study. Section 4 provides basic information on the setting in which the PMCA was applied in West Java, Indonesia. Section 5 assesses the introduction of the PMCA. It outlines the motives for introducing the PMCA and describes the capacity-development process used to introduce the approach and the key actors involved. Section 6 documents the main activities carried out during implementation of the PMCA. Section 7 describes the business-development services provided by the PMCA project team to aid and foster continuing innovation processes, after formal completion of the PMCA in June 2009. Section 8 presents highlights of 15 innovation processes that began during application of the PMCA. Section 9 outlines an approach that was developed by the project team in Indonesia to foster farmer learning and empowerment in the business sphere – the FBS, which was built on previous successful experience with FFS in Indonesia. Section 10 summarizes the main results of this study in relation to the study objectives; and Section 11 presents the main conclusions, distinguishing between conclusions that reinforce ones reached in previous studies from conclusions that broaden our understanding of the PMCA as an approach for fostering pro-poor market chain development.

2. BACKGROUND ON THE PARTICIPATORY MARKET CHAIN APPROACH

The innovation challenge

Innovation involves “the use of new ideas, new technologies or new ways of doing things in a place or by people where they have not been used before” (Barnett, 2004: 1). Until recently, it was commonly assumed that agricultural research would automatically lead to innovation, which in turn would increase yields and benefit the poor. In essence, research results were assumed to flow through an “innovation pipeline” from basic research (conducted by “advanced research institutes” in the north) to strategic research (conducted by CGIAR centers), on to applied and adaptive research (conducted by national programs) and finally to farmer adopters.

In fact, the relationship between research and innovation is not simple and linear but complex and interactive. As Hall (2009: 31, 36) notes:

- “innovation is rarely triggered by agricultural research and instead is most often a response of entrepreneurs to new and changing market opportunities;
- innovation requires knowledge from multiple sources, including from users of that knowledge;
- it involves these different sources of knowledge interacting with each other in order to share and combine ideas;
- these interactions and processes are usually very specific to a particular context; and
- each context has its own routines and traditions that reflect historical origins shaped by culture, politics, policies and power.”

Advocates of participatory research in the 1970s and 1980s believed the main challenge was to persuade biological scientists of the importance of including farmers in research teams (Ashby, 2009: 40), and considerable effort went into the development of methods for engaging farmers and researchers in participatory technology development. However, subsequent research and experience highlights the need to involve a much broader range of stakeholders and to focus attention on *innovation* per se, rather than more narrowly on *research* activities (Hall et al., 2001; World Bank, 2007; World Bank, 2012).

The participatory market chain approach

In 2003, members of the Social Sciences Department of the International Potato Center (CIP)¹ and the Papa Andina partnership program (www.papandina.org) began to experiment with a participatory approach known as *Rapid Appraisal of Agricultural Knowledge Systems* (RAAKS) to promote innovation in market chains for potatoes in Peru. RAAKS brings diverse stakeholders together to stimulate mutual learning, build trust, and foster innovation (Engel and Salomon, 2003). RAAKS was useful to bring those

¹ CIP (www.cipotato.org) is an international agricultural research center affiliated with the Consortium of International Agricultural Research Centers (www.cgiar.org).

who make their living from a market chain – the so-called ‘market chain actors’ – together to identify market opportunities. However, it did not include the development of innovations – new products or processes – to exploit the identified opportunities. As steps and tools were added to foster commercial, technological, and institutional innovations, a new approach emerged, which was named the Participatory Market Chain Approach (PMCA). User guides and training materials for the approach were published in English and Spanish (Bernet et al., 2006; 2010; Antezana, et al., 2008).

Description of the approach

The PMCA applies principles of action research to foster market chain innovation. It engages market chain actors and agricultural service providers (including, for example, agronomists, post-harvest technicians, marketing specialists, extension agents, and enterprise development professionals) in facilitated group processes in which market opportunities are identified and assessed, and innovations are developed. The PMCA is implemented in three phases, which comprise the broad innovation brokering functions of demand articulation, network composition and innovation process management:

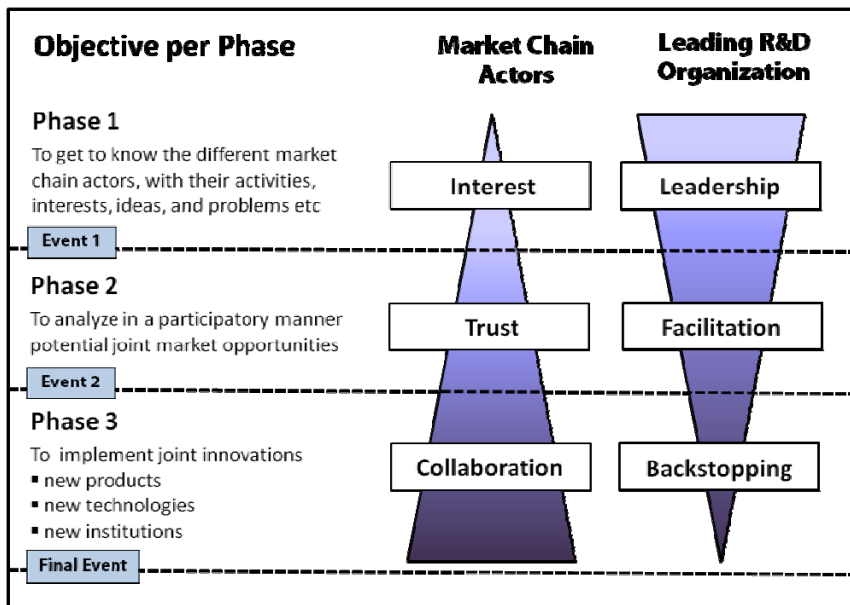
Phase 1. Familiarization with the market chain and the key actors

Phase 2. Joint analysis of potential business opportunities

Phase 3. Development of market-driven innovations

As illustrated in Exhibit 1, a research or development organization typically initiates work with the PMCA. Early steps include selecting the market chains on which to work, identifying potential R&D partners and carrying out exploratory, diagnostic market research. Key goals of Phase 1 are to become familiar with market chains and market chain actors, and to motivate market chain actors to participate in the PMCA process. In Phase 2, representatives of the R&D organization facilitate meetings that aim to build up mutual trust and knowledge sharing among participants. In Phase 3, the market chain actors work together to develop new market processes or products, with support from R&D organizations.

During Phase 1, diagnostic research is carried out to become familiar with key market chain actors and understand their interests, problems and ideas. This phase is expected to take two to four months and may involve 20 to 40 interviews with diverse market chain actors. This phase ends with a public event that brings together individuals who have been involved in the PMCA process so far, including market chain actors and representatives of research organizations and other service providers, to discuss results of the market survey and to exchange ideas. Individuals who have not been involved so far are also invited, to share results with them, to stimulate their interest in the PMCA process, and motivate them to participate in future activities.

Exhibit 1. The three-phase structure of the PMCA methodology

Source: Bernet et al., 2008.

In Phase 2, thematic groups are established to explore potential market opportunities. The lead R&D organization facilitates group meetings where market opportunities are identified and discussed. The main challenges during this phase are to engage a wide range of relevant stakeholders – including business entrepreneurs – and to keep participants focused on identifying and exploiting market opportunities, rather than, for example, addressing production problems of unknown importance for marketing. Six to ten meetings may be needed to analyze potential market opportunities. In some cases, specialized market studies may be needed to complement the group work. At the end of this phase, the market opportunities are discussed in a public event with a wider audience, and new members with complementary knowledge and experience are encouraged to join Phase 3.

Phase 3 focuses on the activities needed to put in place joint innovations, with leadership from market chain agents. A challenge during this phase is to cultivate leadership within the market chain to lead the innovation process. The time required may vary depending upon the complexity of the innovation, the capacity of the group, and biophysical, socio-economic, and institutional conditions. A rough estimate of the time needed, based on experience in Bolivia and Peru, is a period of three to six months. Phase 3 closes with a large public event to which a much wider group is invited to present the commercial innovations or new market products. Invitees include, for example, political officials, donor representatives, commercial leaders, and mass media.

Application of the PMCA is guided by an intervention protocol (Exhibit 2) that is embedded in guidelines for users and trainers (Bernet et al., 2006; Antezana et al., 2008). Use of the PMCA requires trained PMCA facilitators based in local R&D organizations, who understand the protocol and the principles underlying its design and application. For this reason, when CIP and Papa Andina have introduced the PMCA to new areas, they have organized a capacity development process in which potential facilitators participate in workshops, experiment with the approach, and receive advice and feedback from PMCA designers and facilitators with extensive experience with the approach.

Use of the PMCA in the Andes and Uganda

The PMCA was developed to stimulate pro-poor innovation in potato market chains in Bolivia, Ecuador, and Peru. Subsequently, other organizations expressed interest in applying the approach in other regions and market chains. The Department for International Development (DFID) of the United Kingdom funded a project to introduce the PMCA into Uganda and apply it in market chains for potatoes, sweet potatoes, and vegetables (Horton et al., 2010; Mayanja et al., 2013). Funding for this work was also provided by CIP and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). DFID later provided funding for experimentation with the PMCA and other participatory methods in the Andean Change Alliance (www.cambioandino.org), hosted jointly by CIP and the International Center for Tropical Agriculture (CIAT). In the Alliance, the PMCA was applied in market chains for potatoes in Bolivia and Ecuador, for coffee in Peru, for yams in Colombia, for dairy products in Bolivia and Peru, and for fruits and vegetables in Bolivia (Thiele et al., 2011; Horton et al., 2011). The World Agroforestry Center has employed the PMCA with tropical fruits in Peru.

Expected and actual results of the approach

Application of the PMCA is expected to trigger innovation processes that contribute to a number of outcomes including increased knowledge of market chain actors and service providers; enhanced trust among these same groups, leading to collective action in market development; better use of market information; development of new products and new marketing arrangements; improved responsiveness of small farmers to market demands; increased prices paid to smallholders; and ultimately increased incomes and welfare. Exhibit 3 presents a hypothetical “impact pathway” that illustrates how the initial outcomes of the PMCA are expected to contribute to subsequent outcomes leading up finally to improved welfare of small farmers. This impact pathway was developed by participants of the Andean Change Alliance, employing elements of the “Participatory Impact Pathway Approach” (Douthwaite, 2007).

Studies in South America and Africa (Devaux et al., 2009; Horton et al., 2010; 2011, Mayanja et al. 2012) indicate that use of the PMCA has stimulated varying degrees of learning, interaction, innovative thinking, and changes in practices, which in some cases have resulted in commercial, technological, or institutional innovations. Many participants – including both poor farmers and small-scale marketing

agents – have gained valuable new knowledge and experiences that have empowered them in their dealings with other market actors and service providers. Individuals learn a new way of approaching problems – with a more comprehensive market-chain perspective – which they apply in their future work. Exposure to the PMCA also helps professionals appreciate the importance of focusing on practical results and contextualizing their work within larger systems such as market chains.

Experience shows that the main benefits of the PMCA seldom come *during* application of the approach, but *later on*, as a series of ideas are tried, adapted, fail, or succeed. This highlights the value of follow-up support to innovating groups after formal completion of a PMCA exercise.

Several organizations that have participated in PMCA exercises have incorporated elements of the approach into their work. A few have adopted the use of the PMCA *in toto*. Since agricultural R&D organizations depend on external donors for a large part of their operating funds, they have to include the PMCA in their donor proposals. Recently, many donors are favoring projects that promise tangible results in very short periods of time (sometimes in months, rather than years), limiting the possibility of applying a complete PMCA exercise.

A few universities have incorporated the PMCA into their academic curriculum for development professionals, providing an unexpected avenue for dissemination of the approach.

PMCA success factors

A country's economic policies set the stage for local development efforts and can support or discourage use of market-chain approaches such as the PMCA. For this reason, international organizations need to work with local groups to determine which approaches are most appropriate for promoting innovation and market chain development in their context.

Successful innovation is more likely in some market chains than in others, highlighting the importance of doing a thorough market analysis before investing heavily in market-chain innovation. Personal factors also influence results. Five types of "innovation champions" are important:

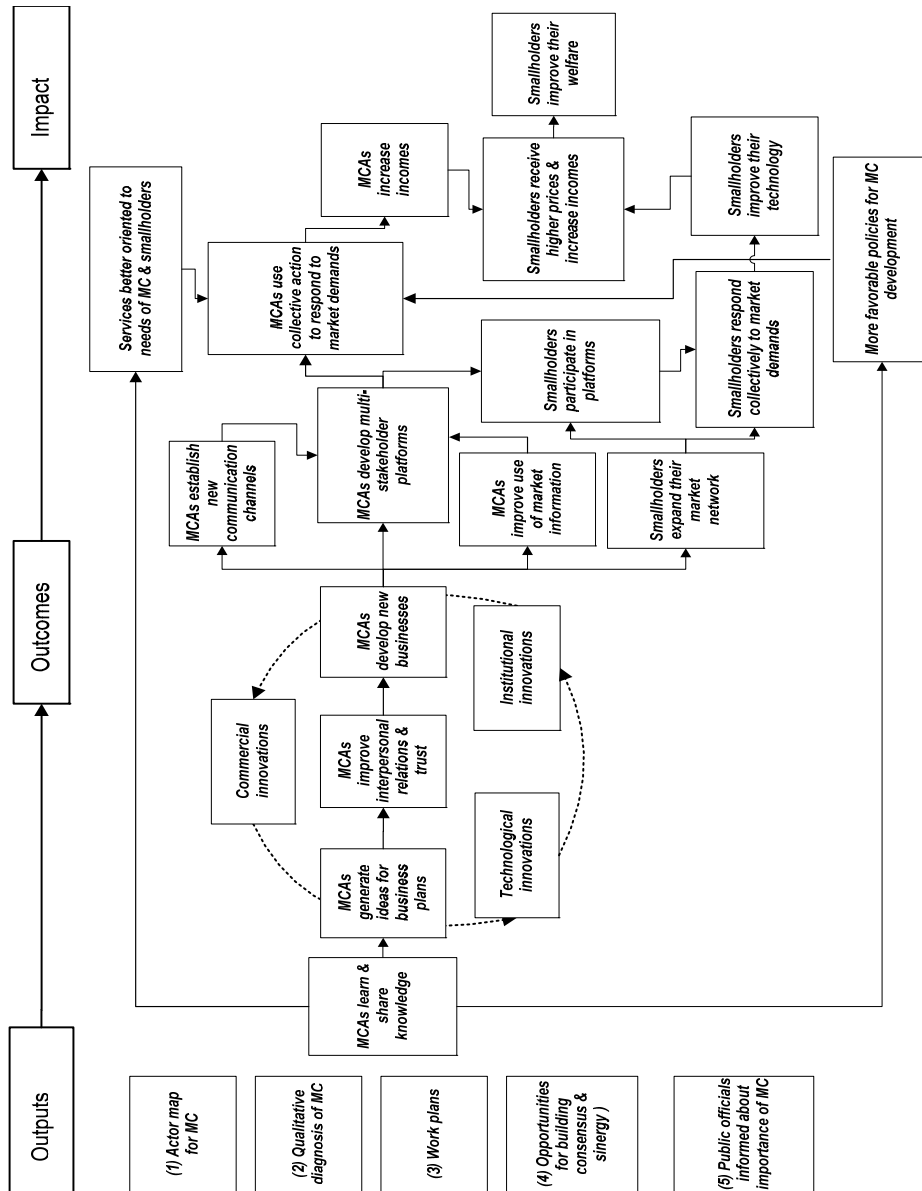
- Facilitators in local R&D organizations who initiate and support the PMCA exercise
- Respected individuals in the market chain who are committed to, and eventually lead, the innovation process
- Decision-makers in local organizations who support and legitimize use of the PMCA.
- Decision-makers in local or international funding bodies who provide resources and support for using the PMCA
- One or more external trainers/facilitators who provide inspiration, as well as technical training and backstopping for the local process

Exhibit 2. Intervention protocol for the PMCA

Activity	Quality
Phase 1. Diagnostic phase (3 months)	
Mapping of actors	The facilitator leads activities that generate the interest of diverse market chain actors in participating in the PMCA exercise. The principal market chain actors are identified and known.
Qualitative diagnosis of the market chain, to identify problems, potential business opportunities.	
Public event at end Phase 1.	The principal market chain actors participate in the event. Potential business opportunities are identified. Thematic groups are established. Results of the event are documented in a meeting report.
Phase 2. Analysis of business opportunities (3-4 months)	
Meetings approx. every 15 days with diverse market chain actors, for: <ul style="list-style-type: none"> • Analysis of market opportunities • Market studies • Analysis of costs • Business planning 	Interaction among diverse market chain actors to generate confidence among them. Development of at least one business plan.
Public event at end of Phase 2.	Progress is shared and new participants/allies are included, who can enrich joint activities.
Phase 3. Implementation of business opportunities (3-6 months)	
Meeting approx. every 15 days with diverse actors, to implement business opportunities.	Joint activities/collaboration to implement new business opportunities with market chain actors playing a leading role. Communication and negotiation among market chain actors. Small farmers increase their knowledge of the market chain.
Specific market studies.	
Specific technical studies.	
Product development.	
Public event at end of Phase 3.	Innovations are launched. Mass media, opinion leaders, and relevant political authorities participate, to ensure ample communication and diffusion of results and support for the PMCA exercise.

