



# Final report

*project*

## Improving the marketing system for maize and soybeans in Cambodia

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# 1 Acknowledgments

The project wishes to acknowledge the involvement and support of our Cambodian collaborators and the farmers and traders who so willingly and actively participated in our workshops. Without their insights and commitment this project would not have been possible.

In particular we wish to acknowledge our in-country collaborators, Mr Un Buntha (Deputy Director, Domestic Trade Division, Ministry of Commerce, RGC), Mr Nou Keosothea (Research Associate, Cambodia Development Resource Institute and currently Phd student), Mam Many (Head of Price Office, Domestic Trade Division, Ministry of Commerce, RGC) and Mr Yi Bunhak (Head of Agro-Industrial Development Office, Department of Agro-Industry, MAFF, RGC).

## 2 Executive summary

This project aimed to bring about positive socio-economic change in the Cambodian soybean and maize marketing systems through the use of community-based decision-making where the community of interest involved the various stakeholders of the marketing system (including farmers, collectors, traders and government officials). The basic research methodology throughout the project has been participatory action research (PAR). The project ran for nearly four years (July 2004 to April 2008), which included the original project and a one-year extension.

The project began with preliminary mapping of the Cambodian maize and soybean marketing system. The result of this preliminary mapping was to divide the country into two parts: eastern Cambodia and western Cambodia because of significant differences in: (a) the type of crops grown (more soybeans in the east, more maize in the west); (b) the nature of the production-marketing systems (old established system in the east with less fertile land and a fragmented and antiquated marketing system while in the west the production-marketing system was relatively new and dynamic with highly fertile land centred around 5 large grain drying/storage operations); and (c) markets (eastern crops tended to move to Vietnam, while western crops tended to move to Thailand).

The work in eastern Cambodia involved taking both a micro approach (working from the perspective of a single soybean farmers association) and a macro approach (working from the perspective of the marketing system as a whole). The micro approach led to the development of the Ta Ong Soybean Farmers Association (TSA) from an organization with no real function comprising 14 members to a successful micro-finance institution with 260 members that has to date made loans to over 1000 farmers. The macro approach led to the development of a fully-fledged feasibility study for the development of an Agricultural Marketing Development Zone (AMDZ) in eastern Cambodia serviced by an Agricultural Marketing Development Centre (AMDC), an Agricultural Wholesale Market (AWM) and an inland port located on the Mekong River in Kampong Cham province. The feasibility analysis showed excellent potential for this development which has received strong backing from the Royal Government of Cambodia and the Kampong Cham Chamber of Commerce.

In western Cambodia, the main conclusion to emerge from preliminary mapping and a stakeholder workshop was that the region suffered from poor communications between different levels of the supply chain. We explored various options for the development of an improved marketing communication system and proposed to local stakeholders the development of an Electronic Marketing Communication System (EMCS) based on the use of SMS technology and mobile phones. We undertook a pilot project in which daily grain market information was collected by the Ministry of Commerce and entered onto a database that was accessible by mobile phone in Cambodia using SMS. The pilot project proved highly successful and its impact has stimulated further work in a follow-up ACIAR project (ASEM/2006/130) that will further develop the concept in both the marketing and production areas.

The main conclusion from this study was that participatory action research (PAR) is a very viable approach to research that can 'make a difference'. As such the main recommendation from this research is that ACIAR consider ways in which to better integrate the PAR methods into their research programs that directly deal with farm groups (e.g. participatory rural appraisal) or village communities. However, our work shows this also has broader applicability (e.g. in improving agricultural marketing systems).

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## 3 Background

The development of a commercial, export-oriented agriculture to reduce poverty is a key priority of the Royal Government of Cambodia (RGC). Among non-rice crops, maize and soybean are particularly important. With Thailand and Vietnam representing the main external markets, both have significant export potential (after rubber and rice). In response, the Australian Centre for International Agricultural Research (ACIAR) commissioned two complementary studies. They include ASEM/2001/109 (entitled *Farming Systems Research for Crop Diversification in Cambodia and Australia*), which was focussed on agronomic (pre-harvest) activities, and the other, the one reported on here (ASEM/2003/012) focussed on marketing (post-harvest) activities.

The marketing systems for maize and soybeans in Cambodia are largely informal and poorly developed. Constraints include post-harvest systems inefficiency, inadequate information flows, high transport costs and lack of external market linkages. Hence, ASEM/2003/012 was aimed at improving the marketing system for maize and soybeans in Cambodia and thereby improving the well-being of rural households and other participants in the non-rice cropping supply chain. The original project ran from July 2004 to December 2006 and was subsequently extended to April 2008 to work on 3 areas of importance arising from the original project: (a) evaluation of the Ta Ong Soybean Association (b) feasibility analysis of the Agricultural Marketing Development Zone (c) development of an Electronic Marketing Communication System based on short text messaging systems (SMS).

In addition to the traders and farmer groups who were involved, key partners were:

- John Spriggs and Robert Fitzgerald, *University of Canberra*
- Un Buntha and Mam Many, *Domestic Trade Division, Ministry of Commerce, RGC*
- Nou Keosothea, *Cambodia Development Resource Institute*
- Yi Bunhak, *Department of Agro-Industry, MAFF, RGC*

Following the end of the project, a further project was initiated (ASEM 2006/130) that extended the work of ASEM 2003/012 as part of an integrated production-marketing research study of maize and soybeans in western Cambodia.

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## 4 Aims & Objectives

The general aims of the original project were:

- mapping the existing (formal and informal) marketing systems for maize and soybeans and its institutional environment (governmental and infrastructural), to identify the constraints and capacities for change and to evaluate the potential for improvement
- facilitating a process of change within these marketing systems
- enhancing the capacity of relevant institutions in Cambodia.

The project extension built on these aims and focussed on the following objectives:

*Objective 1: To document and evaluate the experience of the Ta Ong Soybean Association (TSA) in becoming a successful micro-credit institution.*

*Objective 2: To complete the feasibility analysis of the Agricultural Marketing Development Zone (AMDZ) for Eastern Cambodia, refine it through discussions with potential stakeholders (including government, private sector and donor agencies) and attempt to progress the idea towards implementation.*

*Objective 3: To develop an electronic marketing communication system (EMCS) for Western Cambodia based on SMS (mobile phone) technology combined with a dynamic internet website.*

## 5 Methodology

The general approach taken in this project has been participatory action research (PAR), which includes both a research phase and an action (implementation) phase. In this action research process, participants are taken to be representatives of the various types of participants in the relevant value chains. These include farmers, village collectors, district traders, inter-provincial traders, exporters, importers, and relevant government officers.

As a result of initial research, it was decided to divide the country into two parts: eastern and western Cambodia. This was because we found substantial differences between these regions in the types of crops grown, the nature of the dominant markets involved (i.e. Vietnam and Thailand), and the quality of the production-marketing systems. In particular, the production-marketing system in eastern Cambodia was found to be static and fragmented with relatively old marketing infrastructure and less fertile land, while western Cambodia was found to have highly fertile land, with dynamic and well-organized marketing infrastructure through the development of 5 large grain drying/storage operations throughout the growing area.

The original project aimed to bring about positive socio-economic change in the Cambodian soybean and maize marketing systems through the use of community-based decision-making where, for each marketing system, the community of interest includes the various participants of that marketing system. It involved three main activities: (i) a macro- and a micro-mapping of the two marketing systems to gain an understanding of the major constraints; (ii) the facilitation of a change process through collaborative problem-solving involving representatives of the various participants of the two marketing systems; and (iii) capacity-building.

### *Mapping the Marketing Systems for Maize and Soybeans in Cambodia*

In 2004-05 the major activity involved mapping the soybean marketing system in the eastern Cambodian catchment area. This is the area that primarily supplies soybeans to South Vietnam. For this research activity it was decided to form two research teams. Team A was to focus on the macro-mapping exercise (looking at the big picture) while Team B was to focus on the micro-mapping exercise (looking at the marketing system from the perspective of an individual farmer association). Team B was also asked to prepare a report on the market for Cambodian soybeans from the perspective of buyers in South Vietnam. Three reports were prepared by the two research teams on these research activities and these formed the basic data set that were presented at a workshop in Phnom Penh on July 28-29, 2005. This workshop was attended by representatives of the various types of participants in the soybean marketing system for the east Cambodian catchment area.

### *Facilitating a process of change*

In 2004-05 the main activity was a stakeholder workshop at which the problems/issues associated with marketing soybeans from the east Cambodian catchment area were discussed and an action plan developed. An additional activity was undertaken by Team A (micro-mapping) to assist the Ta Ong Soybean Association (TSA) to become registered so it could operate as a micro-finance organization to administer low-interest loans to its members. The project team allocated some funds from our ACIAR project to permit the executive of TSA to travel to Vietnam to examine the market requirements, to explore alternative models for dryers/silos and to meet with potential buyers with whom to partner. The first 3 papers of the mapping research (described in preceding section) were used as input into a (second) stakeholder workshop which was held in June 2006 in Battambang. The workshop has resulted in an action plan for the development of the maize and soybean marketing system in western Cambodia (where the first step is the development of a silo association).



## Capacity-building

In 2004-05 our main concern was with building the capacity of the Cambodian-based members of the research team. This was primarily through a 2-week research workshop held at the start of the project. However, we also provided support during their research activities (e.g. with developing survey questions) and also with their slide presentations for the first workshop. With regard to this workshop, we decided that the workshop should be held in the Khmer language. Hence we provided additional intensive training in workshop facilitation as the Cambodian-based members of the research team needed to play pivotal roles at the workshop (as lead facilitator, table facilitators and recorder). The process used at this workshop was designed to build the capacity of stakeholders to bring about collaborative change. In 2006-07 Professors Chambers and Spriggs continued to develop their role in this project as that of research coaches to the Cambodian-based members of the research team. Under this research approach, and building on the research training in the first year, the Cambodian-based members of the research team were assigned different sub-projects (i.e. different action and research activities) according to their strengths. Then each was supported to complete their sub-projects, subject to the constraints of their environment. In this way, considerable attention was placed on building their capacity for undertaking action research activities that would be sustainable after the project ends. An important outcome of the research workshop was the development of a research action plan by the research team. The two major decisions made during this workshop and reflected in the research action plan were:

That the research team should focus only on the market catchment (i.e. production) area in eastern Cambodia during 2005, leaving a focus on the market catchment area in western Cambodia until the following year. The eastern catchment area produces primarily soybeans for the South Vietnam market, while the western catchment area produces both maize and soybeans for the Thai market.

That the mapping of the marketing systems should contain both a macro component (looking from the system-wide perspective) and a micro component (looking from the perspective of a particular farmer association trying to develop group marketing). To this end, we divided the four Cambodia-based researchers into two teams: Team A (macro component) and Team B (micro component).

In February 2005, Professor Spriggs visited the two teams to check on progress. Both teams had produced a preliminary report on their research activities. Team A reported that the most important issues for the eastern catchment area appeared to be: lack of cheap credit, farmers not organized, lack of extension/training, lack of market information, not enough good quality seed and high fuel cost (due to the high fuel tax). Team B reported on their survey of the Ta Ong Soybean Association in Chamcarleu, Kampong Cham. This Association was one of only two such Associations in what is the centre of soybean growing in the eastern catchment area. The main issues for this Association were the lack of good quality seed and the lack of low-interest credit. The Association had attempted, in the past, to access a government-run low-interest credit program but was defeated by the amount of "red tape" involved. Team B undertook to work with the Association to overcome the bureaucratic hurdles and to write up their experience in this as a case study. Team B also agreed to undertake a survey of buyers of Cambodian soybeans in South Vietnam.

In May 2005, Professors Spriggs and Chambers visited the two teams to review progress of the research activities and to plan for the upcoming stakeholder workshop (July 2005) for the eastern catchment area. During this visit, the research team agreed that the workshop would be conducted in Khmer with one of the Cambodian-based members of the research team acting as lead facilitator (Sothea), and the others acting as workshop recorder or table facilitators.