Note: Those who lead and facilitate PMCA exercises should be trained (based on the PMCA Trainers' Guide) and supervised at key points in the implementation process, such at the end-of phase public events. Facilitators should ensure the ample participation of market chain actors, especially small farmers, in decision-making during Phases 2 and 3.

Exhibit 3. Hypothesized PMCA impact pathway



Without these champions, results of the PMCA may be limited. An especially critical factor is the engagement and commitment of market chain actors, who are expected to play a lead role in driving development of new business opportunities and generating demands for innovation. As *proactive leadership from within the market chain is essential*, engagement of the business community is an area that merits very careful attention in applications of the PMCA.

3. STUDY OBJECTIVES AND METHODS

The present study has five objectives:

1. Assess how the project team balanced the fidelity of PMCA implementation vis a vis creative adaptations to tailor the approach to fit the local needs and circumstances.
2. Assess the emerging outcomes of the PMCA application.
3. Assess the new R&D approaches developed by the project team to complement the PMCA.
4. Identify key issues for institutionalizing and mainstreaming use of the approach and its benefits.
5. Suggest priorities for future work in this area.

The present study's design and methods build on experiences gained in earlier studies of the PMCA in the Andes and Uganda (Horton et al. 2010; 2011; 2013; Mayanja, et al. 2012).

Objective 1. The fidelity of PMCA implementation is assessed by comparing actual implementation processes in Indonesia against a PMCA protocol (Exhibit 1), which indicates the types of actions that are supposed to take place during application of the PMCA and how these actions are to be carried out. Based on the PMCA intervention protocol, a scoring instrument was developed for assessing the fidelity of implementation. Results of a scoring exercise are presented in Exhibit 13 in Section 10.

Objective 2. The outcomes to date of the PMCA in Indonesia are compared against the expected outcomes. Members of the Andean Change Alliance developed an outcome chain, or "impact pathway," for the intervention, which identifies the main expected outputs and outcomes. The PMCA is expected to produce a number of direct outputs, including such things as a diagnosis for the market chain, work plans, and identified opportunities for building consensus and synergy among stakeholders, and prototype innovations. These activities and their corresponding outputs are subsequently expected to trigger processes that result in a number of outcomes including increased knowledge of market chain actors about each other, enhanced trust, better use of market information, commercial, technological, and institutional innovations, increased prices paid to smallholders, and increased incomes and welfare. Based on the PMCA impact pathway, a scoring instrument was developed for assessing the outcomes of the PMCA exercise. Results of a scoring exercise appear in Exhibit 14 in Section 10.

Objective 3. The new R&D approaches developed by the project team to complement the PMCA are assessed in terms of their perceived fit with local circumstances, responsiveness to local concerns, and contributions to pro-poor market chain innovation.

Objective 4. Key issues for institutionalizing and mainstreaming use of the PMCA have been identified through key informant interviews and review of previous experience with mainstreaming other new R&D approaches, such as the FFS.

Objective 5. Priorities for future work in this area emerged from key informant interviews and semi-structure reflection exercise on experiences with the PMCA in Indonesia as well as in the other areas where it has been applied to date, in the Andes and in Uganda.

This study employs a case study methodology, which according to Yin (2009: 2) is the preferred social science research method when “how” or “why” questions need to be answered, the investigator has little control over events, and the focus is on a contemporary phenomenon within a real-world context.

The PMCA was applied in West Java in 2008 and 2009 in market chains for fresh and processed potatoes. Subsequently, ‘Business Development Services’ were provided as a follow-up to the PMCA. In 2009 and 2010, the ‘Farmer Business School’ approach was developed and tested in West and Central Java. Application of these approaches stimulated innovation among small-scale potato producers, processors, and market agents. The innovation processes were catalogued, and five of the more successful cases were analyzed in this study.

From the outset, the project team monitored implementation of the PMCA and the FBS. Periodically, project implementation was reviewed by participants and external resource persons. In 2011, an external consultant, familiar with PMCA applications in the Andes and Uganda (Horton), was invited to lead the synthesis exercise that is reported on here.

The synthesis exercise draws on project documentation (Annex 1), visits to five field sites in West Java, and key informant interviews with stakeholders (Annex 2). The field visits and key informant interviews were carried out by Horton, Campilan, and Prasetya during November 2011, approximately 30 months after the formal completion of the PMCA application.

4. THE SETTING

Potato production and use in Indonesia

After their introduction by the Dutch in 1794, potatoes were used mainly in European dishes. Recently, however, potatoes are also being used increasingly to make traditional Indonesian snack foods. Potato production has grown most in the highlands of West Java, to supply fresh and processed potatoes for Jakarta, Bandung and other urban centers. The potato is now one of the most important vegetable crops grown in the tropical highlands of Indonesia. With an annual production of about 1 million tons, Indonesia is Southeast Asia's largest potato producer. As demand has increased, prices have increased over time. Major constraints to production relate to few varieties suitable for tropical highlands, limited access to quality seed, volatile weather conditions, rising costs, and scarcity of fertile and healthy land in highland producing areas. Pest and disease problems are on the rise and farmers frequently use pesticides excessively or inappropriately.

Small highland farmers produce most of Indonesia's potatoes, and with the crop as one of their principal sources of cash income. Small farmers usually cultivate less than one hectare of potatoes on rented land and sell most of the harvest in local markets. The bulk of the country's potato production is used for domestic consumption, mainly as an ingredient in vegetable dishes. Until recently, virtually all fresh potatoes consumed in Indonesia were grown locally. However, because of growing demand and limited areas with appropriate climate for potato production in Indonesia, fresh potatoes are now being imported from China and Bangladesh.

Traditional snack foods – made from rice, roots, tubers, and other starchy crops – are integral to Indonesian food culture. Steady demand for these snack-food products, which are popularly consumed during and between meals, has been a key driver for a large informal sector of small-scale snack-food processing and marketing enterprises. In recent years, an increasing share of the potato harvest has been used in small-scale processing of snack foods.

Granola is the main potato variety grown for fresh-potato consumption and for traditional small-scale processing. This variety is sometimes used by small processors to prepare potato chips, however its tubers are difficult to slice thinly while thick chips need to be sun-dried prior to frying, thus limiting their use during the rainy season. In addition, Granola chips brown during frying, and processors usually bleach them with lime to lighten their color.

The largest producer of potato chips in Indonesia is Indofood (www.indofood.com), which is affiliated with the multinational company FritoLay. This company uses approximately 50,000 tons of fresh potatoes of the Atlantic variety annually, of which 30,000 tons are imported. Indofood obtains potatoes

locally via a network of contract growers. The company imports approximately 4,000 tons of Atlantic seed tubers annually, to supply to its growers.

Potato market chains in West and Central Java

Most of Indonesia's potatoes are cultivated in cool highland areas between 800 and 1,800 meters above sea level in the provinces of West and Central Java. Potato pests and diseases are less problematic here than at lower elevations. Highland farmers cater to the demands of large urban and rural populations concentrated in these two provinces. The area of most intense potato production in West Java is the sub-district of Pangalengan, within the district of Garut. For several decades, with support from a number of international donors, the Indonesian Vegetable Research Institute (IVEGRI) has carried out technical potato research and the Ministry of Agriculture has promoted the adoption of new varieties, cultivation, and post-harvest technologies. However, the production and utilization of vegetables, including potatoes, have been hampered by factors that go beyond the realm of production technology, including marketing, seed systems, and agricultural policy. Such problems have seldom been addressed in research or development programs.

Two types of potato market chain operate in West Java – one for fresh potatoes and one for processed potatoes. The structures of these two chains prior to the PMCA exercise are illustrated in Exhibits 4a and 4c. The fresh-potato market chain obtains its supply from both large and small-scale farmers, with the former having a major advantage over the latter in terms of volume as well as access to production assets. Potato farmers are highly reliant on local traders/assemblers and traditional wholesale markets in linking with the fresh-potato market chain.

Large-scale intermediaries influence market-chain dynamics, by purchasing from large numbers of small producers and supplying fresh potatoes to retail shops, processors, and restaurants. Small farmers find it difficult to supply many urban buyers, who want to buy relatively large volumes on a regular schedule and pay suppliers only 15-30 days after delivery. Unless they are well organized, small producers cannot meet demands for large volumes of quality produce, and they generally seek cash payment at the time of sale.

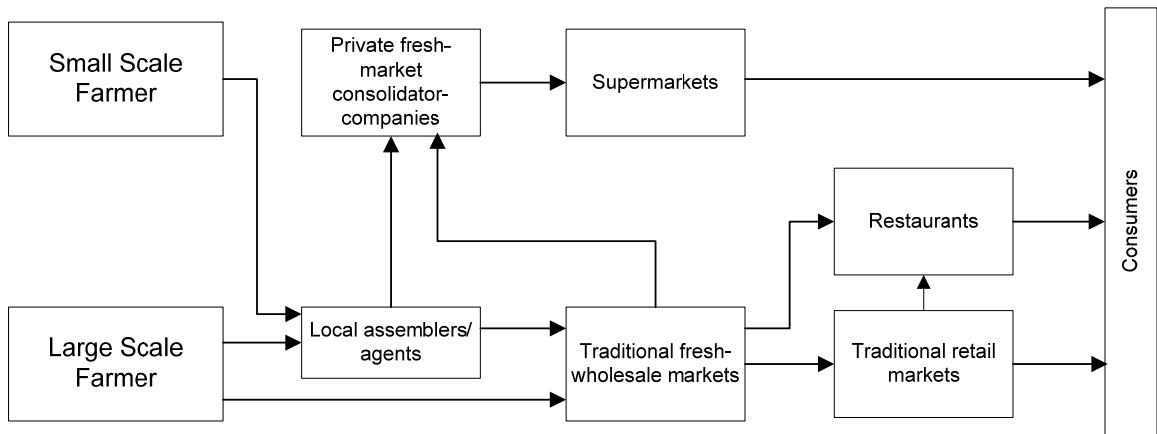
The rise of supermarkets has also helped establish a parallel chain, through companies that act as consolidators/brokers for fresh potatoes. In general, this limits participation for small-scale farmers who have limited capacity to meet the required high-volume supply and cash bond for supplier registration, as well as the delayed payments under consignment schemes.

Indonesia has long relied on imports to meet the needs of the local potato processing industry. But in recent years, domestic processing facilities have been established, in some cases in association with

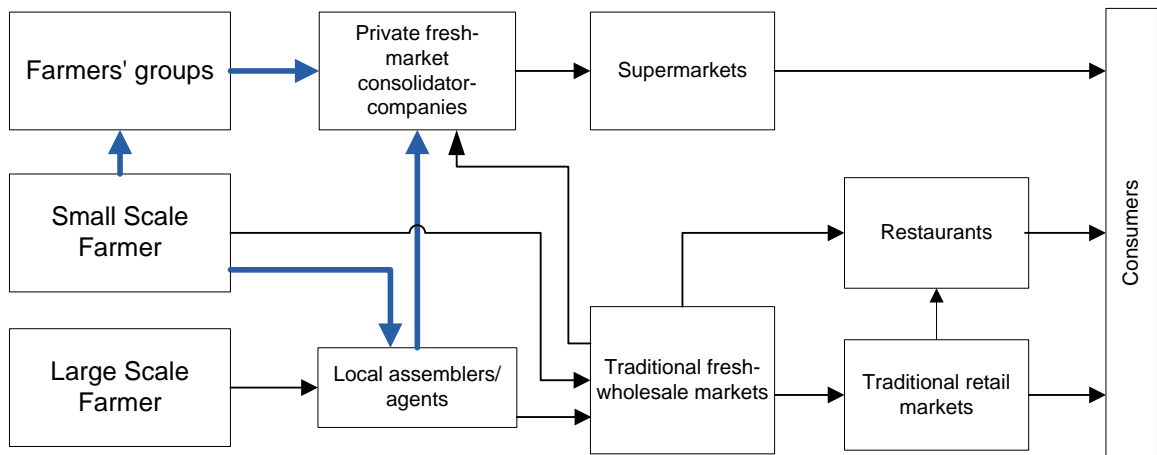
multi-national companies. The Atlantic variety is preferred for processing. But it is difficult to produce high-quality planting material of this variety in Indonesia and seed is normally imported each year from Australia, Europe or Canada.

Exhibit 4. Potato market chains in West and Central Java

4.a. Fresh-potato market chain: before intervention

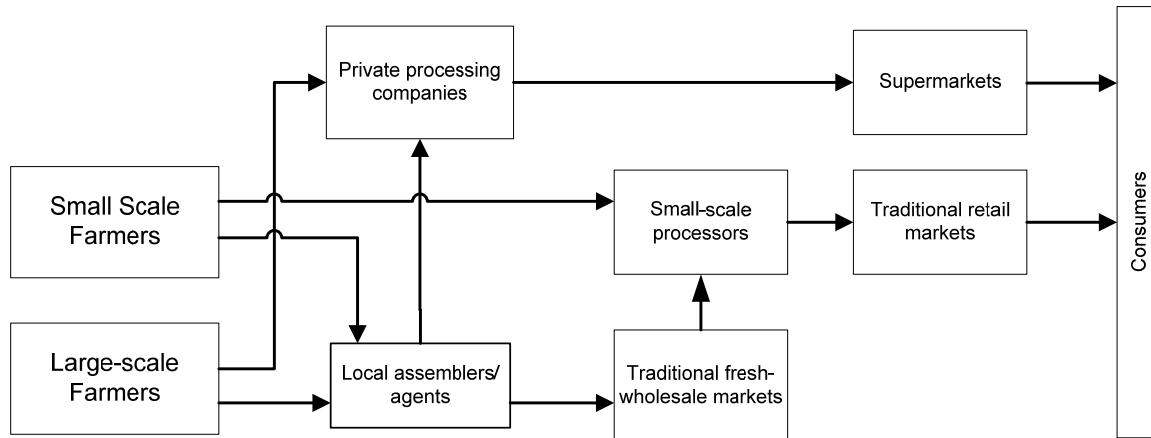


4.b Fresh-potato market chain: after intervention

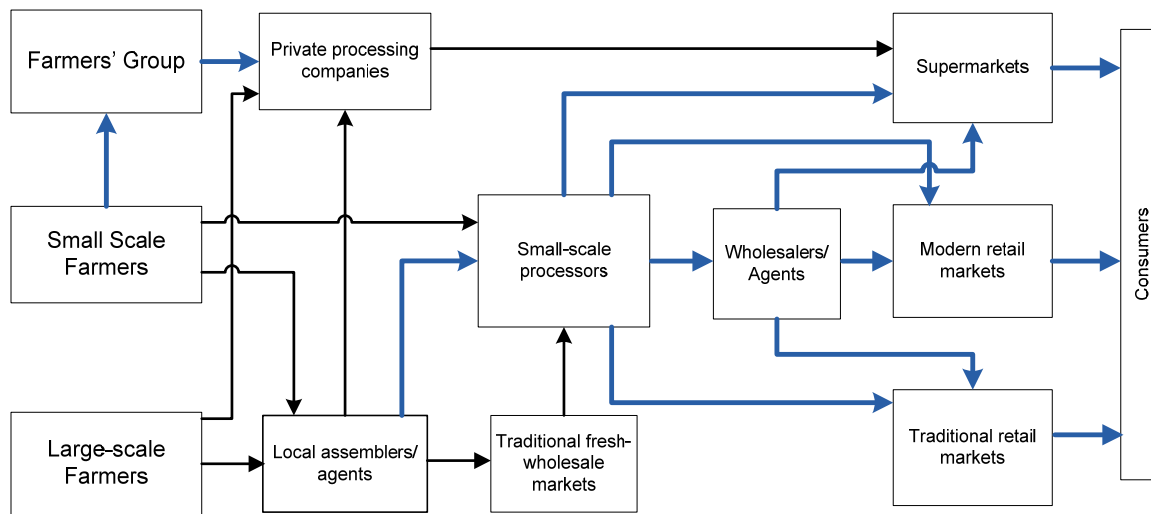


➔ Link established/ strengthened by project

4.c Processed-potato market chain: before intervention



4.d Processed-potato market chain: after intervention



➔ Link established/ strengthened by project

The market chain for processed potatoes is dominated by a single commercial chipping company, Indofood, which produces western-style potato-based snack foods. Indofood is a subsidiary of Frito-Lay, which itself is a division of PepsiCo. Indofood obtains its potatoes through a contract-farming scheme. Indofood imports quality seed of the Atlantic variety and delivers it to about 400 farmers in Pangalengan. At harvest time, these farmers are obliged to deliver their large-sized tubers to Indofood for processing. The contracts are oral, but strictly enforced by local agents, to maximize the supply of potatoes for Indofood’s processing facilities and minimize the “escape” of potatoes to potential

competitors. Up to now, Indofood is the sole importer of Atlantic seed potatoes. It markets its chips through a range of up-scale retail outlets, with the largest volume sold through urban supermarkets.