The ensuing workshop began with three presentations:

- The Marketing System for Cambodian Soybeans (Team A)

- The Market for Cambodian Soybeans in South Vietnam (Team B)
- Strengthening the Ta Ong Soybean Association (Team B)

It then proceeded through a process of large and small group discussion to develop a collaboratively-based action plan for socio-economic change for the eastern catchment area. Following the workshop, the focus of this action research project was to shift from research to action as the research team attempted to facilitate implementation of the action plan during 2005-06.

This involved two initiatives:

- a macro initiative – writing a concept paper on the idea for an agricultural market development zone for eastern Cambodia and presenting this to a panel of government policy decision-makers (June 2006). The panel gave a strong endorsement to the concept and was further developed in the form of a full feasibility analysis
- a micro initiative – develop a successful soybean marketing association in eastern Cambodia. The project team worked with the Ta Ong soybean Association (TSA) in Kampong Cham province.

During 2005-06, the project team also began the research phase in western Cambodia (involving mapping research on the marketing systems for maize and soybeans in this region). At the end of the year (June 2006), the project team held a stakeholder workshop in western Cambodia to present the research findings and also to gain an understanding of what the stakeholders considered to be the major issues facing them. This stakeholder workshop represents the main transition point from **research** to **action**. According to general consensus of the workshop participants, the major issues identified were: (1) existence of border fees; (2) lack of access to good quality market information; and (3) lack of access to low-interest credit. The main action advocated by the workshop participants was the development of a silo association comprising the 4 new silos of western Cambodia (plus the fifth one when it was built). Such an association was viewed as an important catalyst for positive change on the major issues confronting the industry. Hence, the project team focused on facilitating the development of this association.

As discussed in the 2004-05 annual report, it was planned to undertake a study of the maize marketing system in the first year, followed by soybeans in the second year. However, the order was reversed and so the (eastern Cambodian) soybean marketing system was studied in the first year, while the (western Cambodian) maize marketing system was studied in the second year. As a result of the above reversal, the scheduled field trip to Thailand in 2005 was replaced by a field trip to Vietnam which took place in 2006. As a result of a mapping of the maize marketing system in western Cambodia it was decided to undertake a pilot sub-project (led by Dr. Rob Fitzgerald, University of Canberra) on the development of an electronic marketing communication system (EMCS) for western Cambodia using mobile phone SMS text messaging linked to a computer database.

## 6 Achievements against objectives and outputs/milestones for project extension

**Objective 1: To document and evaluate the experience of the Ta Ong Soybean Association (TSA) in becoming a successful micro-credit institution**

no.	Activity	outputs/ milestones	completion date	comments
1.1	Document the steps involved in transforming TSA to a functioning micro-credit institution	TSA report draft	November 2007	Steve Gniel, MBA student at ANU was engaged to undertake this study. He made 2 trips to Cambodia and wrote a report.
1.2	Evaluate the experience of the TSA as a micro-credit	TSA evaluation report	April 2008	Steve Gniel returned to Cambodia in February 2008 to undertake the evaluation of the TSA experience.

PC = Partner Country, A = Australia

**Objective 2: To complete the feasibility analysis of the Agricultural Marketing Development Zone (AMDZ) for Eastern Cambodia, refine it through discussions with potential stakeholders (including government, private sector and donor agencies) and attempt to progress the idea towards implementation**

no.	activity	outputs/ milestones	completion date	comments
2.1	Complete the feasibility analysis of the AMDZ	Feasibility analysis report draft	March 2007	The feasibility analysis revealed that the AMDZ was likely to be very worthwhile in meeting the development objectives of the RGC
2.2	Stakeholder workshop to discuss the feasibility analysis	Workshop and revised feasibility analysis report	March 2007	Workshop was held in Phnom Penh in March 2007
2.3	Establish stakeholder implementation committee to progress the concept	Implementation committee established	March 2007	It was agreed in March 2007 that the Ministry of Commerce should take ownership of the proposal through the Undersecretary of State for Commerce (H.E. Mao Thora). A small implementation committee comprising H.E. Mao Thora, Un Buntha and Professor Spriggs was formed. Subsequently H.E. Mao Thora asked Prof. Spriggs to make a presentation to the Minister of Commerce (H.E. Cham Prasidh) to obtain his approval. Professor Spriggs presented this proposal to a meeting of donors in late 2007
2.4	Final report on the AMDZ	Final report produced	April 2008	

PC = Partner Country, A = Australia

**Objective 3: To develop an electronic marketing communication system (EMCS) for Western Cambodia based on SMS (mobile phone) technology combined with a dynamic internet website**

no.	activity	outputs/ milestones	completion date	comments
3.1	Review of previous projects	Initial review of previous projects related to the EMCS		These included: (i) the KwaZulu Project in Natal, South Africa; (ii) the Pinoy Farmers Project in the Philippines; and (iii) the Kiwanja Project
3.2	Expand pilot EMCS project	Workshop 1 held in Battambang	June 2006	Gained consensus support for EMCS
		SMS server as part of pilot project was installed	November 2006	Basic functionality of system established
		Workshop 2 held in Phnom Penh	August 2007	Identified user's information needs and sms skills and capabilities
		Workshop 3 held in Pailin and Kam Pong Cham	November 2007	Developed price information matrix, workflows and sms templates Un Buntha & Man Many offered regional user training
3.3	Link with Village Phone Operator (VPO) project and CAMIP (Cambodian Agricultural Market Information Project)	Presentation at Meeting of Marketing Information Projects in Cambodia organized by Pieter Ypma (director of CAMIP)	January 2007	The VPO project (of GTZ) has unfortunately not gone ahead. However, we have established close links with CAMIP (through conference calls and in-person discussions). CAMIP is focusing on developing high quality agricultural market information in Cambodia and they see our EMCS as a potentially useful delivery platform for this market information
3.4	Develop content management system (CMS) and link with EMCS	A prototype was developed	April 2008	A prototype was developed using the Drupal Content Management system
			April 2008	Work started on this using Drupal that was further extended by CAMIP
3.5	Evaluate the resulting EMCS	Evaluation of EMCS completed	April 2008	Mr Steve Gneil undertook an evaluation of the EMCS Mr Nou Keosothea is expecting to use this as a case study for his PhD research on "New Approaches to the Evaluation of Development Programs in Cambodia."
3.6	Final report on EMCS	Final reported completed	May 2008	Mr Steve Gneil completed a report on the evaluation of the EMCS

PC = Partner Country, A = Australia

## 7 Key results and discussion

The project began with preliminary mapping of the Cambodian maize and soybean marketing system. The result of this preliminary mapping was to divide the country into two parts: eastern Cambodia and western Cambodia because of significant differences in: (a) the type of crops grown (more soybeans in the east, more maize in the west); (b) the nature of the production-marketing systems (old established system in the east with less fertile land and a fragmented and antiquated marketing system while in the west the production-marketing system was relatively new and dynamic with highly fertile land centred around 5 large grain drying/storage operations); and (c) markets (eastern crops tended to move to Vietnam, while western crops tended to move to Thailand).

The general approach taken in this project includes both a research phase and an action (implementation) phase. Participants are taken to be representatives of the various types of participants in the relevant value chains. These include farmers, village collectors, district traders, interprovincial traders, exporters, importers, and relevant government officers.

It was decided to divide the country into eastern and western Cambodia because we found substantial differences between these regions in the types of crops grown, the nature of the dominant markets involved (i.e. Vietnam and Thailand), and the quality of the production-marketing systems. The production-marketing system in eastern Cambodia was found to be static and fragmented with relatively old marketing infrastructure and less fertile land, while western Cambodia was found to have highly fertile land, with dynamic and well-organized marketing infrastructure through the development of five large grain drying/storage operations throughout the growing area.

Following on from the research phase which included the use of participatory workshops in eastern Cambodia and western Cambodia, we developed action plans that we believe are well-suited to the differing regions. The action plans involved three major initiatives; two in eastern Cambodia and one in western Cambodia.

### **Major Initiatives (eastern Cambodia)**

In eastern Cambodia, we took both a micro and a macro approach. The micro approach was to work with a single farmer association to see what we could do to help this association become more successful in marketing crops on behalf of its members. The macro approach was to explore the potential for developing an Agriculture Marketing Development Zone (AMDZ) for eastern Cambodia.

With respect to the micro approach, we selected a farmer association based at the centre of the soybean growing region of eastern Cambodia. That was the Ta Ong Soybean Association (TSA). When we first met with the executive of the TSA, it was a dispirited organization comprising 14 members that saw itself as having no function. We began our intervention by helping it to obtain access to low-interest credit from the Rural Development Bank. This was achieved through it being granted status as a micro-credit institution becoming the first to achieve this status in the country. It has since received two tranches of credit from the RDB – an initial tranche of \$US30,000 and a subsequent one of \$US100,000. Membership of the TSA has risen from 14 to 260 and it has so far made loans to about 1,000 farmers. We have since undertaken other initiatives with the TSA in response to their perceived needs. These included arranging and funding a field trip for the TSA executive to meet potential buyers and processors of soybeans in Vietnam and undertaking a benefit-cost analysis to help the TSA make an investment decision on the purchase of a grain dryer-storage facility.

This case study of the TSA provides valuable information on how some of the challenges of establishing farmer associations as microfinance institutions in rural Cambodia can be

overcome. The mechanisms and processes implemented by the TSA to mitigate the risks associated with lending in this environment have resulted in impressive loan repayment rates. The use of Village and Commune Heads, existing institutions and authorities provides the TSA with valuable information about prospective borrowers and assists with monitoring and enforcement. The TSA's internal screening process mirrors best practice rural financing in its use of character based assessments in addition to technical criteria and its insistence on assessing all sources of income when determining loan repayment capacity. However, the TSA model is an extremely complex process requiring high level skills and experience to put into practice some of the necessary mechanisms for risk mitigation in this environment. The TSA has also managed to service a niche market in the financial services sector in their immediate environment by providing products and services that best meet the needs of their clients. The TSA's interest-only monthly repayments and acceptance of early repayments of loan principal are particularly well suited to the predominantly agriculture based activities of its clients.

With respect to the macro approach, the action plan first called for the development of a concept paper for improving the marketing of soybeans and maize in eastern Cambodia. This paper called for an overall revamping of the marketing system for maize and soybeans in eastern Cambodia including both the development of new marketing infrastructure and the introduction of technical assistance right along the value chains. In concrete terms we called for the establishment of an Agricultural Wholesale Market (AWM) and inland export port on the Mekong River in Kampong Cham as well as the establishment of an Agricultural Market Development Zone (AMDZ), which would be the base for the technical assistance program. The AMDZ would also house government inspection personnel who would inspect and certify products for export. The concept paper was presented to a meeting of senior government officers for their approval and advice. The consensus was that we should proceed to a feasibility analysis, which we subsequently did. As part of the feasibility analysis we selected potential sites for the AWM, inland port and AMDZ and engaged a consulting engineer to draw up plans for the facilities and give an estimate of the construction cost. The feasibility analysis was completed in March 2007 and was presented to a meeting of senior government officials (national and provincial). The meeting, chaired by the Under-Secretary of State for Commerce gave strong endorsement for the proposal and agreed that the Ministry of Commerce would take the lead in attempting to pursue this initiative to funding and implementation with the assistance of Professor Spriggs. Following this meeting, Professor Spriggs made a presentation of the proposal to Senior Minister H.E. Cham Prasidh, Minister of Commerce who made further suggestions for improving the proposal including integrating it with the Ministry of Commerce's Trade Sector-wide Approach. H.E. invited Professor Spriggs to present a revised proposal to the development partners (donors) at their meeting in November 2007. At the meeting, the proposal was strongly endorsed and it was generally agreed that, in the first instance, we should approach AusAID for possible funding. An approach has been made to AusAID in Cambodia for possible funding. While there was considerable interest, there has been no commitment as AusAID has indicated its impending Cambodian program is likely to be focussed on different commodities in different provinces to where our macro initiative in eastern Cambodia is proposed.