Quite separately, many home-based snack-food enterprises process and market some snack potatoes. There are no published estimates of the number of such enterprises, but perhaps 100 small-scale processors produce potato-based products in Pangalengan and another 100 or so in Garut. These processors source their raw materials from traditional markets and small-scale farmers, and also distribute their products through traditional markets and small snack-food stores.

Support services and institutions

Potato ranks low in the Indonesian government's list of priority commodities. The national policy agenda remains highly focused on rice as the country's major food staple, and secondarily on high-value horticultural and estate crops.

Public-sector agricultural research has had limited impact on the potato sector. Many new potato varieties have been developed by local breeders, often with support of international research and development programs, but none of them has achieved wide adoption by farmers. The limited availability of good-quality seed also remains a major bottleneck to potato production. The public extension service reflects similar commodity priorities, while its farmer-marketing assistance is framed within post-harvest management programs. For their part, development NGOs generally have a stronger pro-poor focus, but few have demonstrated the capacity to facilitate farmers' improved access to markets.

Religion plays an important role in everyday lives of most Indonesians. The strong religious influence on social norms is highly evident in the conduct of individuals and groups within potato market chains. Especially among local communities, there is a conscious effort to blend Islamic thinking – such as on leadership, trust and equity – with more pragmatic approaches toward socio-economic development.



5. INTRODUCING THE PMCA: MOTIVATIONS, STRATEGY, AND KEY ACTORS

Motivations for introducing the PMCA

From 2007 to 2010, the Australian Centre for International Agricultural Research (ACIAR) supported the project “Optimising the Productivity of the Potato/Brassica Cropping System in Central and West Java”, that aimed to assist farmers in West and Central Java to increase the economic returns from potato and *Brassica* (cabbage) cultivation by applying improved cultivation, pest management, and post-harvest practices suited to local farming conditions (<http://aciar.gov.au/publication/FR2011-24>). Leading the project was the Department of Agriculture and Food in Western Australia (DAFWA), with CIP and the Indonesian Vegetable Research Institute (IVEGRI) as key implementing partners.

While the project was on-going, an informal market survey carried out (Campilan and Asmunati, 2007) identified a number of marketing problems that hampered the development of the potato sector and the benefits that small-scale farmers derived from potato cultivation. Farmers in West Java have not been able to provide a regular and adequate supply of vegetables due to seasonal production, and wholesalers have increasingly sourced vegetables from other parts of Indonesia and internationally. The market chain for fresh potatoes is long – with many intermediaries between farmers and consumers. While there is a demand for about 7,000 tons of fresh potatoes to export to Malaysia and Singapore each year, traders were discouraged from supplying this market by lack of knowledge and finance and complex government regulations. Similarly, many farmers have not taken advantage of market opportunities with large and small-scale processors because their products did not match the specific requirements of processors, which included varietal requirements as well as dependable supplies of high-quality produce – often in amounts that far surpassed the production capacity of individual farmers.

Farmers had very limited understanding of the broader market, beyond their immediate market environment, coupled with lack of access to information on market trends, pricing and demand. Farmers had participated in various training and extension programs, but these have focused only on technological improvements on-farm. There had been few opportunities for farmers to learn about marketing and entrepreneurship. Market information and production statistics for vegetables in Indonesia were limited in scope and reliability, hampering decision-making on the part of market chain actors in Central and West Java.

In this context, CIP formulated a four-year project “Linking vegetable farmers with markets in West and Central Java, Indonesia” in 2007. Dindo Campilan and David Shearer, CIP’s senior social scientist in Asia and ACIAR’s manager for agri-business research, respectively, collaborated in designing a market chain project as a complement to the on-going production-oriented potato-*Brassica* project. With CIP as lead institution and Campilan as project leader, a research and development team was formed consisting of

staff from national and international organizations -- SwissContact Indonesia, IVEGRI, University of Adelaide's School of Agriculture, Food and Wine, and DAFWA.

This newer ACIAR-funded project was launched in February 2008, aimed to improve incomes and promote sustainable livelihoods among vegetable farming households in West and Central Java. The strategy for achieving this goal was to integrate vegetable farmers in profitable supply chains and enhancing their capacity to adopt new technology and market-driven innovative practices. The project had four specific objectives:

1. Assess current supply chains, market information flows and the contribution of vegetable production to farmers' livelihoods.
2. Design strategies to enhance coordination among supply chain partners in the marketing of fresh and processed vegetables.
3. Develop and pilot-test marketing innovations for enhancing farmers' participation in vegetable supply chains.
4. Strengthen farmers' capacity to effectively use market intelligence in adopting improved production technologies and practices.

The project was designed with an overall market-chain framework, with its general goal of linking farmers to markets while keeping open to emerging opportunities for innovating towards value creation, addition and/or capture. In practice, the focus of this project was to promote pro-poor innovation in market chains for fresh potatoes and processed potato-based products. The project was designed to involve partners from Indonesia's private/commercial sector, governmental bodies, and NGOs that were active in developing vegetable market chains in the country.

Capacity development strategy

A central focus of the project was to introduce and test the PMCA and develop local capacity for application of the approach. Use of the PMCA was to be complemented with other proven participatory methodologies, such as the FFS. Developed in Indonesia in the 1980s and 1990s to promote integrated pest management in the rice crop, the FFS approach has subsequently been mainstreamed in Indonesia's agricultural extension services.

Based on CIP's previous experience in introducing and developing capacity for the PMCA in the Andes and Uganda, the capacity development strategy employed in Indonesia included the following main elements:

- Participatory planning and decision-making involving local actors

- Negotiation with senior managers in lead R&D organizations to foster institutional commitment to the PMCA
- A comprehensive training strategy that included: action-oriented PMCA training workshops; use of the *PMCA User Guide* and complementary training materials; practical hands-on work with the PMCA in commodity groups; and backstopping and coaching by experienced PMCA facilitators, involving both face-to-face and virtual communications
- Knowledge sharing among the PMCA facilitators and teams working with different thematic groups
- Periodic learning-oriented reviews to improve the implementation process and document results
- Continuing support to innovators after the completion of Phase 3

Thomas Bernet, one of the lead developers of the PMCA and a skilled and experienced PMCA trainer, led the process of PMCA capacity development in Indonesia. He traveled to the country five times to provide PMCA training to a core group of Indonesian PMCA facilitators and assist the core team in organizing public events at the end of each phase of the PMCA. After completion of this initial PMCA application, Bernet traveled to Indonesia again to facilitate a workshop where initial strategies were developed for providing innovators with business development services. Between his visits to Indonesia, Bernet responded to requests and provided advice to the Indonesian-based project team via e-mail.

Results from on-going monitoring and the mid-project review identified the need for a complementary approach to PMCA, to focus on prior capacity strengthening for farmers seeking greater participation in market chains. In a series of learning workshops in 2009 and 2010 facilitated by Campilan, the project team and partners jointly conceived of the idea of FBS -- which was initially developed to be a marketing-oriented adaptation of FFS in Indonesia.

Institutional partners

Different institutional partners have been involved in the PMCA work over time. Some of those who were expected to play major roles participated less than expected and others who were initially considered to be minor partners participated more actively than expected.

SwissContact was expected to play the lead role in facilitating and coordinating the PMCA application in Indonesia. However, between the time the project was prepared and implementation began, this organization's business model changed and participation in the project no longer fit well with its priorities and financial needs. As a result, *SwissContact* withdrew from the project after having been actively involved during Phase 1.

Academic staff at the *University of Adelaide's School of Agriculture, Food and Wine* were originally assigned to support the PMCA application with broader applied social science research and documentation. During project implementation, their role was specified towards conducting targeted assessment study via student research and advisory support in project review meetings.

DAFWA, which led the FFS activities in an earlier potato-*Brassica* project, provided a link between FFS and the subsequent PMCA and FBS activities in the present project.

Following changes in the roles of implementing partners, *CIP* assumed direct responsibility for coordinating the PMCA exercise, through an in-country staff member (Budhi Prasetya) who served as PMCA coordinator. *CIP* had a strong interest in testing the applicability and effectiveness of the PMCA in Indonesia and in supporting capacity development for the PMCA in partner organizations. In his role as project leader, Campilan provided strategic guidance throughout the PMCA process, to ensure its alignment with the overall project goals and targets. Lorna Sister from *CIP-UPWARD* took the lead in documentation and provided a link to parallel efforts in market chain development for *CIP's* Philippine projects. Other *CIP* staff members and resource persons also participated occasionally; most significant were the critical inputs from Graham Thiele (leader of *CIP's* Social Science Division) and Gelia Castillo (*CIP-UPWARD* senior adviser) during monitoring visits to Indonesia.

IVEGRI participated actively in the project in order to complement its technical research work with a new market-development approach. Initially, economist Mieke Ameriana represented *IVEGRI*, participating in planning sessions and the market survey in Phase 1, and facilitating the working groups during Phases 2 and 3 of the PMCA exercise. Dr. Eri Sofiari and Kusmana (both plant breeders) represented *IVEGRI* as potato technical experts in the project and likewise served as group facilitators.

The *Department of Agriculture and Food Crops, Provincial Government of West Java* joined the project team, also eager to learn a new market-development approach that could complement its work with FFS. The Department's representative, Mimin R. Pakih, participated actively in planning PMCA activities, in conducting the market survey in Phase 1, in facilitating thematic group meetings during Phases 2 and 3, in reviewing workshops, and in subsequent provision of business development services and development of the FBS approach.

Eco Pesantren, the agro-business branch of a large and prestigious NGO *Daarut Tauhid*, joined the PMCA project team to learn the new market-development approach, which could be of direct use in its own business development activities. The organization's representative, Husen Gani, has been one of the most dedicated and active members of the PMCA facilitation team and participated in all the major

activities, beginning with the public event at the end of Phase 1. His organization encouraged several market chain actors to join the PMCA exercise and has assisted them in developing their businesses and in marketing their products. One important feature of Eco Pesantren is that it not only promotes ecologically oriented agricultural business development, but also engages directly in the marketing of agricultural products, with own sales points. In this sense, Eco Pesantren is both a service provider and a market chain actor.

Participating market chain actors

Efforts were made during Phase 1 and later on, to engage diverse market chain actors in the PMCA exercise. For the market assessment conducted during Phase 1, about 30 market chain actors were interviewed, including potato producers, market intermediaries, processors, retailers, restaurant owners, and diverse types of retailers (including traditional retail stores and supermarkets). Many of these individuals participated in the public event at the close of Phase 1, along with some others, who were interested in learning about the results of the study and the plans for market chain development. Of the 46 participants at this first event, 18 were farmers, 26 were market agents, and 2 were business service providers. At this meeting, groups were formed to work on innovations in the fresh and processed-potato markets. About 60% of the participants decided to work on processed potatoes.

During Phase 2, an average of 15 market chain actors participated in the series of group meetings to explore innovations in the chain for processed-potato products. These included small-scale processors, private food distributors, small farmers, and retailers. An average of 10 individuals participated in the series of group meetings to explore innovations in the fresh-potato market chain. These included small farmers, local traders, larger-scale intermediaries, and owners of small market outlets in Bandung and Jakarta. The public event at the end of Phase 2 attracted nearly 60 participants, including 22 farmers, 41 market agents, and 3 business service providers.

During Phase 3, the number of individuals who participated in the thematic group meetings declined about one-third, as activities focused on practical aspects of developing specific new products. But the public event at the end of Phase 3 attracted nearly 100 participants. The largest single group was made up of marketing agents, including local traders, wholesalers, processors and input suppliers. Twenty-seven farmers also participated along with a few representatives of development organizations, universities, the chamber of commerce, and the mass media.

As a general rule, small-scale processors and farmers participated more frequently and with greater interest in the thematic group meetings and related PMCA activities than did larger-scale producers, processors or market agents. Small farmers showed greatest interest in the fresh-potato group and small-scale processors showed greatest interest in the processed-potato group. A representative of one large market agent (CV. Bimandiri) did participate regularly in the group meetings for fresh potatoes

during Phases 2 and 3. This firm supplies fresh vegetables, including potatoes, to an Indonesian supermarket chain, and it has a long tradition of working with small farmers and farmer groups to develop regular supplies of fresh vegetables for its operations. One observation from the thematic group meetings and final events at the end of each phase of the PMCA is that presence of private-sector actors who operate close to the retail end of the market chain and have rich personal knowledge of business operations was critical for stimulating discussions and actions that led to successful market innovations.

Exhibit 5 presents information on the different stakes represented by the individuals who participated in the PMCA. During the three phases, 35-40% of all participants represented producers, 55-60% represented market agents, and 5-10% represented business service providers and the media.

Exhibit 5. Types of participant in chain actors who participated in the 3 phases of the PMA exercise

Type of participant	Number of market chain actors who participated in each phase:		
	Phase 1	Phase 2	Phase 3
Farmer	18	22	27
Market agent:			
• Local trader	5	4	4
• Wholesaler	3	3	3
• Supplier	7	10	14
• Cold store operator	0	0	1
• Processor	9	10	15
• Seed producer	1	1	1
• Retailer	0	2	6
• Chef's association	1	1	1
Service provider*	2	3	7
Media	0	1	1
Total	46	57	80

* Includes NGO's, Bandung Chamber of Commerce, trade and small enterprise agencies, and a university food technology department.



6. IMPLEMENTATION OF THE PMCA

This section describes the main activities carried out to introduce and implement the PMCA in Central and West Java, as summarized in Exhibit 6. The PMCA was introduced via the capacity-development strategy outlined in the previous section. Central to this strategy were the training and backstopping provided by Bernet and the hands-on work with the PMCA carried out by groups of local market chain actors and agricultural service providers and facilitated by individuals based in local R&D organizations.

After approval of the project proposal by ACIAR, the first main activity in Indonesia was to formally launch the project in February 2008 in a workshop in Bandung. About 30 people participated in this planning event, representing CIP, IVEGRI, SwissContact, the West Java Provincial Department of Agriculture and Food Crops, Eco Pesantren, CAPAS Padjadjaran University, ICASEPS, Mercy Corps, LPTP Solo, CV. Bimandiri, an employee of a large commercial farm, and a field extension agent of Indofood (subsidiary of Fritolay). Participants were informed about the purpose and strategy of the project, and individuals and organizations that could form the core PMCA team were identified.

Exhibit 6. Timeline: Main activities during PMCA implementation and follow-up

Dates	Activity	Participants
Planning and preparation for the PMCA		
2/08	Launching meeting.	30 participants from CIP, IVEGRI, SwissContact, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid, CAPAS Padjadjaran University, UNESCAP-CAPSA, ICASEPS, Mercy Corps, LPTP Solo, CV. Bimandiri, Farmer, PD. Hikmah Farm, Field extension of Indofood Fritolay.
Phase 1: March – June 2008		
3/08	PMCA training for Phase. 1	T. Bernet as trainer. 12 participants from CIP, IVEGRI, SwissContact, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid, Mercy Corps. Training was in Bandung and field sites in Pangalengan (West Java).
3/08	Sharing of promotional information on the project.	Presented at Agro Spot Market workshop organized by Eco Pesantren Daarut Tauhid. More than 50 participants attended the workshop.
4-5/08	Participatory market assessment.	Personnel from CIP, IVEGRI, Swisscontact, Department of Agriculture and Food Crops of West Java Province interviewed about 30 people.
5/08	Sharing of promotional information on the project.	Web publication at Dinas of Trade and Industrial and Dinas of for Small and Medium Enterprises, West Java Province.
6/08	Sharing of promotional information on the project.	Publication in Indonesia-Netherlands Association (INA) Magazine.

Dates	Activity	Participants
Phase 1: March – June 2008		
6/08	Preparation for final event.	T. Bernet and 9 representatives of CIP, IVEGRI, SwissContact, Department of Agriculture and Food Crops of West Java Province.
6/08	Public event at end of Phase 1 (<i>held in hotel Bandung</i>).	Approx. 45 participants, including producers, merchants, processors, representatives of development organizations and local authorities and partners. Event held at Aston Tropicana Cihampelas Hotel, Bandung.
Phase 2: June – December 2008		
6/08	PMCA training for Phase 2.	T, Bernet as trainer. Ten participants, from CIP, IVEGRI, SwissContact, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid, ICASEPS.
7-12/08	Seven group meetings for processed potatoes (1) Selecting business opportunity; (2) Product development; (3) Cost-benefit analysis; (4) Marketing plan (1); (5) Branding; (6) Packaging; (7) Marketing plan(2) - decided to focus on use of small unpeeled tubers (Atlantic) for chips, and white thin-sliced potato chips (Granola), and dodol from potato (Granola) using Cumelly brand.	Average 15, including small-scale processors, private food distributors, small farmers, retailers with facilitator CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren. Meetings were held in Bandung and Lembang, with visits to a hotel (for frying quality – slicing – making dodol), a food store (Bandung), and the Chamber of Commerce Bandung.
7-12/08	Seven group meetings for fresh potatoes (1) Selecting business opportunity; (2) Product development; (3) Cost-benefit analysis; (4) Marketing plan (1); (5) Branding; (6) Packaging; (7) Marketing plan (2) - decided to focus on use of small-sized tubers (15- 17 tubers/kg) using Cumelly brand.	Average 10, including small farmers, local traders, intermediaries, small market outlets in Bandung and Jakarta with facilitator CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid. Meetings were held in Bandung and Lembang, with visits to the traditional market, a supermarket, and a supplier.
7/08	Establishment and distributes Market Chain Actor Directory (contact).	CIP representatives.
8/08	Exhibit potato products at IVEGRI Exhibition for International Year of the Potato.	Over 1,000 participants including small-scale processors, farmers, students, Ministry of Agriculture, CIP, IVEGRI, ACIAR, Indonesian Chef's Association, private companies, and general public.
8/08	Sharing of promotional information on the project.	Presented at a workshop in Lembang to promote farmer access to markets, organized by Department of Agriculture and Food Crops, West Java Province, and with 35 participants.
8/08	Participation in potato-brassica project workshop to link FFS and PMCA activities.	D. Campilan and potato-brassica project team, ACIAR.

Dates	Activity	Participants
Phase 2: June – December 2008		
10-12/08	Drafting packaging and design for Cumelly brand.	Designer, packaging expert, CIP representative, and thematic working group.
10-12/08	Testing product unpeeled potato chips – thin sliced potato chips – dodol.	Five processors, Indonesian Chef's Association, IVEGRI, and CIP.
11-12/08	Testing “baby potato” product.	Two farmers, one farmer/trader, Eco Pesantren Daarut Tauhid, CV. Bimandiri, and Carrefour supermarket.
1/09	Preparation for second public event.	T. Bernet assisted representatives of CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, and Eco Pesantren Daarut Tauhid.
1/09	Public event at end of Phase 2 (<i>held at Daarut Tauhid venue</i>).	Approx. 60 participants, including producers, merchants, processors, representatives of development organizations and local authorities, partners, radio broadcaster and newspaper.
Phase 3: January – June 2009		
1/09	PMCA Training for Phase 3.	T, Bernet as trainer. Nine participants, from CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid Bandung
1/09	Mid-term review for project.	Twenty representatives of CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid Bandung, Adelaide University, DAFWA
2-5/09	Three to four group meetings for fresh potatoes to assess and decide on packaging materials, and propose an experiment to BALISTA to find ways to produce more large-sized tubers. Discussion of branding – product development – packaging/design.	Six to seven participants, including small-scale processors, private food distributors, small farmers, retailers with facilitator CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid. Meetings held in Lembang and Bandung.
2-5/09	Three to four group meetings for processed potatoes, to assess and decide on packaging, experiment with ways to slice thinly and produce white Granola chips, and producing dodol. Discussion of branding – product development – packaging/design.	Average 10 participants, including small farmers, local traders, intermediaries, small market outlets in Bandung and Jakarta with facilitator CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid. Meetings held in Lembang and Bandung.
2-5/09	Fresh-potato thematic group began supplying large-size tubers to Bimandiri, to supply to supermarkets.	Small farmers and trader, Bimandiri and supermarkets.
3-5/09	Drafting also finalizing packaging and design Cumelly.	Designer, packaging expert, CIP representative, and thematic working group.
3-5/09	Trial product unpeeled potato chips – thin sliced potato chips – dodol.	Five processors, Indonesian Chef's Association, IVEGRI, and CIP.

Dates	Activity	Participants
Phase 3: January – June 2009		
3-5/09	Trail product small size potato (baby potato).	Two farmers, one farmer/trader, Eco Pesantren Daarut Tauhid, and CV. Bimandiri.
4/09	Two focus group discussions with urban consumers (Bandung) to assess market response to fresh and processed products.	Five women-consumers in each group, CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, and Eco Pesantren Daarut Tauhid.
5/09	Participation by processed- and fresh-potato thematic groups in Jakarta Agricultural Expo to market-test products under Cumelly brand.	Four processors and two farmers participated in the Expo attended by more than 2,000 people. Support provided by CIP and Eco Pesantren Daarut Tauhid.
5-6/09	Promotion business through mass media.	Promotional flyers (3) and poster (3) were distributed at an Expo in Jakarta and in the Final Event for Phase 3 of the PMCA.
6/09	Preparation for third public event.	T, Bernet as trainer. Eight participants, from CIP, IVEGRI, Department of Agriculture and Food Crops of West Java Province, Eco Pesantren Daarut Tauhid Bandung.
6/09	Public event, end of Phase 3 (<i>Sari Sunda Restaurant Bandung</i>).	100 participants, including small producers, merchants, processors, representatives of development organizations and local authorities, partners, radio broadcaster, TV and newspaper.
Follow-up: Provision of business development services (June 2009 – November 2011)		
6/09	Review workshop on PMCA implementation.	15 participants, from the project team, PMCA trainer, and resource persons.
6/09	Planning workshop to initiate development of Farmer Business School (FBS) approach.	15 participants from the project team, PMCA trainers, and new partners for FBS (LPTP, FIELD).
10/09	Review and planning workshop for BDS.	25 participants, from the project team, external PMCA trainers, and resource persons.
1/10	Small consumer survey to assess fresh and processed products.	CIP representative surveyed 10 households, who received the products being developed.
10-11/09	Two group discussion meetings on business progress and continuing challenges.	20 market chain actors, and project team.
11/10	Developing a business plan and a grant proposal for a small processor.	One processor, Eco Pesantren Daarut Tauhid Bandung (for a grant proposal to the Agricultural Ministry).
7/09-11/11	Participation in 10 trade and agriculture expos in various locations across Indonesia.	Three processors.
7/09-11/11	Business promotion through mass media.	Radio interviews (2), online news portal (1), promotional flyers (3), and video (1).
7/09-11/11	PMCA and business promotion in public-awareness events organized by project partners and external organizations.	Regular briefings and presentations by project partners, and participation of activities by other market development projects (USAID AMARTA, Dutch HPSP project).
7/09-11/11	Advice and support to 15 market chain actors, involving at least 35 face-to-face meetings and 50 telephone calls.	Eight processing-market chains and seven fresh-market chains, project team, Ministry of Agriculture, Padjadjaran University, and private companies.

Phase 1

Phase 1 of the PMCA exercise began in March 2008 with a training workshop organized and delivered by Bernet. Twelve individuals participated in the training, including representatives from CIP, IVEGRI, SwissContact, the West Java Provincial Department of Agriculture and Food Crops, Eco Pesantren, and Mercy Corps. The workshop held at a Bandung hotel and at IVEGRI campus in Bandung, included field visits to potato-growing areas in Pangalengan. Later in March, the CIP PMCA coordinator shared information on the project at a marketing workshop organized by Eco Pesantren.

In April and May, 2008, personnel from CIP, IVEGRI, SwissContact, and West Java's Department of Agriculture and Food Crops carried out a rapid assessment of potato market chains, based on interviews with about 30 people². Seven key roles were identified in the market chains: producer, collector, assembler, trader, wholesaler, processor, and retailer. Some individuals were found to play multiple roles. The following priority needs and opportunities were identified for enhancing small farmers' access to markets included: (1) expand the supply of good-quality planting material; (2) improve access to financial capital; (3) post-harvest storage and handling; (4) product development and improvement for both fresh and processing markets; and (5) enhanced governance and operations of farmer groups.

In May and early June, Prasetya, as PMCA coordinator, prepared articles on the project, which were posted on the website of West Java's Trade and Industry Department and disseminated via a magazine of the Indonesian-Netherlands Association (INA). In June, Bernet returned to Indonesia to work with representatives of CIP, IVEGRI, SwissContact, West Java's Department of Agriculture and Food Crops to prepare for and organize the final event at the end of Phase 1 of the PMCA, which was held at a hotel in Bandung. Approximately 45 individuals participated in this event, including producers, merchants, processors, representatives of development organizations, local authorities, and partners. Results of the participatory market assessment were shared with interested parties and attendees were encouraged to participate in Phase 2 of the PMCA. At this meeting, it was decided to structure the remainder of the PMCA exercise around two thematic groups. One would work on innovations in the domestic fresh-potato market chain; the other would work on innovations in the market for processed-potato products produced by small-scale processors.

Workshop was attended by 43 market chain participants from West and Central Java, including representatives from the following groups: producers/farmers (15), local traders (5), wholesalers from traditional markets (3), supermarket representatives (7), small-scale processors (9) and input suppliers/service providers (4).

² Methods for the rapid and qualitative study of the market chain are provided in Bernet et al. (2006: 23-27).

The group working on fresh potatoes identified four main business opportunities:

- expand existing farmers' arrangements with traditional wholesale markets,
- establish supply contracts with supermarkets and wholesalers,
- on-farm sorting/grading of tubers, and
- develop new markets for small-sized tubers ("baby potatoes").

The group working on processed potatoes also identified four business opportunities:

- strength entrepreneurial capacity of small-scale processors,
- improve the quality of existing traditional processed products,
- tap supermarkets as marketing outlets of processed products, and
- expand access to varieties suitable for processing (in particular, Atlantic variety).

Phase 2

Phase 2 began immediately after the public event at the end of Phase 1 in June 2008 with the second PMCA training workshop. Bernet served as trainer for this workshop, which was attended by 10 representatives from CIP, IVEGRI, SwissContact, Eco Pesantren, ICASEPS, and West Java's Department of Agriculture and Food Crops. The training focused mainly in skill development relating to group facilitation, market development, and focus group work.

From July to December 2008, the thematic groups working on fresh and processed potatoes each met seven times, to address the following topics as part of the group discussions to develop new products and partnerships in the two targeted subsectors:

Selection and fine-tuning of business opportunities

- Product development
- Cost-benefit analysis
- Elaboration of marketing plan
- Branding
- Packaging

The group working on fresh potatoes focused on the development of a new product that would add value to small potatoes with a relatively low market price: the innovation would be to offer selected, high-quality and bagged small tubers (15-17 tubers/kg) as "baby potatoes" in supermarkets.

The group working on processed potatoes focused on producing three new products:

- A new potato chip product derived from small un-peeled tubers of the Atlantic variety
- A new chip product derived from thinly sliced and bleached chips of the Granola variety

- A traditional snack food, known as *dodol*, derived from potatoes of the Granola variety

Both the fresh and processed products were to be marketed under the “*Cumelly*” brand, based on the word “Kumeli” in the Sundanese language of West Java, which means highland potato. In July 2008, the PMCA team, led by CIP, issued a directory of potato market chain actors, with the names and contact information of all those who had participated in PMCA events to date. This directory had been updated periodically since that time. In August, the new potato products being developed were exhibited at a large expo organized by IVEGRI to celebrate the UN International Year of the Potato (2008). Over 1,000 people attended this exhibition, including farmers, small-scale processors, students, personnel of the Ministry of Agriculture, CIP, IVEGRI, ACIAR, the Indonesia Hotel and Restaurant Chefs’ Association, private companies, and the general public. The same month, the PMCA team shared information on the project with 35 participants at a workshop in Lembang on promoting farmer access to markets, organized by the West Java’s Provincial Department of Agriculture and Food Crops. The project leader also participated in a workshop of the potato-*Brassica* project, to promote the linkage of FFS and PMCA activities. In the last quarter of 2008, a designer and a packaging expert worked with members of the thematic groups to design the Cumelly brand and develop packaging for the products under development. The fresh and processed products were also tested with processors and chefs.

In January 2009, Bernet returned to Indonesia to work with the core PMCA team to prepare and deliver the public event at the end of Phase 2. This event, held at the headquarters of Daarut Tauhid, attracted approximately 60 participants, including producers, merchants, processors, representatives of development organizations, local authorities, partners, a radio broadcaster and newspaper journalists. The meeting was organized and facilitated by the core PMCA team, members of which presented the main activities carried out and the results achieved so far. Market chain actors served portions of the new products they were working on to participants at the event. Members of the local chefs’ association also served various potato-based dishes to motivate participants to think of alternative uses of potato. Contact information was collected from all participants and subsequently compiled in a directory of potato market chain actors and service providers. The event helped to test prototypes for new products, to inform a wide range of stakeholders about the PMCA activities and potential results, and to motivate new market chain actors and service providers to participate in Phase 3 of the PMCA process.

Phase 3

Phase 3 began in January 2009, immediately after the final event for Phase 2, with the third PMCA training workshop, delivered by Bernet. Nine participants came from CIP, IVEGRI, Eco Pesantren, and West Java’s Provincial Department of Agriculture and Food Crops. During January, a mid-term project review was conducted, involving 20 representatives from project partners. During the review, the main

activities carried out to date were presented, the expected results were summarized, and main challenges were identified. Two major challenges were identified:

1. How to ensure adequate follow-up and support for business development after the formal completion of the PMCA
2. How to scale up application of the PMCA both within and outside Java

The group from the University of Adelaide presented results of a farm survey, and the importance of obtaining better information on markets and business opportunities was highlighted.

During Phase 3, the thematic groups responsible for fresh and processed potatoes each held three or four group meetings. The fresh-potato group, with six or seven members, worked mainly on packaging designs and materials for “baby potatoes.” To hedge their bet that the market for this novelty product could become profitable, the group also proposed an experiment to IVEGRI to find ways to increase the proportion of large-sized tubers in their harvests.

The processed-potato group, with an average of 10 members, also assessed and decided on packaging design and materials, and experimented with ways to thinly slice and produce white chips from Granola variety. The group developed a potato-based *dodo* snackfood product, they planned at Phase 2.

Some members of the fresh-potato group began supplying large tubers to the CV. Bimandiri Company, for sale in supermarkets. Between March and May, when a prototype design for the Cumelly brand became available, fresh and processed products were tested with chefs and consumers. These tests allowed fine-tuning of the products and their market presentation.

Two focus groups were organized in Bandung to gauge the reaction of housewives to the new products. In May, four processors and two farmers participated in an agricultural exposition in Jakarta to market-test new potato products marketed with the Cumelly brand. Some 2,000 people attended this expo. Based on results of the testing, the products were refined. In May and June, promotional fliers and posters were distributed at another exposition in Jakarta and in the public event and the end of Phase 3.

The PMCA exercise drew to a close in June with a large public event held in the traditional Sari Sunda restaurant in Bandung, which has an ample and attractive garden. This setting was ideal for demonstrating the new products and stimulating discussion around new business opportunities. Bernet returned to Indonesia to work with the core PMCA team to prepare this final event, which was attended by 80 people including small producers, merchants, processors, representatives of development organizations, local authorities, and journalists from a local newspaper, radio and TV stations.

Exhibit 7 describes the main innovations presented at the PMCA final event and notes what was novel about them. Interestingly, five of the six innovations presented relate to processed-potato products and only one to fresh potatoes. Four of the six innovations also involved new packaging and branding.