The key development problem addressed by this feasibility analysis was that Cambodia had a comparative advantage over Thailand and Vietnam in the production of many agricultural commodities including maize, soybeans and cassava. The broad concept of the AMDZ was to define a region in which Cambodia has an actual or potential comparative advantage in the commercial production of one or more agricultural commodities and to facilitate the development of the whole supply chain for these commodities within the AMDZ (e.g. from the supply of production inputs to the marketing of the commodity or value-added products). We found that Eastern Cambodia had the potential to considerably expand the production and export of non-rice crops (i.e. soybeans, maize and cassava) if supply chain constraints could be overcome. Using an

integrated supply chain approach we proposed the establishment of an Agricultural Marketing Development Zone (AMDZ) within which there would be an Agricultural Marketing Development Centre (AMDC) and an Agricultural Wholesale Market (AWM). The costs of the project from the perspective of the funding agency are substantial. Initial costs are estimated to be in the vicinity of \$4.5 million with ongoing costs of \$0.8 million per year for the life of the project (20 years). The potential benefits for rural households in eastern Cambodia are even more substantial. Over the 20 year period, these are estimated to be between \$68 to \$120 million. While the economics of this project appear to be sound, it could succeed or fail depending on the quality of the institutional arrangements. It will be essential to give careful consideration to encouraging competitive behaviour by the private operator(s) of the AWM and preventing corrupt practices from intruding at all stages of project development and/or operation.

### ***Major Initiative (western Cambodia)***

In western Cambodia, our background research and a participatory workshop revealed that the major concerns of value chain participants (along with credit concerns) were: (a) lack of access to markets; and (b) lack of market information. These are the result of poor communications between different levels of the supply chain. At a Battambang workshop of participants, we proposed to address this issue through the development of an Electronic Marketing Communications System (EMCS) based on the use of SMS technology and mobile phones. The idea of using SMS to communicate is workable in Cambodia where the country enjoys 75 % coverage of mobile phones and 85% coverage of SMS. There was enthusiastic and consensus support at the workshop for a pilot project on the EMCS to be introduced. As a result, and under the direction of Dr. Rob Fitzgerald, we undertook a pilot project involving traders in Western Cambodia as well as the Battambang Chamber of Commerce to receive price information via SMS. To make this work, we purchased and established an SMS server at the Price Office, Ministry of Commerce where it is being maintained by Ms. Mam Many. Once we established a basic proof of concept we made plans to move to a larger-scale implementation of the EMCS under the extension project. Dr. Fitzgerald held a second workshop in Phnom Penh in August 2007 with traders, producers, government and local university representatives to initiate the design and development of the information structure for the EMCS. This workshop addressed: (a) identifying basic stakeholder information including regions, supply chain roles, language capabilities and SMS skill levels (self assessed); (b) determining stakeholder needs regarding market information (What price information do you need?; How could this be conveyed via alphanumeric code?; How will we link buyers and sellers?; What farm/production information do you want?); and (c) obtaining stakeholder views on the nature of the training and extension work that should be considered. The basic technical overview of the EMCS is provided in Figure 1.

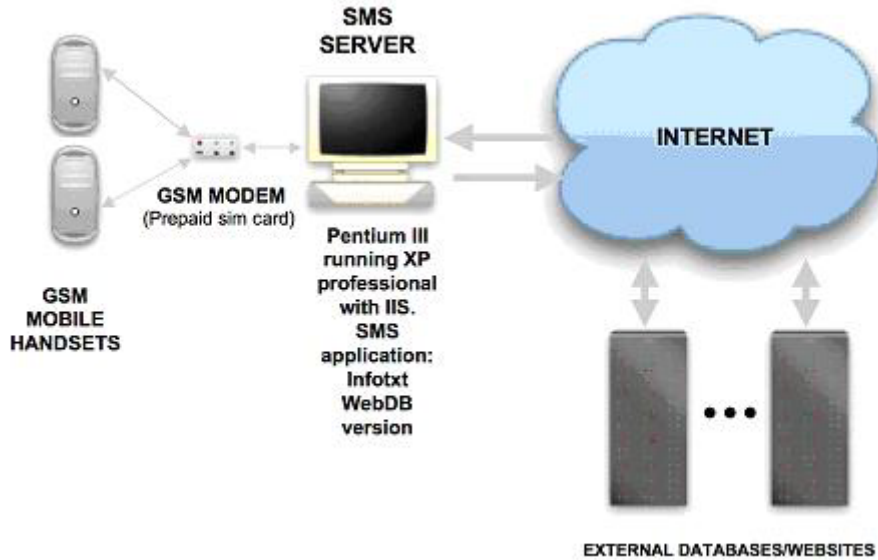


Figure 1: Electronic Marketing Communication System – Technical overview

Since the establishment of the EMCS seventy individuals have been added to the user list including farmers, traders, silo owners and members of chambers of commerce in four Cambodian provinces as well as a number of Ministry of Commerce and Provincial Department of Commerce staff. Most of the participants in EMCS training and information workshops had not used SMS technology previously although many were familiar with the basic operation of mobile phones. However, as the system is based on keywords with much of the information received as numbers, participants believed that through some general training on using SMS technology combined with specific training on the EMCS, they could effectively use such a system. Observations of training sessions and workshops in August and November 2007 supported this belief.

Data from the EMCS suggest that value chain participants and administrators are not only interested in the idea of the system but are also keen to use it. There were almost 1000 text messages sent via the EMCS from August, 2007 to February, 2008. This included the development of 39 keywords used to retrieve specific information from the database. Over 35% of messages sent via the EMCS during this period provided price information, while currency exchange (18%) and information on weather (8%) were also popular with users. The remainder of the messages sent from the EMCS server related to requests for general help information such as welcome messages, keywords list and value chain participant contact numbers. A detailed break down of messages sent can be seen in the Figure 2 below.