Exhibit 7. Main innovations presented at the Final Event of the PMCA Exercise (June 2009)

Innovation	What is new
Potato chips made from small unpeeled tubers of Atlantic variety, sold under the Cumelly brand and attractive packaging	Previously, most potato chips of Atlantic variety on the market were produced by Indofood, from large tubers. The new product used small tubers discarded by Indofood, new packaging, and a new brand.
Bleached white, thin-sliced potato chips of medium-sized tubers of Granola variety, using Cumelly branding and packaging	Previously, the bleached white chips produced from Granola were thick, from large tubers, and sold in bulk. The new chips are thinner, produced from smaller tubers, and sold with a new brand.
Dodol made from potato (Granola variety) sold with Cumelly branding and packaging	Traditionally, Dodol is made from rice. This was the first dodol produced from potato on the market, with a new brand.
Selected, graded and sorted fresh potatoes supplied to a wholesaler (CV. Bimandiri) by a farmer and a farmer-trader	Previously CV. Bimandiri purchased potatoes from traders without any direct link to farmers. This was the first time small farmers organized to supply them with selected, graded, and sorted fresh potatoes.
An agreement between a group of seven small processors in Garut and a small chain of grocery stores (PT. Bali Muda) to supply bleached, white, thin-sliced potato chips of Granola variety, made from medium-sized tubers.	This was the first time that Bali Muda worked with a group of small processors.
Balado and mustofa produced from potatoes (Granola variety), using Cumelly branding and packaging	Brand. Previously these products were sold in bulk or in more primitive packaging materials.

7. PROVIDING BUSINESS DEVELOPMENT SERVICES

When the PMCA exercise was completed, the importance of providing continuous support to the farmers and processors who had initiated innovation processes was not fully realized. But over the next few months, Prasetya and other project team members received a number of requests for support. Motivated by these requests, a workshop was organized in October 2009 to consider ways to provide what came to be known as “business development services” (BDS). The workshop was attended by 25 individuals, including members of the core PMCA team, the PMCA trainer, specialists affiliated with CIP, external resource persons, and stakeholders. A curriculum was developed for BDS training workshops. However, the anticipated formal training program was never conducted. Instead, the core team responded to requests received and to perceived needs for support by providing four types of on-going services:

1. Organizing meetings and facilitating interactions among market chain actors
2. Supporting communication and promotional activities for new products
3. Providing advice and support for individual innovators, as requested
4. Conducting applied research

Organizing meetings and facilitating interactions

Two group discussion meetings were organized to review progress in business development and continuing challenges. Approximately 20 individuals participated in each meeting, including market chain actors, business service providers, representatives of financial institutions, and members of the PMCA core team. The meetings were held in snack-food outlets in Bandung. Participants updated the group on progress with innovations they had been working on during the PMCA exercise and on more recent developments. One issue concerned delayed payments to processors for products sold in supermarkets and snack-food outlets. Owners of snack-food stores promised to shorten the time lag between deliveries and payments. Processors realized the disadvantages of selling to supermarkets, which requested bonds and sold on consignment, with considerable delays, and shifted their sales more to snack-food outlets, who they found easier to work with.

Prasetya, often with the assistance of Husen, continuously facilitated interactions and negotiations between one chain of consumer-goods stores (Balimuda) and small processors, which resulted in an agreement for five small processors to supply Balimuda with potato chips (Granola variety). He also facilitated interactions between a group of small farmers and an investment group, which culminated with the investors’ group providing funds for the farmer group so they could supply fresh potatoes (Atlantic variety) to a large processing company, Pacific Foods. This business is on-going.

Communication and promotion

The core PMCA team supported the participation of market chain actors (mainly processors) in 10 trade and agricultural expositions in various locations across Indonesia. Participants were briefed on how to prepare for the expos (for example how to prepare posters and demonstrations), how to interact with visitors, and how to present their wares. Core team members promoted the PMCA and the new products that emerged from the PMCA exercise in a number of meetings on agricultural market development in Indonesia. They also developed three promotional fliers, a video, and a web site, and were interviewed on the radio.

Advisory services

Since completion of the PMCA in 2009, small holders, processors, and market agents have frequently requested advice and assistance to develop or expand their businesses. In response to these requests, core team members provided advice and support to 15 market chain actors, via at least 35 face-to-face meetings and over 50 telephone consultations. This one-on-one support has frequently been in the realm of pricing and negotiation. In one case, they helped a small-scale potato processor in Pangalengan prepare a business plan and a proposal for a business-development grant offered by the government. The grant was obtained, and the business is now being developed.

Applied research

The coordination team has conducted or arranged for several applied research activities. An informal consumer survey was conducted to assess some of the new fresh and processed-potato products that innovators were producing. The coordination team later worked with IVEGRI to test a new potato variety under development that was intended to compete with Atlantic in processing. The new variety was tested with four processors in Pangalengan and Garut and the chips produced were market tested. It was found to be more difficult to fry the new variety, and consumers preferred chips produced from Atlantic. When a small-scale processor (Ida Rosida) wanted to buy a small machine for mechanical potato slicing and peeling, she requested assistance to acquire the right type of knife. The coordination team arranged for a meeting with professionals at the food technology department at Pasundan University, who subsequently identified an appropriate type of knife and a machine shop in Bandung who could produce and provide maintenance for the needed machine. As a result, the processor was able to obtain a functional, low-cost machine and also to establish relationships with both the university and the machine shop.



8. INNOVATION PROCESSES AND OUTCOMES

Introduction

Innovation processes are open-ended and their results emerge over time, often in unexpected ways. Innovation may involve both quantitative and qualitative changes of a technical or institutional nature. In the context of market chain development, it is useful to distinguish between three types of innovations:

- *Commercial innovation* involves the introduction and sale of a new or improved product (such as a new, potato-based snack food) or development of a new market for an existing product (such as a new export market).
- *Technical innovation* involves the introduction of a new method of production (such as integrated pest management to reduce pesticide use, or sprout suppressants to allow longer storage of potatoes).
- *Institutional innovation* involves the introduction of a new form of business organization or a new way of doing business (such as contract farming, a production cooperative, or employment of a market agent).

Due to the complex and emergent nature of innovation, it is difficult to quantify innovations and their results in meaningful ways. In this section, we frequently refer to the *products* or the *market niches* around which innovation processes have occurred. This corresponds to the ways in which farmers and other market agents generally think about innovation. However, it is important to keep in mind that numerous interrelated innovations are frequently associated with each new product and with the development of each new market niche.

Approximately, 90 small farmers or processors participated in the PMCA exercise in West Java. Several of these are known to have begun to sell new products or sell their existing products in new ways. To date, these innovators have engaged in at least 13 distinct innovation processes. Exhibit 8 is organized around the innovations and products that have been marketed. As can be seen, bringing these new products to market has involved numerous interrelated technical and institutional innovations.

One thing the exhibit illustrates is that a few innovators may be associated with many different innovations. In West Java, three innovators have been associated with three-quarters of the known innovation processes.

Another pattern that this exhibit illustrates is that most of the innovation processes have involved processed products, rather than improvements in fresh-potato marketing. Five of the cases have involved marketing different types of potato chips, five have involved using potatoes in traditional processed snack foods, and one has involved producing French fries. Only two of the innovations have

involved selling fresh potatoes. In one of these cases, the potatoes are going to a processor who uses them to manufacture potato chips, and in the other case a group of small farmers has organized to sell fresh potatoes to a supermarket. Clearly, the PMCA has been much more successful in stimulating commercial innovation in the marketing of processed potatoes than in the marketing of fresh potatoes. This pattern probably reflects the underlying potential for innovation in the fresh and processed-potato sub-sectors, rather than the relative utility of the PMCA in these two settings.

Exhibit 8. Summary information on innovations associated with the PMCA exercise

Innovator, Location	Products	Innovations**	Current status
Ida Rosida, Pangalengan	Jacket potato chips, Cumelly brand	New product (small potato chips, Atlantic variety), new packaging and Cumelly brand	Still sold, but in small quantities
	Potato-based snack foods (<i>mustofa, balado</i>), Cumelly brand	Use of potatoes in traditional snack foods, new packaging and Cumelly brand	Still sold
	Hot spicy potato chips, Cumelly brand	Introducing a series of new products that respond to consumer preferences	Growing market volume
	Other traditional snack foods using, e.g. spinach	Developing new products that respond to consumer preferences	Initial marketing
Chandra Hayat,* Pangalengan	French fries, Cumelly brand	New product, new packaging and Cumelly brand	Small, growing market volume
	Bleached white potato chips (Granola variety), Cumelly brand	New product, new packaging and Cumelly brand	Erratic production and sales, due to weather
	Fresh potatoes for chips	New market arrangement for supplying a large processor	Growing market volume
	Fresh potatoes sold to a modern food market	Informal farmer group and new market arrangement for supplying a modern food market with sorted, graded, and washed potatoes	Initial marketing
Erlismiati, Bekasi	Traditional snack foods using potato	Improved packaging, expanded marketing	Growing market volume
	Other traditional snack foods	New products, improved packaging, expanded markets	Growing market volume
Uus Kusnawan, Garut	Potato-based snack foods (<i>dodol</i>)	Use of potato as main ingredient in traditional snack food	Growing market volume
Six small farmers, Garut	Bleached white potato chips (Granola variety)	Six farmers working together to supply this product to a modern food market in Jakarta	Marketing interrupted
Hendra,* Garut	Potato chips for retail shops	New product, new packaging and Cumelly brand	Erratic volume marketed
Asep Carli, Pangalengan	Fresh potatoes for sale in supermarket	New informal farmer organization working with wholesaler, farmers sort and grade potatoes	Volatile, but growing volume marketed

*Motivated in part by their experience with the PMCA, these farmers became independent businessmen.

Exhibit 8 also illustrates the dynamics of innovation processes. For example, over time, Ida Rosida has reduced the production and sale of the first two products that she developed, based on her experience with marketing these products. More recently, she has launched a series of new product variants – mainly multi-flavored potato chips – that have been very well received in a number of market outlets. Consequently, over time, her product portfolio has evolved while she gained consumer loyalty based on the high-quality of her products.

These and other points are illustrated in the five illustrative cases that follow.

Illustrative cases

This section presents brief synopses of the experiences of five innovators who participated in the PMCA exercise in West Java and have gone on to successfully market new products or utilize new arrangements for marketing their products.

Case 1 –Ida Rosida: From housewife to successful businesswoman

Ida is the wife of a highly respected preacher in Pangalengan. She was born in the area, but spent eight years in Bandung and then three years in Jakarta, where she studied Islamic communication. Subsequently, she and her husband moved back to Pangalengan. In 2008, Ida started a small business producing mustofa (a traditional Sundanese food made from potato). In March 2008, she attended an exhibition of agricultural products held at the offices of Eco Pesantren in Bandung. There, she met with Husen Gani, an employee of Eco Pesantren and a PMCA facilitator. Husen Gani suggested to Ida that she become involved in PMCA activities.

Ida attended the first meeting of the group working on processed potatoes, during Phase 2 of the PMCA exercise, motivated by her interest in meeting people involved in potato marketing and in learning new things that she could apply in her business. She became an active member of the group and participated in most of the subsequent activities and events. When the idea of developing a collective brand – Cumelly – was raised in the group, she was enthusiastic. She also responded positively to the idea of producing potato chips from small-sized, unpeeled potatoes of the Atlantic variety (discards from the large-scale processing industry), which were named “Jacket potato chips”. Marketing this new product involved both commercial innovation (a new product) and technical innovation (developing a new production process for a new input).

During the PMCA exercise, she developed jacket potatoes as well as potato-based mustofa for marketing in large supermarkets in new packages bearing the Cumelly brand. However, these initiatives were only partially successful. She quickly learned that there were some barriers to marketing in supermarkets that were difficult to overcome. One was the need to post a monetary bond; another was the custom of consignment sales, which required the supplier to leave produce in the supermarket and

receive payment later, when the products were sold – generally at least 30 days later. Another problem was that while consumers liked the small chips, they expressed a preference for chips made from peeled potatoes. As a result of this experience, Ida altered her market strategy to sell in smaller retail markets, rather than large supermarkets. She also purchased an electrical potato peeler and began producing chips from peeled potatoes. She then began diversifying the chips she sold, by offering them in various flavors, including hot spicy ones that have proved to be very popular among consumers. At present Ida is producing nine flavors of potato chips as well as mustofa and marketing them all with the Cumelly brand.

As a result of the connections and recognition she obtained through the PMCA, bolstered by her husband's reputation in the community, Ida has gained support from several public and non-governmental organizations. She has also obtained Halal certification for her products and a license for food processing. She has also participated in several training workshops and food exhibitions organized by government agencies. In late 2010, she received a grant from the Department of Agriculture for Agricultural Business Development. This grant is helping her to purchase machinery and equipment to expand the scale of production and to develop a community-based group of food processors.

Ida began producing potato chips in 2009, employing only about 30 kg of raw potatoes per month. Over time her production has increased steadily. Presently, the four women she employs process about 650 kg of raw potatoes each month. She currently markets her products to around 21 snack-food shops, four of which are in Bandung. To expand her sales and cope with increasingly market competition, Ida has recently contracted a person to work full-time as a marketing agent. One creative initiative of this individual has been to develop a blog on the internet to promote marketing of her products.³ Another initiative is to reach out to students to encourage them to become entrepreneurs selling her products.

Ida's business is not always smooth. Fluctuations in sales are still common, mainly due to fluctuations in the availability of fresh potatoes (Atlantic variety). For example, many farmers had low yields last year because of rainy weather, and this drove potato prices up. Additionally, there is increasing competition in the processed-food market. Potato chips from small businesses have to compete not only with similar products but also with other processed food products that are produced from cheaper raw materials such as rice. To deal with the increasing competition, Ida plans to focus future production on high-quality niche market that value healthy food produced locally from high-quality inputs. For this reason, she is increasingly careful to use top-quality potatoes and cooking oil, to maintain sanitary conditions, and to use high-quality and attractive packaging.

One of Ida's goals, in addition to her personal business, is to promote group processing and marketing activities that will benefit households throughout her community.

³<http://kripikentangcumelly.blogspot.com>.

Case 2 –Chandra Hayat: A young man who evolved from employee to independent businessman

Chandra was still very young – 26 years of age – when he attended the public event at the end of Phase 1 of the PMCA. Significantly, he was not invited to this event, but came with a friend from Pangalengan, who was the original invitee. At the time, Chandra farmed a small amount of land (less than 1 hectare) and derived most of his income from working in a Jakarta-based factory. Chandra became so interested in the PMCA he attended nearly every group meeting and event during Phases 2 and 3.

At the public event at the end of Phase 2, another participant (Asep Carli, Case 3 below), who is a local farmer and trader, was invited by a representative of a large vegetable wholesaler (CV. Bimandiri) to supply large-size, sorted and graded potatoes for sale in supermarkets. This participant subsequently invited Chandra and some other farmers to work together to take advantage of this opportunity. Encouraged by the potential business opportunities he observed with potatoes, Chandra decided to quit his factory job and focus on producing, processing, and marketing potatoes. He named his new business *Insani Agro Semesta*, which means “Agribusiness Benefits Everyone”.

In the thematic group for processed potatoes, Chandra participated in discussions of the market potential of bleached potato chips produced from *Granola*, and sold with the *Cumelly* brand. He was attracted to the idea, but decided to try producing chips from *Atlantic*, a superior chipping variety for which quality planting material is extremely scarce. To overcome the shortage of planting material, Chandra set up a small seed-multiplication operation based on virus-free plantlets obtained from IVEGRI.

After the final PMCA event, Chandra continued innovating. One new idea was to begin producing French fries of *Atlantic* variety, with the *Cumelly* brand. Chandra saw this as a way to compete with imported French fries that contained chemical preservatives. Originally, he produced for one food store for high-income households in Jakarta. This business has grown and he is now supplying four stores in Bandung and Jakarta. Each month he uses an average of 1,000 kg of raw potatoes for this business.

Chandra has actively participated in training events and food exhibitions in Bandung and Jakarta. As a result, he has identified other potential business opportunities, including one with the large processing company *Pacific Food*. The company asked Chandra to supply fresh potatoes of *Atlantic* variety for producing potato chips. Chandra has responded dynamically to this opportunity, developing further his system for producing clean seeds of the *Atlantic* variety and working jointly with neighboring farmers to produce the desired volume of potatoes.

An interesting aspect of this case is that 15 years ago, Chandra’s father-in-law (Bunyanun Marsus) was the first farmer in Pangalengan to grow the *Atlantic* variety. Bunyanun also traveled to Australia to study

potato production. In the months prior to the present study, Chandra and his group supplied an average of 20 tons of fresh potatoes per month to the company.

While surfing the Internet for more opportunities, Chandra located a merchant who was supplying potatoes of Granola variety to *Superindo*, a small supermarket that specializes mainly in fresh vegetables and meat. He contacted this merchant, and is now supplying him.

As a highly respected young businessman dedicated to potato farming and processing, Chandra is playing a key leadership role in the advancement of potato sector in Pangalengan and can be expected to play an even larger role in the future in bringing change to farmers in Pangalengan. In addition to his personal attributes, Chandra's position is strengthened because his father-in-law is a highly respected member of the community, who a generation ago was a pioneer in potato cultivation, and who now holds a position in the local government.

Recently, motivated by a proposal from Eco Pesantren, Chandra and his father-in-law invited some neighboring farmers to join them in planting broccoli for export. This group worked with Eco Pesantren during a cropping season in a Farmer Business School for broccoli, beginning the process of developing appropriate production practices and working out marketing arrangements. Broccoli could be a valuable high-value new component in the prevailing potato-cabbage cropping system.

Chandra's long-term goal is to build a potato processing plant, so local farmers would have a more dependable market for their potatoes, and more dignified positions – both financially and socially.

Case 3 – Asep Carli: A small farmer who joined with his neighbors to supply potatoes to a supermarket

Asep Carli is a farmer in Pangalengan and a trader in Bandung's traditional market. In June 2008, his cousin received an invitation to attend the public event at the end of Phase 1 of the PMCA. When Asep learned that a meeting was being held that would help farmers and traders expand their business, he contacted the PMCA coordinator to see if he could also attend the meeting.

Generally traders are not interested in attending meetings unless there are quick payoffs in terms of new business. But Asep was an exception. He attended nearly every thematic group meeting for fresh potatoes during Phases 2 and 3, as well as the public events at the end of each phase. When the idea emerged to market "baby potatoes" (small potatoes averaging about 60 grams each) Asep responded positively, bringing samples of such potatoes to the thematic meetings, food exhibitions, and the final event at the end of Phase 3.

A representative of the large vegetable wholesaler CV. Bimandiri also participated in the fresh-potato thematic group. Bimandiri's main activity is to supply fresh vegetables to supermarkets. During the meetings they questioned the rationale for attempting to market baby potatoes, and encouraged farmers to increase the supply of the high-quality, selected and graded large tubers preferred by consumers (averaging around 200 grams in size). Asep wanted to respond to this opportunity, but he needed to work with neighboring farmers to supply the minimum amount of potatoes to make the arrangement attractive to Bimandiri. So he invited five other farmers in Pangalengan to work with him on this project. Initially this group supplied Bimandiri with an average of seven tons of potatoes each month.

Although he began working to supply CV. Bimandiri with a steady supply of high-quality large potatoes, Asep did not abandon the idea of producing baby potatoes, which had emerged in the thematic group meeting. He always supplied baby potatoes packaged and labeled with the Cumelly brand when required for food exhibitions or negotiations with suppliers. He negotiated a sales contract for baby potatoes with two suppliers for supermarkets in Bandung and Jakarta, but the parties could never agree on a price.

Supplying potatoes to CV. Bimandiri was not always smooth. At the end of 2010, Bimandiri stopped buying from the group, due to a change in personnel in the company, and there were no purchases for three months. Later, Bimandiri began buying again from the group, and now they are supplying an average of 14 tons per month.

Asep is grateful to the PMCA for providing him the opportunity to interact with other market chain actors and understand how farmers can better organize to negotiate on a more equal footing and supply the needed produce to large traders in an increasingly competitive market.

Case 4 –Erlismiati: A processor/restaurant operator who improved her products and diversified her markets

When the public event at the end of Phase 1 of the PMCA was held, there were no potato processors from urban areas such as Bandung or Jakarta; most were from rural areas or small towns, such as Pangalengan. To broaden the diversity of market chain actors involved, the PMCA facilitators searched for names of urban processors. An Internet search turned up the name of Erlismiati, who was producing balado (spicy snackfood made from potato stick) in Bekasi of peri-urban Jakarta. The PMCA coordinator contacted and invited Erlismiati to the first meeting of the processed-potato thematic group.

Erlismiati was intrigued by the invitation, but was hesitant to attend, because she did not know any of the organizers. So, she asked a relative of hers from Bandung to go with her to the first meeting, in Lembang. When she arrived, she was relieved to find that everyone present had some aspect of potato

production, processing, or marketing, and she found the discussions and contacts very useful. She felt the meetings provided a great opportunity to learn, develop contacts, in ways that could help her expand her business.

After this first meeting, Erlismiati was always present in PMCA activities, despite the fact that she resided several hours by public transportation from Bandung. She felt that meeting new people and discussing common interests gave her greater insights and fueled her passion to innovate and advance in her business. At one meeting, she was asked by a representative of the national Ministry of Industry to participate in an exhibition of food products in Singapore. She decided to use a type of packaging that was developed by the thematic group, and consulted with a packaging expert who supported the group in designing and producing the packaging. Finally, she went to Singapore to sell *balado* with a very attractive package, which she believes added value to the product and aided in its sale at a premium price.

As a result of the improvements she has made in packaging, in 2010, Erlismiati received an award from Indonesia's Department of Small and Medium-sized Enterprises for the best packaging in a competition for small businesses.

At present, she is using about 25 kg of potatoes each day to produce *balado*, and she sells to five stores and five independent marketing agents scattered in Jakarta. In future, she plans to broaden the network of market agents she works with, in order to expand her sales. She realizes the importance of developing an appropriate management structure as her business grows.

To expand her sales, in addition to working with more market agents, she plans to develop products with a range of flavors, which will be attractive to a broader range of consumers. As her sales expand, she would be interested in developing relationships with farmers who could supply her directly with fresh potatoes. At present, she purchases potatoes from local market in Bekasi.

Erlismiati is also diversifying her business to include a broader range of snack-food products, and is using the lessons learned with the PMCA to do so. She has begun producing another snack-food – *kerupuk* – made from catfish, and is using her improved packaging for this product as well. Her dream is to establish a big *Oleh-Oleh* shop, where she could offer a wide array of innovative, high-quality snack foods including ones based on potato.

Case 5 – Uus Kusnawan: A processor who incorporated potato into a traditional snack-food

Uus Kusnawan is both a potato farmer and a processor who, prior to his involvement with the PMCA employed five individuals in the production of potato chips (*Granola* variety). He lives, farms, and processes his products in Garut, one of the main potato growing areas in West Java, near Bandung. His

first contact with the PMCA was when he was interviewed during the informal market survey, carried out in Phase 1. When he was informed that there would be a series of meetings that would encourage innovation in the potato business, he was eager to participate, and in fact, he attended nearly all the PMCA activities and events. During the meetings of the processed-potato thematic group, someone suggested to use potatoes to produce dodol – a traditional Sundanese snack food. At first this idea was considered a joke, but later, Uus was convinced to try out the idea, because Garut is famous for its tradition of dodol production, using a mixture of rice flour, sugar, and other ingredients. Intrigued by the prospect of using potato to make dodol, Uus gave it a try, and presented the new product at the next thematic group meeting. Participants felt it was too sweet. Finally, thanks to help from a chefs association in reducing sugar levels, an acceptable product was prepared. The chefs also helped to increase the shelf life of the product. Gradually, Uus gained confidence in making dodol from potatoes.

After the public event at the end of Phase 3, Uus began marketing his product in the local community. He started by offering 50 kg of dodol, which were sold in one week. He continued to improve and expand the supply to stores around Garut and as far away as Bekasi. Sometime around mid 2010, a national television station did a short program on dodol made from potatoes. Uus was happy with this, because television is a medium that could accelerate growth of the market for his products. Sure enough, after the program, sales of his dodol made from potato skyrocketed. At present, he is selling about 3 tons/month of dodol and employs 15 people - 13 of whom are involved in production, one supervisor, and one making deliveries. Producing this amount of dodol requires 3 to 3.5 tons of fresh potatoes each month.

In the future Uus expects his sales of potato dodol to increase, but he also plans to continue to innovate, developing a wider variety of flavors and improving the design and materials used in his packaging. Whereas Uus previously used his own potatoes for processing, now he focuses mainly on processing dodol, and purchases potatoes from neighboring farmers. In contrast to chips, dodol does not require that very high-quality potatoes be used. Growers around Uus are very excited about his expanding business, because it provides them with a market for potatoes that were previously discarded or sold at deep price discounts.

Summary of outcomes of the PMCA

Innovation processes develop in ways that are impossible to predict. The outcomes of the PMCA exercise have emerged over time, often in ways that were unexpected, and many outcomes may be unknown to us, because we have not known where to look for them. For this reason, it is important to keep in mind that the analysis presented here is based on “available information”, not on “complete knowledge”.

The information presented is likely to be incomplete for two reasons. The first reason is that we have no way to know all the innovation processes that have been stimulated, directly and indirectly, by the PMCA. Whereas it is generally expected that innovations will be produced by participants in Phase 3 of the PMCA exercise, some individuals and groups in Indonesia began innovating as early as the thematic group meetings in Phase 2. The new products presented and the discussions that took place among diverse stakeholders at the public events at the end of Phases 2 and 3 of the PMCA appear to have stimulated a number of individuals and groups to develop new products or new marketing arrangements that were beyond the focus of the PMCA exercise itself. For example, a group of farmers reached an agreement to supply selected, graded and sorted fresh potatoes to the wholesaler CV. Bimandiri.

The second reason is that, thanks in part to the BDS provided to innovators after the completion of Phase 3, some of the innovation processes initially triggered by the PMCA have continued until today or have triggered other innovation processes that have led to new outcomes. New innovations are bound to emerge and produce new outcomes in the future. For these reasons, this section presents a snapshot of known outcomes as of December 2011, not a definitive assessment of all the outcomes of the PMCA exercise in West and Central Java.

Four types of outcomes are assessed here, including contributions to knowledge, skills and attitudes; contributions to social capital; development of commercial, technical, and institutional innovations; and downstream contributions to inclusion, empowerment, and wellbeing.

Contributions to knowledge, skills, and attitudinal change

The small processors and farmers involved in the PMCA exercise report valuable contributions to their knowledge and skills in the following areas:

- Understanding existing market chains, the individuals involved, and the roles they play
- Marketing principles and the requirements for successful market chain innovation
- Knowledge of potential sources of expertise or support for problem solving
- Communication and negotiation skills
- Cost–benefit analysis
- Methods for selecting, sorting, grading, and selling fresh potatoes
- Methods for producing, packaging, branding, and selling processed potatoes

Small processors (some of which are also potato producers) note that their involvement in the PMCA has made them more open to interacting with others involved in potato production, marketing, and consumption, and are more optimistic about the prospects for development of the potato market. They are also more aware of consumer preferences for potato products.

The agricultural researchers and other service providers who have been involved in the PMCA exercise also report significant learned and skill acquisition, and changes in attitudes. In addition to the areas listed above, they highlight the importance of learning about the PMCA, which they consider a useful new systems-oriented approach for linking small farmers to dynamic markets. In particular, the researchers and development workers who participated in the PMCA as facilitators value the skills they have acquired in facilitating group work, which include skills in communication, mediation, and negotiation of agreements involving diverse stakeholders with different backgrounds and interests.

Social capital formation

The feature of the PMCA that participants – both market chain actors and agricultural service providers – seem to value most is the potential it offers for networking and the development of useful contacts and relations among those who participate in the thematic groups and public events. More than anything else, it seems to have been the networking opportunities that motivated market chain actors to come to their first PMCA event, and to keep coming later on. The PMCA seems to have been an effective mechanism for developing a particular type of social capital that allows people to work across organizational and cultural boundaries, which might be called “bridging social capital.” Development of this type of social capital has allowed farmers to work more effectively with processors, wholesalers, researchers, and other service providers.

Commercial, technical, and institutional innovation

The heart of the PMCA is market chain innovation, which results primarily from the interaction of diverse market chain actors and service providers. In the work reported on here, the main emphasis was on developing new potato-based products (commercial innovation), several of which have been described. The successful development and marketing of these products has involved both technical and institutional innovation. For example, for Ida Rosida to develop her new hot spicy potato chips, she had to acquire a new potato peeler and develop the recipes for frying and flavoring the chips. She also needed to develop packaging for these new products. The first packaging material she used was quite expensive. Later she developed packaging that was less expensive and more appropriate for local markets. As her scale of operations has increased, she has developed new market outlets and has contracted a sales agent. She is now working to organize a group of small farmers to provide her with a reliable and high-quality supply of fresh potatoes for processing.

The case of Chandra Hayat illustrates how technical problems can stimulate other types of innovation. One of the product lines he has attempted to develop is the preparation of potato chips from Granola variety. Small-scale processors find it difficult to make thin slices of this variety, and the thick slices need to be sun dried. Since sun drying is problematic during the rainy season, Chandra has developed a relationship to supply granola to a large processor who with an industrial facility. Each of the other cases

examined during this study demonstrates the intimate linkage of commercial, technical, and institutional innovations.

The PMCA has triggered changes in the market chains for fresh and, especially, processed potatoes. These can be observed by comparing Exhibits 4a and 4b (for fresh potatoes) and Exhibits 4c and 4d (for processed-potato products). The main changes in the fresh-potato market chain are near the origin of the chain, where producers interact with local assemblers and market consolidators who supply supermarkets with fresh vegetables. Small producers have strengthened their ties with local assemblers and have organized farmer groups to supply large consolidators. In contrast, the main changes in the market chain for processed potatoes are near the end of the chain, where processors and wholesalers interact with retailers and consumers.

Inclusion, empowerment, and wellbeing

The term inclusion has numerous meanings in different contexts. In this report, we use this term to indicate the extent to which small farmers and processors participate in and benefit from growing markets for agricultural produce. Using this definition, the PMCA has contributed to inclusion, by allowing several small processors and some producers to participate for the first time in dynamic markets for potato-based products or to expand their market involvement over time.

It seems safe to say that in some cases – as summarized in Exhibit 8 – the PMCA has also empowered participants to enter new markets, negotiate, and develop constructive business relationships with other market actors. In some cases – such as those of Ida Rosida, Chandra Hayat, and Uus – the PMCA appears to have served as a springboard for significant career changes – from housewife or employee to independent entrepreneur. Notwithstanding these changes, further work to upgrade the communication and negotiation skills of small farmers/processors and to improve the organization of these groups remains a high priority.

In all the cases studied, the innovations appear to have contributed to the incomes and wellbeing of the innovators involved. Measurement of the economic benefits derived from these innovations has been beyond the scope of this study. However, the typical innovator appears to be from a relatively well-off family, not from the poorer strata of their community. Consequently the direct contribution of the PMCA to poverty reduction is likely to have been small. An indirect benefit of the innovations triggered by the PMCA has been a modest increase in employment in processing and marketing activities, but it is doubtful that these have made major contributions to poverty reduction to date. As innovation processes evolve, and if use of the PMCA is scaled up in the future, greater poverty reduction impacts can be expected. A priority for future research would be to assess the overall contributions of the PMCA to development goals.



9. DEVELOPING A COMPLEMENTARY APPROACH: THE 'FARMER BUSINESS SCHOOL'

Motivations for developing the Farmer Business School approach

Right from the beginning, the project sought to capitalize on the already widespread use of the FFS in Indonesia, as an action-learning approach that improves small farmers' knowledge and skill in handling production problems. It argued that the PMCA should not be viewed as a substitute for the FFS but as a complementary approach for market chain development.

Immediately after the final public event, in June 2009 the core PMCA team, the PMCA trainer, and external resource persons from CIP-UPWARD, FIELD, LPTP, IVEGRI, and Padjadjaran University met to review the implementation and results of the PMCA exercise and to initiate development of FBS – as farmer-focused capacity strengthening approach -- that would be pilot tested in Central Java.

One finding of the review was that an important challenge to applying the PMCA in West Java was the limited capacity of small farmers and their organizations to interact productively with businessmen engaged in potato marketing and processing. The review also highlighted the relative complexity, high cost, and amount of time required to implement the PMCA.

The review team envisioned three scenarios in which a FBS might be useful:

Scenario 1. In some cases, a FBS, which strengthened the business and marketing skills of farmers and farmer groups, might be sufficient to allow small farmers to participate successfully in dynamic market chains for their produce.

Scenario 2. In other cases, the FBS might usefully strengthen farmers' business skills and organizations prior to implementing the PMCA.

Scenario 3. In yet other cases, a FBS might be implemented after the PMCA, to allow small farmers to better take advantage of the market opportunities identified during a PMCA exercise.

Main features of the approach developed

The FBS builds on the FFS and the PMCA and integrates elements of these two approaches. It is an action-learning approach that aims to develop the capacity of farmers and farmer groups to transform themselves from traditional producers and suppliers of agricultural commodities into successful businesses men and women that actively participate in dynamic agricultural market chains.

The FBS involves a structured action-learning process that is implemented by a facilitated group of small farmers over the period of a cropping and marketing cycle. The FBS groups were facilitated by members of LPTP, Eco Pesantren, Farmers' Initiatives for Ecological Livelihoods and Democracy (FIELD) Indonesia,

IVEGRI, and the Department of Agricultural and Food Crops, West Java Province. Three of these groups had facilitated earlier groups involved in the PMCA.

The first pilot exercise with the FBS was conducted in Central Java from October 2009 to March 2010. The second set of 4 pilot FBSs were conducted in West, Central, and East Java from December 2010 until May 2011.