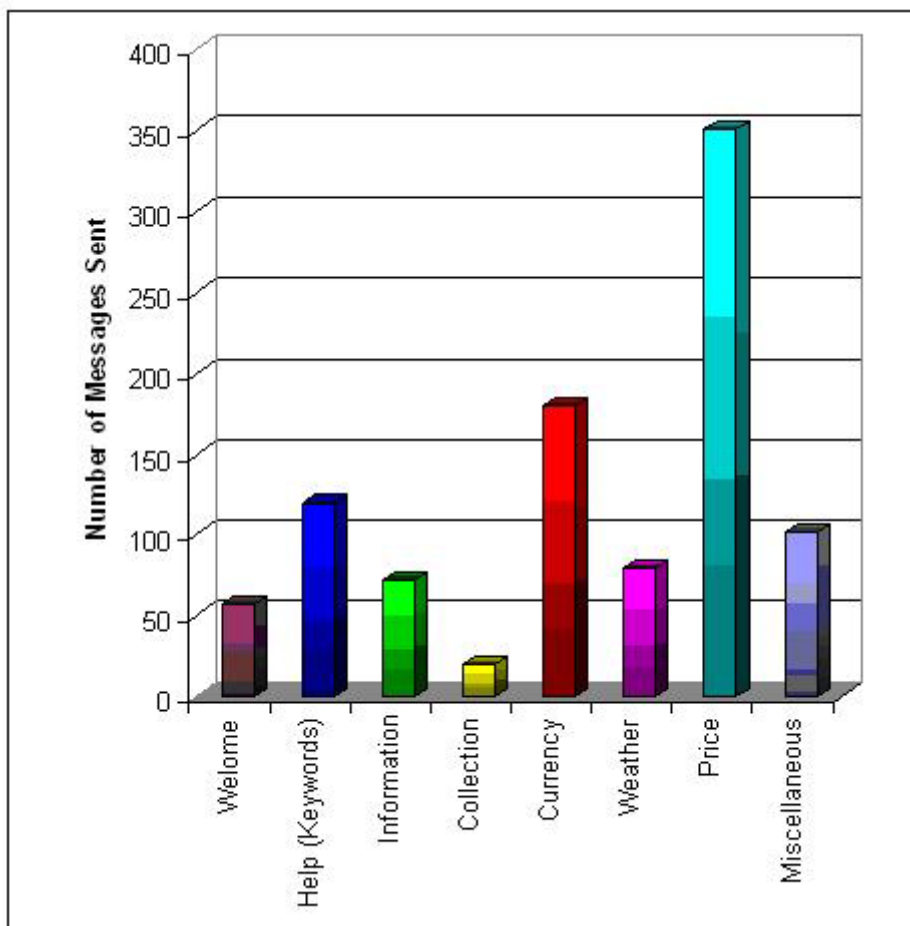


Figure 2: Categories of messages sent via the EMCS from August 2007 to February 2008

Towards the end of 2007, Ms Man Many, MOC’s main price information collector, supplemented her telephone conversation-based price collection strategies with SMS - ‘Hello, Charya give me price of the maize, soybean, cassava. Please. Thankyou. Many’ (EMCS message, October, 2007). Comments from other stakeholders provided further evidence in support of the SMS based system:

- ‘The system [EMCS] is better than fax as fax is expensive, everyone has a phone so can access what [information] they need’ (Chairman, Malai Trading Company, Malai discussion group, 2008).
- ‘Currently, to access market information we call traders by phone, this takes a lot of time to get through and then discuss, it is expensive’ (Trader, Pailin discussion group, 2008).
- ‘Farmers will not pay to access the information’ (Interview with Deputy Chief, PDOC, Battambang, 2008).
- ‘Community of farmers, one person, perhaps the chief, can disseminate to others’ (Interview with Deputy Chief, PDOC, Battambang, 2008).
- ‘We can learn to use the [EMCS] codes as long as the instructions are in Khmer’ (Trader, Malai discussion group, 2008).

Interest in the project led to an invitation to Dr Robert Fitzgerald and Professor John Spriggs to present to the sector-wide Market Information Group chaired by Pieter Ypma from the Cambodia Agricultural Market Information Project (CAMIP). This presentation and meeting was the beginning of successful collaboration between ACIAR and CAMIP project team members. The EMCS server was used to trial the retrieval of market information from the Cambodia Agricultural Market Information System (CAMIS) database

administered by CAMIP. This was beneficial to both projects. For the ACIAR project it provided the opportunity to test accessing market information from a remote database via the EMCS server, while for the CAMIP project it provided another means of dissemination for the information contained on their database. This relationship will continue as part of the new ACIAR project.

Responsibility for the server and the data gathering and data inputting became a major issue towards the end of the project. Due to restructuring of the Ministry of Commerce, the EMCS server was moved a number of times and responsibility for provision of price information and operation of the server was not clear. Two key project personnel, Mr Un Buntha and Ms Man Many, were both promoted towards the end of the project out of the trade promotion area. Despite providing training to the Ministry of Commerce staff assuming responsibility for the EMCS, the system was not operational for a period of time. Moving the server also disrupted remote access to the server for administrators as the new locations did not have a Public IP address. This situation resulted in a letter being presented to the Ministry of Commerce outlining a strategy for the ongoing management and future directions for the EMCS server.

The key message from the EMCS work is that there is a great deal of excitement about the potential for SMS technology to provide marketing information to value chain participants in rural Cambodia. The 85% SMS coverage in Cambodia provides scope to explore use of this technology to assist in real-time communication of market information. The accessibility of mobile phones and the low cost of sending text messages combined with a simple design, such as an Electronic Marketing Communication System (EMCS), appeals to participants in a number of agricultural product value chains. The EMCS has demonstrated that SMS technology using mobile phones and simple computer hardware and software has the potential to help overcome poor communications between value chain participants in rural Cambodia. The development of a working model of the EMCS highlighted a number of technical issues that need to be addressed to successfully expand both outreach and information of the EMCS. However, perhaps the greatest challenge is to institute procedures and instill responsibility for maintaining quality marketing and other information on the system. One of the most encouraging aspects of the EMCS is the excitement generated amongst farmers, traders, ministry officials, silo owners and potential development partners having seen a working model using this technology. The EMCS is now at an important stage in its development, with the challenge being to use this excitement to move from a trial model to a fully fledged operating model that exhibits long term sustainability.