The FBS's main objectives are to build the capacity of farmers to work effectively with other market chain actors, to strengthen collaboration among farmers, and to develop new business enterprises. A guide has been developed for applying the FBS, which includes five learning modules, which address five specific objectives (Exhibit 9). The modules progress from market analysis and gaining knowledge of the key market chain actors, to identifying potential market opportunities, developing innovations that respond to market opportunities, business planning, and accessing business development services.

The five modules included in FBS are similar to the main activities conducted during Phases 1 to 3 of the PMCA. However, in FBS all the activities are carried out by a group of small farmers, not by a group of diverse market chain actors. The FBS starts with farmers conducting a market chain assessment, under the supervision of a facilitator. Results of the market chain assessment are used to identify and prioritize areas in which farmers may work to develop technical or institutional innovations. Although farmers are the main participants in a FBS, there may be sessions in which other market chain actors and business support service providers are invited to participate as resource persons. The FBS ends with the farmer-participants launching a new enterprise, which in one case was a new line of business – broccoli production for the domestic and export markets – but more often involves an improvement on an existing line of business – for example, a group of farmers that began supplying sorted and graded potatoes to a wholesaler, whereas previously it supplied unsorted and ungraded potatoes to a middleman.

Exhibit 9. The five modules of the FBS and their learning objectives

Module	Learning objective
1. Identifying market opportunities	Identify and describe key actors and their roles in agricultural market chains
2. Assessing market chains	Analyze and prioritize market opportunities, by using appropriate tools, to increase profitability of the farm enterprise
3. Developing market-oriented innovations	Develop new production or post-harvest practices or ways of working that respond to market opportunities
4. Developing business plans	Develop a business plan to make use of new market opportunities by building on innovations
5. Accessing business services	Develop strategies to enhance farmers' access to and use of business services

Applications and results of the FBS to date

Two cycles of the FBS have been implemented in Indonesia to date. In the first cycle, a farmer group in Dieng, Central Java that had participated in a FFS in the potato-brassica project were the first group to work with the new FBS approach to improve their marketing of fresh potatoes.

Based on this initial experience, the next season, the FBS approach was applied with four groups. The original group in Dieng continued to work with potato, but focused on processing. It began producing potato chips from Granola variety, and it is believed that this is the first time that farmers in this locality have produced potato chips and sold them to local retail stores. Several stores are now buying this product from the group.

The second group, in Pangalengan, worked to develop the production and marketing of broccoli – a new high-value crop for these farmers – for the domestic and export markets. The group encountered a number of technical and institutional problems, but has marketed its products and is continuing its work. This group was facilitated by Eco Pesantren, which provided farmers with imported seeds and marketed the produce. The market prospects seem bright, but the group has been hindered by the lack of technological knowledge and support for this crop in Indonesia.

The third group, in Nganjuk district, East Java province, worked to improve their marketing of black soybeans, in the context of a contract-farming scheme with the Unilever Corporation, and to use discarded soybeans to produce soymilk for local markets. This group, facilitated by FIELD and Unilever's corporate social responsibility (CSR) unit, has negotiated somewhat higher prices with Unilever and has also been successful in marketing its soymilk.

The fourth group, facilitated by LPTP in Dieng worked to supply a supermarket directly with sorted and graded fresh potatoes. This business was established and expanded, but during 2011, due to rainy weather in Dieng, potato yields dropped and middlemen in the area began to offer them a higher price than that received from the supermarket. After discussions, the supermarket decided to acquire its supply from middlemen who could bring in potatoes from other areas and sell at prices below those offered by the farmers in Dieng. This illustrates how difficult it can be for a farmer organization operating in one location to compete successfully with a large middleman who can offer urban consumers with potatoes from different regions depending on local supplies and prices.

From the foregoing information, it can be seen that three of the five groups have been successful in producing and marketing new products, including broccoli, soybean milk, and processed potatoes. The two groups that have been less successful to date worked to improve the marketing of fresh potatoes to

wholesalers or directly to supermarkets. This finding parallel the one noted earlier: that the PMCA has been more successful in stimulating market chain innovation with processed products than with fresh potatoes.

The project's pioneering efforts in the FBS development generated interest from other projects and organizations involved in enhancing market access for small farmers. Thus, in November 2010, it hosted a regional learning workshop on the FBS approach with over 20 participants from Southeast Asian and Pacific countries; most of them were associated with ACIAR projects, but there were also representatives from the Food and Agriculture Organization (FAO) and international NGOs. Held in Bandung, the event provided a forum to critique and refine the project's initial FBS approach.

A key opportunity for the project to share its experience internationally arose in August 2011, with Campilan serving as one of the keynote speakers for the Australian Parliamentary Conference. Held in Canberra, Australia and sponsored by The Crawford Fund, the project paper "Enhancing Farmers' Capacity to Link With Markets" (Campilan, 2012) provided strategic input to discussions the Australian parliamentary discussions on targeting development aid to support small farmers in the emerging supermarket revolution. In its final year, the project also began efforts to disseminate its outputs and outcomes in Indonesian to other Asian countries. In 2011, Campilan assumed leadership of a new CIP initiative with the International Fund for Agricultural Development (IFAD) to design and launch a regional project focused on use of root and tuber crops (RTCs) for food security in Asia-Pacific. A key component of the five-country four-year project was to promote market-led agricultural development as a strategy for enhancing food access, through income generation from RTCs by rural farming households. Since then, the FBS and related approaches have been introduced in other countries – initially in the Philippines – by integrating these methodological innovations into large-scale development investment programs financed by IFAD.

Comparison of the FFS, the FBS, and the PMCA

As already noted, the FBS incorporates elements of both the FFS and the PMCA, and for this reason, the three approaches have many common features. All three are action-learning approaches that aim to improve the welfare of small farmers. However, they go about achieving this objective in different ways (Exhibit 10). Whereas the FFS and the FBS are centered on groups of small farmers, the PMCA engages diverse market chain actors (including small farmers) in innovation processes.

The key issues that the farmer group addresses in a FFS are technical issues related to crop or livestock production. In contrast, the farmer group in a FBS addresses mainly issues of marketing, business development, and farmer organization. The PMCA goes beyond farm-level business development to issues of development of the market chain as a whole. Whereas the FFS is designed primarily to

promote technical innovation, the FFS and the PMCA seek to foster both technical and institutional innovation.

Exhibit 10. Comparison of the Farmer Field School (FFS), the Farmer Business School (FBS), and the Participatory Market Chain Approach (PMCA)

	FFS	FBS	PMCA
Participants	Small farmers	Small farmers	Diverse market chain actors (including small farmers)
Issues addressed	Technical crop-related	Marketing farm produce, business development, farmer organization	Development of market chain
Innovations promoted	Technical	Institutional and technical	Institutional and technical
System level of interest	Cropping system	Farm enterprise and farmer organization	Market chain
Duration of intervention	Crop production cycle (3-6 months)	Crop production plus marketing cycle (6-9 months)	Market innovation cycle (12-18 months)
Knowledge and skills needed by facilitators	Facilitation of learning among peers. Technical knowledge of crop production	Facilitation of learning among peers. Marketing of farm produce, enterprise development, farmer organization	Facilitation of learning among diverse stakeholders. Market chain innovation/development. Business development
Complexity of intervention	Low	Intermediate	High
Cost of intervention	Low	Intermediate	High
Contribution to farmer organization	Intermediate	High	Low
Contribution to multi-stakeholder networks	Low	Intermediate	High
Importance of follow-up support	Low	High	High
Main purpose	Farmer learning and improved production practices	Strengthen farmer business capacity to respond to market opportunities	Identify and develop market opportunities along market chain

In systems terms, the FFS addresses the level of the cropping system, the FBS addresses the level of the farm enterprise (including potential post-harvest activities) in relation to the market chain, and the PMCA addresses the market chain itself. All three of these approaches are structured in terms of a cycle that relates to the system focus; the FFS is structured around the crop production cycle (generally 3-6 months); the FBS is structured around the production and marketing cycle (6-9 months); and the PMCA

is structured around the longer cycle generally required for successful market development (12-18 months).

Given the attributes of the participants, the issues addressed, the types of innovations promoted, and the system level at which each of these approaches operates, the FFS is a simpler type of intervention than the FBS, and the PMCA is the most complex of all three. Whereas the FFS facilitator needs expertise in the facilitation of peer learning and technical knowledge of the crop in question; the FBS facilitator also needs to know about the marketing of farm produce, enterprise development, and farmer organization. The PMCA facilitator needs more refined facilitation skills yet, as she or he needs to facilitate learning and teamwork with a group of diverse market chain actors with different backgrounds and different, sometimes conflicting, interests. She or he also needs to understand market chain innovation processes.

For the same reasons, the FFS generally has the lowest cost of the three types of intervention; the FBS has an intermediate cost; and the PMCA has the highest cost of the three.

As we have seen, each of these approaches can stimulate innovation. The FFS approach is mostly concerned with group-based learning for technical innovation. The PMCA focuses on commercial innovation, which is seen as a driver of subsequent technical and institutional innovations. The FBS emphasizes institutional innovation, to improve farmer organizations and business practices. One of the specific goals, and results, of the FBS has been to facilitate farmers' collective action as market-chain participants. The PMCA's *direct* contribution to farmer organization is smaller, but farmers often realize that successful commercial innovation requires a degree of organization and group formation. The PMCA also contributes to formation of "bridging social capital", which strengthens relations between people from different spheres of activity, builds mutual understanding and trust, and allows them to work together in multi-stakeholder networks. The FBS also contributes to such networks, much more so than the FFS.

The FFS was designed to be a self-contained exercise. However, the same farmer group often cycled through more than one school, each of which addressed a different technical problem. In contrast, experience has shown that both the FBS and the PMCA end rather early in the business development processes, before some innovations have proven their market viability and entrepreneurs have developed the capacity to fully exploit them on their own. Follow-up measures and the provision of business development services are very important for the overall success and impact of the FBS and the PMCA.

Considering the attributes of these three types of action-learning approach, the FFS is probably the preferred one where the goal is mainly to improve the farming practices of small farmers. The FBS is the preferred approach where there is a reasonably clear-cut market opportunity and the main challenge is for small farmers to develop the capacity needed to exploit the opportunity at hand (i.e. where farmers are able to organize and work together to provide an adequate supply of high-quality produce for large traders or supermarkets). The PMCA is the preferred approach where market opportunities are less clearly defined or understood, and where successful market development requires interactions among not only farmers but diverse market chain actors. This may occur for example, where there are significant potential benefits from innovation in processing.

10. MAIN RESULTS OF THE STUDY

In this section, we present the main results of the study, in relation to the five study objectives, which are concerned with balancing the fidelity of implementation and creative adaptation, the emerging outcomes of the PMCA in relation to the original expectations, the new R&D approaches developed, key issues for institutionalization and mainstreaming use of the PMCA, and priorities for future research and development of the PMCA.

Fidelity of PMCA implementation and creative adaptations

The fidelity of implementation of an intervention refers to the extent to which the intervention has been implemented according to plan and the critical components of the intervention are present when the intervention is implemented (Horton et al., 2013). Based on the PMCA intervention protocol (Exhibit 2), an instrument was prepared for gauging the fidelity of PMCA implementation (Horton et al. 2013). The authors of the present paper independently scored the fidelity of PMCA implementation in Indonesia, and their scores appear in Exhibit 11. The professional literature on fidelity of implementation often gives the impression that any significant deviation of an implementation from an intervention's original plan/protocol are cause for grave concern. However, some deviations reflect creative adaptation of the intervention to fit local needs and circumstances. The key point is whether or not the critical components of the intervention have been present.

Emerging outcomes of the PMCA in relation to expectations

An instrument was developed for assessing progress along the hypothesized outcome pathway for the PMCA. The authors of the present paper independently scored progress in Indonesia; the average scores appear in Exhibit 12. The results indicate that substantial progress has been made along the first part of the chain, relating to learning and knowledge sharing, generation of new business ideas, and establishment of new businesses. Moderate progress has been made along the rest of the chain, which includes:

- development of commercial, technical, and institutional innovations;
- improvement of interpersonal relations and trust;
- expansion of market networks;
- improved use of market information;
- development of new commercial channels;
- use of collective action to respond to market demands; and
- increases in smallholders' sales and prices received.

Exhibit 11. Assessment of the fidelity of implementation of the PMCA in four cases
(score: 0 = absent; 1 = present with low quality; 2 = moderate quality; 3 = high quality)

Activity and quality parameter	Individual scores ¹					Ave.
	A	B	C	D	E	
Phase 1. Diagnostic phase (3 months)						
Market chain is mapped and main MCAs are interviewed						
• At least 20-40 diverse MCAs are interviewed	2	3	2	2	2	2.2
• Bottlenecks and opportunities are identified	2	2	2	3	2	2.2
• MCAs are motivated to participate in PMCA	2	2	3	2	2	2.2
Public event at end of Phase 1						
• Key MCAs and service providers attend	3	2	3	3	2	2.6
• Results of market study are presented and discussed	1	2	2	2	2	1.8
• Interest in further collaboration is generated	2	2	2	2	2	2.0
• Thematic groups are established	2	3	3	2	2	2.4
Phase 2. Analysis of business opportunities (3-4 months)						
Meetings to analyze market opportunities and plan business						
• Meetings approximately every 15 days	1	1	2	1	1	1.2
• Interaction among diverse MCAs to generate confidence	2	2	2	2	2	2.0
• Development of at least one business plan	1	2	2	3	2	2.0
Public event at end of Phase 2						
• Key actors attend	3	3	3	3	2	2.8
• Progress is shared	3	3	3	3	2	2.8
• New participants are engaged to enrich joint activities	2	3	2	2	2	2.2
Phase 3. Implementation of business opportunities (3-4 months)						
Meeting for joint implementation of business opportunities						
• Meetings approximately every 15 days	1	1	2	1	1	1.2
• Diverse MCAs engaged in PMCA application	3	2	2	2	2	2.2
• Market chain actors play a leading role	2	2	1	2	2	1.8
Technical and market studies carried out						
• Studies carried out	2	3	2	1	2	2.0
• Studies support group decisions	2	2	1	1	2	1.6
New products developed						
• Prototype is tested with consumers and markets	2	3	3	3	2	2.6
Public event at end of Phase 3						
• Innovations are launched	2	3	3	3	2	2.6
• Opinion leaders, and political authorities participate	2	2	3	3	2	2.4

¹ The scores correspond to the following individuals: A= Dindo Campilan. B = Budhi Prasetya. C = Husen Gani. D = Kusmana. E = Mimin R. Pakih.

The areas in which least progress was made relates to the establishment of viable multi-stakeholder platforms, provision of agricultural services that are oriented to the needs of market chain actors, and more favorable policies for market chain development. These three areas were not systematically

addressed during implementation of the PMCA in Indonesia, and may go beyond the realistic appropriate scope of the PMCA as currently designed. Through informal information sharing, market chain actors may have improved their access to needed information and services, without visible improvements in service organizations or in the establishment of viable multi-stakeholder platforms.

Development of new R&D approaches to complement the PMCA

In Indonesia, the PMCA has been complemented with the FBS and BDS. The FBS combines elements of the PMCA and FFS in an action-learning approach centered on building farmers' capacity to respond, individually or jointly, to new market opportunities. The Indonesian experience indicates that these approaches are highly complementary. The PMCA appears to be most appropriate where markets are complex and innovations in marketing and processing are key drivers for successful market development. The FBS may be more appropriate where there are clear market opportunities that farmers can tap through improved organization and collaboration. One advantage of the FBS is that working with a group of neighboring farmers (the learning group) can lay the foundation for a farmer group that can work together to produce the quantity and quality of produce needed to supply large-scale wholesalers or processors. The PMCA has the advantage of being a more comprehensive systems approach for fostering market chain innovation; but its implementation is more challenging, costly and time-consuming than the FBS.

The BDS approach was developed to respond to the felt need in previous implementations of the PMCA (in the Andes and in Uganda) for continuing support to innovators after formal completion of Phase 3 of the PMCA. The FBS was developed as an experiment to explore the feasibility of blending positive aspects of the FFS approach and the PMCA. After the first FBS were conducted, it was realized that BDS could play a useful role in stimulating fostering and consolidating innovations not only after a PMCA exercise but also after a FBS.

Whether the PMCA, the FBS, or some combination of the two approaches is implemented, it seems vital that business development services be provided after completion of these interventions.

Issues of institutionalization and mainstreaming

In general terms, institutionalizing something (e.g., a new R&D approach) means making it part of a structured and well-established system (e.g., part of an agricultural research organization or an NGO). Mainstreaming is a related concept that refers to the integration of something into the prevailing values and practices of an organization or system (e.g., incorporating the PMCA into the standard operating procedures of organizations that operate within the agricultural innovation system).