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## 8 Impacts

The original project (July 2004 to December 2006) was primarily concerned with the **research** phase of this action research project. The project extension (January 2007 to April 2008) is primarily concerned with the **action** phase. Based on the research undertaken as part of the original project, three major initiatives evolved and were singled out for action in the Project Extension. Thus, we expect the initiatives to have significant community impacts, but also to have some scientific and capacity impacts, particularly with respect to the EMCS initiative.

The collection of data on the mapping of the soybean marketing system in the catchment area of eastern Cambodia as included in (a) the macro-mapping paper; (b) the micro-mapping paper on the Ta Ong Soybean Development Association; and (c) the paper on the market for soybeans in South Vietnam

The training of Cambodia-based researchers in the ideas and methods of marketing, supply chain management, critical action research and workshop facilitation.

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### 8.1 Scientific impacts – now and in 5 years

The project team wrote a research paper on the incidence of border fees in western Cambodia and how this significantly and adversely affects farmer net income. It was presented at a stakeholder workshop and at a seminar at CDRI (Cambodia Development Resource Institute).

1. We have been invited to submit a paper detailing our approach to developing the EMCS to the *International Journal of Web-based Communities* for their special issue on Mobile technologies.
2. The EMCS pilot project proved highly successful and its impact has stimulated further work in a follow-up ACIAR project (ASEM/2006/130) that will further develop the use of SMS in both the marketing and production areas.
3. The methodology of participatory action research (PAR) has been taken up as a core research approach in ASEM/2006/130.

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### 8.2 Capacity impacts – now and in 5 years

1. We assigned the various members of the Cambodian research team to the three different initiatives so they are building their capacity to undertake action research in these 3 different areas: Un Buntha (AMDZ, EMCS), Nou Keosothea (EMCS, AMDZ), Yi Bunhak (TSA), Mam Many (EMCS). They have been teamed up with Australian counterparts as follows; Steve Gniel (TSA), John Spriggs (AMDZ) and Rob Fitzgerald (EMCS).
2. We provided assistance for the executive of the TSA to increase their capacity to operate a micro-credit/marketing association. We provided for basic training in bookkeeping as well as providing a field trip to Vietnam to talk to buyers and wholesalers of soybeans with a view to developing a marketing capacity as well as investigating the potential for investing in a grain drying/storage facility.
3. We investigated the training requirements for supply chain participants to use the EMCS and offered training in November 2007.
4. One of our project team members (Mr Nou Keosothea) was awarded a John Allwright fellowship to undertake PhD studies at the University of Canberra. He began his program in July 2007 under the supervision of Dr. Rob Fitzgerald and Professor John

Spriggs and is doing his research on New Approaches to the Evaluation of Development Programs in Cambodia.

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## 8.3 Community impacts – now and in 5 years

We expect all 3 initiatives to have community impacts

### 8.3.1 Economic impacts

1. The initiative to develop the TSA as a micro-credit institution has had a significant impact on farmers in the Ta Ong area. This is evidenced by the fact that this program is currently extending credit to about 1000 farmers. It provides more options for farmers at harvest time as they are not locked into selling their crop to the village collector (to repay loans) when prices tend to be at their lowest level.
2. The initiative to develop the AMDZ, if successful, will have a significant impact on the agricultural production-marketing system for upland crops in eastern Cambodia. It will provide farmers with an alternative market outlet (including an inland export port) for their produce and it will provide technical assistance right along the value chain as appropriate. An estimate of the discounted net benefits of this initiative over the next 20 years is \$94 million for an outlay of less than \$US 10 million.
3. The initiative to develop an EMCS is expected to have a significant socio-economic impact by reducing price dispersion and reducing the asymmetry of information (some supply chain participants benefit unduly because of better access to market information). This is particularly expected to benefit those supply chain participants with the poorest access to market information (i.e. farmers).

### 8.3.2 Social impacts

1. The TSA is a social organization as well as an economic entity and so it is expected there will be significant social benefits to poor rural households. These are addressed in the evaluation report.
2. The EMCS will provide a potential for 2-way information communication by SMS. Although primarily intended to support and expand market information communication the project offers an opportunity to explore the role ICT (Information and Communications Technologies) could play in supporting a user-contributed information and knowledge system. In fact, we also expect the EMCS to be used as a social networking tool to build and maintain marketing and community relationships. This has been the experience of other similar initiatives in other developing countries such as the Philippines.

### 8.3.3 Environmental impacts

None

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## 8.4 Communication and dissemination activities

The project produced a number of detailed reports including:

**Appendix A** – Feasibility Analysis: Agricultural Marketing Development Zone for Eastern Cambodia.

**Appendix B** – Microfinance in Rural Cambodia: The Case of the Ta Ong Soybean Development Association.

**Appendix C** – The Innovative Use Of SMS Technology To Enhance Marketing Information Systems In Cambodia: An Electronic Marketing Communication System.

### **Training**

In 2004-05 we held a two-week research workshop at the commencement of the project in Phnom Penh for the Cambodian-based members of the research team. Topics covered included marketing, supply chain management, critical action research and workshop facilitation using the creative problem solving methodology

In 2007 Mr Nou Keosothea was awarded a John Allwright scholarship and is currently at our university receiving training for his PhD. He is being co-supervised by John Spriggs and Rob Fitzgerald and his area of study is “New Approaches to the Evaluation of Development Programs in Cambodia.”

In November 2007 Mr Un Buntha conducted some basic training activities in conjunction with the implementation phase of the Electronic Marketing Communication System.

### **Links to other donor activities**

The project established a number of links to other donor activities. The first project focused on the development of the maize and soybean marketing systems with respect to grower groups (working with AusAID-CAAEP and the participants of the ACIAR-funded agronomy project ASEM 2000/109). The ACIAR team has been working closely with Pieter Ypma and Eric Sommeling from CAMIP. The Cambodia-Canada Agricultural Market Information Project (CAMIP) aims to develop the Cambodian Agricultural Market Information System, CAMIS. The ACIAR project team initially shared ideas about the dissemination of market information and our project to develop a SMS-based market information system. John Spriggs and Rob Fitzgerald presented a number of papers at sector-wide meetings organised by Pieter Ypma. Fitzgerald liaised closely with CAMIP staff around ways of collaborating and we agreed to share SMS models.

As evidence of these links ACIAR’s work on the EMCS and our collaboration with CAMIP was referred to in a July 2007 research report (“A pre-investment feasibility study on ICT solutions for private sector development in the agricultural and fishery sectors”) prepared by Indochina Research Limited for UNDP Cambodia. CAMIS is now trialling the retrieval of market information from their database via SMS using the ACIAR server. The Agricultural Marketing Office of MAFF collects market wholesale price information three times weekly. These prices can be accessed using their website (<http://www.camis-kh.org/>). In the future CAMIS has agreed to give the EMCS team access to their market information database. We expect CAMIP will eventually develop their own SMS server but we continue to share ideas for SMS training and future developments.

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## 9 Conclusions and recommendations

The project's main conclusions and recommendations follow.

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### 9.1 Conclusions

From a methodological perspective, this project was a case study in the use of participatory action research (PAR) in international development. While participatory methods have long been advocated as an approach to sustainable development (because it is people-centred), the reality is that the use of PAR is still dwarfed by the use of top-down positivistic research methods. Our first conclusion then is that at least for our case study, PAR as a research methodology works! It is sensitive to the local context and bottom up (by including local stakeholders in the planning and action phases of the action research cycle).

An initial mapping of the marketing system for maize and soybeans in Cambodia led to a division of the marketing system into an eastern and western component. In eastern Cambodia, the PAR approach led us to identify lack of credit as the most pressing issue for farmers. In the PAR tradition, work does not typically stop at issue identification or even at recommendations for improvement. Rather, it proceeds to action (implementation), reflection and then further research. Thus, we moved beyond identifying credit as a critical issue to the development of a microfinance for farmers in eastern Cambodia that would provide low-cost credit to farmers. This was the Ta Ong Soybean Association which we helped to transform from a moribund association of 14 member farmers to a successful microfinance institution with 260 members and which has to date made over 1000 loans.

Apart from specific issues with farm credit, we found a more general set of issues surrounding the antiquated and fragmented nature of the marketing system in eastern Cambodia. This led us to develop a proposal for the development of an Agricultural Marketing Development Zone (AMDZ), which would consist of: (a) an Agricultural Marketing Development Centre; (b) an Agricultural Wholesale market; and (c) an inland port. We worked up a feasibility analysis of this concept (including construction drawings and proposed sites), which showed the benefits would far outweigh the costs. Unfortunately, we have not yet been able to interest a major development partner in funding this worthwhile infrastructure investment.

In western Cambodia, the PAR approach led us to identify poor communications as a critical issue for farmers and other participants in the supply chain. There are no major issues with the marketing infrastructure because the region is new and dynamic and 5 large modern grain handling facilities have been recently built to serve this region. To help improve communications in western Cambodia, we again moved beyond the problem identification and recommendation stages to implementation in the form of a pilot project to look at the viability of an electronic marketing communication system (EMCS) using SMS mobile phone technology.

The EMCS has demonstrated that SMS technology using mobile phones and simple computer hardware and software has the potential to help overcome poor communications between value chain participants in rural Cambodia. The development of a working model of the EMCS highlighted a number of technical issues that need to be addressed to successfully expand both outreach and information of the EMCS. However, perhaps the greatest challenge is to institute procedures and instill responsibility for maintaining quality marketing and other information on the system. One of the most encouraging aspects of the EMCS is the excitement generated amongst farmers, traders, ministry officials, silo owners and potential development partners having seen a working model using this technology. The EMCS is now at an important point in its development,

with the challenge being to use this excitement to move from a trial model to a fully-fledged operating model that exhibits long term sustainability. These ideas are being expanded as part of a new follow up project (ASEM/2006/30) in western Cambodia focused on improving the production and marketing of maize and soybeans.

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## 9.2 Recommendations

The main conclusion from this study was that participatory action research (PAR) is a very viable approach to research that can 'make a difference'. As such the main recommendation from this research is that ACIAR consider ways in which to better integrate the PAR methods into their research programs that directly deal with farm groups (e.g. participatory rural appraisal) or village communities. However, our work shows this also has broader applicability (e.g. in improving agricultural marketing systems).

Our experience with the Ta Ong Soybean Association, shows that there is a strong demand for better forms of farmer credit (lower interest and less onerous conditions) and it is important to learn what we can from this case study, if the model is to be replicated elsewhere. The evaluation report (Appendix 11.2) that examines the lessons learnt from this case study should be invaluable here.

Our experience with the AMDZ feasibility study shows that more effort and resources are needed to explore funding alternatives.

Our experience with the SMS pilot project has already shown a proof of concept and this pilot is being expanded in the follow-up project (ASEM/2006/130) in the following directions:

- Exploring a variety of options for developing market and production information systems
- Exploring the use of single and multiple server models for the expansion of the SMS communication system
- Exploring the use of other SMS server systems including open source solutions such as FrontlineSMS.

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## 10 References

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### 10.1 References cited in report

Nil

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### 10.2 List of publications produced by project

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## **11 Appendixes**

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- 11.1 Appendix A: Feasibility analysis: agricultural market development zone (AMDZ) for eastern Cambodia**
- 11.2 Appendix B: Microfinance in rural Cambodia: the case of the Ta Ong Soybean Development Association**
- 11.3 Appendix C: The innovative use of SMS technology to enhance marketing information systems in Cambodia: an electronic marketing communication system**