Exhibit 12. Assessment of progress along the hypothetical impact pathway for the PMCA
(score: 0 = no progress; 1 = limited progress; 2 = moderate progress; 3 = substantial progress)

Outcomes and impacts	Individual scores ¹					Ave.
	A	B	C	D	E	
MCAs learn and share knowledge	3	3	2	3	2	2.6
MCAs generate ideas for new businesses	3	3	2	3	2	2.6
MCAs develop new businesses	2	3	2	3	3	2.6
MCAs generate joint technological, commercial, and institutional innovations	2	2	2	2	3	2.2
MCAs improve interpersonal relations and trust	3	2	2	2	3	2.6
Smallholders expand their market network	3	3	2	2	2	2.4
MCAs improve use of market information	2	3	1	2	3	2.2
Smallholders improve their technology to fit market demands	2	1	2	2	2	1.8
MCAs establish new commercial channels	2	2	1	1	2	1.8
MCAs use collective action to respond to market demands	3	2	1	3	2	2.2
Services become better oriented to the needs of MCAs	1	2	1	1	3	1.6
MCAs develop multi-stakeholder platforms	0	0	1	2	1	0.8
More favorable policies for market chain development	1	0	0	1	2	0.8
Smallholders expand their sales and receive higher prices	2	2	2	1	2	1.2

¹The scores correspond to the following individuals: A = Dindo Campilan. B = Budhi Prasetya. C = Husen Gani. D = Kusmana. E = Mimin R. Pakih.

The PMCA and the FBS have proven effective on a pilot scale in stimulating market chain innovation that benefits small potato processors and farmers. The promising early results raise the following questions concerning institutionalizing and mainstreaming the approaches:

- Could the PMCA and the FBS be effectively applied on a significantly larger scale in Indonesia?
- What are the prospects for mainstreaming use of the PMCA and the FBS in Indonesian agricultural innovation system?

Many interventions that produce promising results in pilot tests prove to be less effective when applied on a larger scale (Chen, 2010). There are several reasons for diminishing performance as interventions move from pilot trials to broader application. Pilot tests are generally carried out by highly trained and highly motivated professionals under the watchful eye of the intervention's designers – typically researchers. They are usually conducted in relatively favored environments and are supported with relatively generous budgets. When the same interventions are applied on a larger scale in public agencies or NGOs, they are applied by individuals with less training and motivation who have less supervision and backstopping and who are working with more restricted budgets and under less-favorable conditions.

Both the PMCA and the FBS are relatively “knowledge-intensive” interventions that require highly trained and well-supervised implementers. Consequently, expanding and mainstreaming the use of these new approaches would require a well-resourced capacity-development effort. The basic principles and procedures of the PMCA are well documented in training documents and user guides developed in the Andes and Uganda. But for the PMCA to be widely applied in Indonesia, it would be necessary to incorporate Indonesian examples and illustrations into these documents and to translate them into the languages of the regions in which they were to be used. Training would be needed to prepare a critical mass of PMCA facilitators who could lead future PMCA exercises, PMCA facilitators would then need to receive backstopping from an experienced PMCA practitioner/trainer who could provide adequate technical backstopping and also foster mutual learning among the local facilitators.

In the case of the FBS, two variants of the approach have been developed and applied by FIELD and Eco Pesantren, to respond to the specific conditions of these two applications. Before any effort to scale up the FBS, it would be important to review the two cases and make an effort to identify a set of common principles and crucial activities for the approach, which could be documented in an intervention protocol, training materials, and user guides.

Before contemplating a large-scale effort to institutionalize use of the PMCA or the FBS, it would be wise to prepare the needed training materials and user guides, establish teams of PMCA/FBS facilitators, and test larger-scale applications of these approaches.

A crucial aspect of institutionalizing and mainstreaming the PMCA and the FBS is the identification of one or more organizations that could champion these approaches. In the case of the FFS – originally developed to combat pest problems in rice, the country’s most strategic food crop – there was strong political support in Indonesia for use of the approach. One advantage of the FFS was that it was implemented in short cycles, corresponding to the cropping cycle for rice, which fit well into the budgetary cycles of public agencies and NGOs. In contrast, the PMCA and the FBS have been developed to improve business practices and marketing of potato and other high-value vegetables, which are far less politically strategic than rice. Consequently, there is less government support for this type of initiative. Another challenge to institutionalizing and mainstreaming use of the PMCA is that market innovation and business development are more open-ended types of initiatives, which cannot be completed in a single cropping season, and for which the resource requirements cannot be accurately. For these reasons, budgeting for the PMCA and FBS is difficult to incorporate into highly bureaucratic budgetary processes, such as those of public-sector agencies.

Two potential champions in Indonesia for the PMCA and the FBS are Eco Pesantren and FIELD – NGOs with mandates linked to business development that have already begun work with these approaches.

Within Indonesia's Ministry of Agriculture, the Divisions of Horticulture and Post-Harvest Technology are the possible institutional loci of work with the PMCA and the FBS. At the provincial level, groups working on good handling practices could champion use of the PMCA and the FBS.

Priorities for future research and methodology development

In light of the progress with the PMCA, FBS, and BDS, we have identified three main, highly interrelated, priorities for future work:

1. Further testing and consolidation of the approaches
2. Evaluation and documentation of results and lessons
3. Development of strategies for institutionalizing and mainstreaming the approaches

Priorities for further testing and consolidation include the following:

- Test the PMCA, FBS, and BDS in diverse settings and types of market chains
- Organize these tests as action research projects, to ensure that lessons learned are documented and available for use in improving and consolidating the approaches
- Identify the conditions under which the PMCA, the FBS, or other market chain development approach may be most appropriate
- Review international literature on experiences with FFS, market chain development, and provision of business development services, and build good practices into the FBS, BDS, and PMCA
- Revise user guides and training materials for the PMCA and prepare similar materials for the FBS and BDS.
- Incorporate lessons from Indonesian experience into these materials and make them available in local languages
- Identify ways in which the protocols for these approaches may need to be adapted to meet particular sets of circumstances

Priorities for evaluation and documentation include the following:

- Evaluate each application of the PMCA, FBS, and BDS, to assess and document the complex innovation processes that take place, the outcomes, and the lessons learned
- Periodically conduct meta-analyses of the evaluations carried out, to identify general patterns and formulate general propositions, conclusions, and lessons for implementation of the approaches
- Disseminate the evaluation results so that others who are working in market chain development can learn from these experiences

Priorities for institutionalizing and mainstreaming include the following:

- Develop and support a critical mass of skilled and motivated facilitators
- Identify key institutions for institutionalizing the approaches and work with internal champions and change agents, to mainstream use of the approaches, where appropriate
- Identify potential champions for the approaches in funding agencies and national policy-making groups, work with them to support the institutionalization and mainstreaming in local R&D organizations
- Pursue action research projects to promote institutionalization and mainstreaming of the PMCA, FBS and BDS, and disseminate the lessons learned from such projects

11. CONCLUSIONS

This section presents two sets of conclusions, ones that reinforce conclusions of previous studies of the PMCA, and ones that go substantially beyond what we knew previously.

Conclusions that reinforce those of previous studies

Three types of “champion” are important for the success of the PMCA:

- External process facilitators, with good communication, negotiation, and technical skills
- Champions within the market chain, who take the lead in innovation and chain-wide learning and action
- High-level decision makers in donor organizations and local organizations, who marshal support and legitimize working with the PMCA

Farmer organizations can play key roles in linking small farmers to high-value (horticultural) markets. However, the type of organization that is most effective depends on the macro environment (prevailing socio-economic and political conditions), the market chain, the main local actors involved, and prevailing customs and institutions.

The PMCA can trigger innovation processes that continue and evolve long after the PMCA exercise has finished. The most important innovations may be developed after completion of the PMCA exercise. Innovations produced during the PMCA exercise may be viable for a time, and serve for learning purposes. But they seldom prove to be viable in the marketplace over a sustained period. After completing the PMCA, participants often fine-tune innovations or replace them with other products or processes that better meet changing market needs and opportunities.

Follow-up mentoring and support after completion of the PMCA is often useful for consolidating innovations, for fostering continuing innovation processes, and for strengthening links to external support services.

The main direct benefits from the PMCA accrue not to the poorest of the poor, but to those who possess moderate levels of assets, who then become PMCA champions and role models for innovativeness in their communities. These individuals may play an important role in establishing and strengthening the production end of the market chain, which can benefit the poor through job creation and stimulation of further local innovation.

PMCA interventions need to be carefully targeted to reach the poor. While an initial focus may be on the less poor households with immediate potential to grasp market opportunities, the social and organizational context needs to be wider enough, so poorer strata of rural society can also benefit in the

longer term. Inclusive farmer organization may be critical to achieve the desired development outcomes.

One needs to be realistic about expected outcomes, in relation to project time frames and resources. It may take a considerable amount of time for innovations to spread widely and for outcomes to work their way through the impact pathway and benefit large numbers of smallholder farmers and others. The PMCA, FBS and BDS are most appropriately built into larger-scale and longer-term agricultural and rural development initiatives, rather than as stand-alone activities.

What this study adds to what we already knew about the PMCA

The principles underlying the PMCA and the basic three-phase structure are valid and useful, but the approach needs to be flexibly implemented to fit local circumstances. The PMCA was designed for use in the Andean highlands of South America, where economic and cultural factors are strikingly different from those prevailing in West and Central Java. For this reason, the fidelity of implementation of the approach needs to be skillfully balanced against the need for creative adaptation of the approach to fit with local circumstances. Readers of the PMCA User Guide frequently request more concrete examples and clear guidelines. This highlights the need for a capacity development strategy that provides concrete examples and illustrations and also builds facilitators' skills to adapt the guidelines efficiently to their context.

Indonesia provides novel examples of farmer organizations that link small farmers to large enterprises. CV. Bimandiri provides an example of a large supplier of fresh vegetables that works with farmer groups but has limited capacity to invest in business development services. The Unilever Foundation provides an example of how a large food processor can invest in strengthening farmer organizations and development of business capacities.

The FBS can be useful as a stand-alone intervention or as a complement to the PMCA. The FBS, which develops entrepreneurial and business-related capacities of farmers and farmer groups, may be effective as a stand-alone intervention where there is a clearly defined market opportunity that can be exploited by a farmer group with and limited innovation is needed in post-harvest activities. As a complement to the PMCA, the FBS can be used to build the business/entrepreneurial capacity of farmers and farmer organizations prior to launching a PMCA exercise. Alternatively, a PMCA exercise can build a group of skilled facilitators who can later facilitate farmer business schools.

Some of the main challenges to development of successful businesses come after completion of the PMCA. For this reason, provision of BDS should be built into value-chain development interventions. Useful types of business development services include the following:

- Periodic meetings of innovators
- Provision of advice and assistance on demand (for, e.g., negotiation, mediation, proposal development, business planning, informal discussions, and brainstorming on problems and opportunities)
- Promotional and advocacy activities
- Applied technical and marketing research

The study suggests the following priorities for institutionalizing and mainstreaming use of the PMCA:

- Apply the approach to market chains for commodities (or groups of commodities) that have high political importance
- Build on local experiences and approaches for learning, collective action, and market/business development
- Develop a cadre of facilitators from a range of organizations with diverse stakes in the market chain and the approach (including, for example, organizations concerned with research, marketing, agricultural extension, and policy)
- Nurture collaboration among PMCA facilitators and their organizations

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ABOUT THE AUTHORS

Douglas Horton worked for the Alliance in 2010 and 2011 as a consultant, leading the study of this report. Since 2004 he has worked as an applied researcher and evaluator for Papa Andina and other organizations, on topics related to agricultural research, innovation, and capacity development. Doug earned a Ph.D. in economics from Cornell University (1977) and a M.S. degree in agricultural economics from the University of Illinois (1967). From 1975 to 1990 Doug led CIP's Social Science Department. From 1990 to 2004 he worked as an evaluator, trainer, and management advisor at the International Service for National Agricultural Research, in The Hague. Doug has participated in more than 50 evaluations and has published more than 100 articles, books, reviews, and research reports.

Dindo Campilan joined CIP in 1995 as postdoctoral fellow in participatory monitoring and evaluation, and subsequently became leader of CIP's UPWARD regional partnership program (1999-2008). He was CIP regional leader for South, West and Central Asia (2008-10) and regional science leader for sweetpotato in Asia (2011-12). Currently he is senior food security and livelihood specialist – Asia and leader of the IFAD-funded regional project Food Security Through Asian Roots and Tubers (FoodSTART). He has led several action research projects on agricultural livelihood and market chain development across the Asian region, including the ACIAR-funded project on linking vegetable farmers with markets. He holds a PhD in Communication and Innovation Studies from Wageningen University, The Netherlands.

Budhi Prasetya graduated from the Bandung Institute of Technology (2001), faculty of mathematics and natural sciences, with concentrations on statistics. He has been extensively involved in facilitation, development, research, and advocacy for small businesses and entrepreneurship, funded by national and international institutions such as: World Bank, Oxfam Great Britain, National Development and Planning Agency, Friedrich Naumann Foundation, and the International Labor Organization. He worked on cluster development for small and medium enterprises in several regions in Indonesia. Prior to joining CIP in 2008 as part of the ACIAR-funded project on linking vegetable farmers with markets, he worked on horticultural projects in Indonesia funded and implemented by organizations from The Netherlands.

Husen Gani graduated from the Padjadjaran University, faculty of agriculture, socio economics department. Since joining the Eco Pesantren Daarut Tauhid Foundation in 2004, his work has focused on the facilitation and business training for the farmers. He is the head of department of agriculture in the foundation. Since 2008, along with CIP, he has served as member of the team of facilitators for the ACIAR-funded project on linking vegetable farmers with markets. In addition, he has been involved in several collaborative activities related to farmers' business development, including the USAID AMARTA

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Mimin R. Pakih started as team member for the ACIAR-funded potato- project. She later joined the ACIAR-funded project on linking vegetable farmers with markets as representative of the Department of Agriculture and Food Crops of West Java Province. She was also involved in a project on developing high-quality seed potato funded by the Japan International Cooperation Agency (JICA). She has worked in the Department of Agriculture and Food Crops since 1986 and now serves as head of the vegetables section. She studied for her bachelor's and master's degrees at the Padjadjaran University, with the departments of agronomy and agribusiness.

Kusmana has been a potato breeder at IVEGRI since 1990. He was involved in various activities related to potato cultivation and breeding including research projects on potato crop improvement in South East Asia (2010 to 2012) with CIP and potato late blight management for the ABSP II project with Cornell University. He is head of IVEGRI's plant breeding department. Besides being a breeder, he was involved as team member in facilitating PMCA and FBS for the ACIAR_funded project on linking vegetable farmers with markets. He graduated from the Bandung Raya University, faculty of agriculture, department of agronomy.

ANNEXES

Annex 1. Project documents consulted

1. Project proposal as approved by ACIAR
2. Series of project progress reports (2008-12)
3. Various paper presentations by project team members in external conferences, seminars and workshops
4. Various publications and multi-media products developed by the project

Annex 2. Individuals interviewed

1. Aditajaya – Program Director – FIELD Indonesia
2. Andre Setiawan – Program Officer – Unilever Foundation
3. Agus S, Tayan, Maman, Yayat H – Farmers – Pangalengan
4. Bunyanun Marsus – Farmer and sub district staff – Pangalengan
5. Chandra Hayat – Farmer and small processor – Pangalengan
6. Deni Hidajat – Purchasing Manager – CV. Bimandiri Lembang (private fresh consolidator company)
7. Deden Miqdad – Head Officer – Eco Pesantren Foundation Daarut Tauhid Bandung
8. Erlismiati – Small processor – Bekasi
9. Entin – Traditional snack-food retailer – Pangalengan
10. Endar Kusmayadi – Marketing agent – Pangalengan
11. Eri Sofiari – Senior advisor of human resources development – Agricultural Ministry, Republic of Indonesia
12. Iman – Farmer – Pangalengan
13. Iin Inati – Local collector – Pangalengan
14. Ida Rosida – Small processor – Pangalengan
15. Sandredo Tanjung – Operational Manager – CV. Bimandiri Lembang (private fresh consolidator company)
16. Setyo Untoro – Program Manager – FIELD Indonesia
17. Tirai Anarqi Hayat – Farmer's wife – Pangalengan
18. Wahidi – Farmer – Pangalengan
19. Witono Adiyoga – Economist researcher – IVEGRI, Lembang
20. Wahyu Prihartono – Secretary – Eco Pesantren Foundation Daarut Tauhid Bandung



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