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Final report

Project

Impact of migration and off-farm employment on roles of women and appropriate technologies in Asian and Australian mixed farming systems

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2 Executive summary

This research was conducted to gain a better understanding of the changes occurring in rice-based farming systems in Asia (Thailand, Philippines, and Vietnam) and in mixed farming systems in Western Australia as a result of migration and off-farm employment and effects on the changing roles of, and constraints on, women managing farms. This research achieved the following: (1) determined the occurrence and extent of individual migration in major rice-based farming systems in Asia and off-farm work in Australia; (2) assessed the effects of family migration on household income, rice productivity and farm efficiency; (3) using a subsample of households with male migrants, examined the effects of migration on household welfare and changing roles of women at the farm and household level, examined key constraints faced by women heads of farms that are different from male heads, and identified on-farm strategies and technologies that could help overcome these constraints; (4) identified and tested on-farm and local strategies and interventions through participatory approaches; and (5) communicated/disseminated information to

stakeholders, including women, farm households, research institutions, government bodies, and NGOs.

In this research, the focus in Asia was on migration, which was defined as the move or change in residence of family members of farming households, leaving other family members behind. In Australia, the focus was on off-farm and/or nonfarm work. A rapid rural appraisal (RRA) and census of farming households in 48, 46, and 42 villages in Thailand (northeast), the Philippines (Central Luzon and Bicol regions), and Vietnam (North and South) revealed that migration is occurring in both rainfed and irrigated ecosystems. However, migration is higher in rainfed villages than in irrigated villages. Migration is highest in northeast Thailand, wherein 63% and 54% of farming households in rainfed and irrigated villages, respectively, have at least one migrant. Migration is lower in the Philippines and Vietnam (about a quarter of farming households). In Western Australia, approximately 77% of farming families undertake off-farm and/or nonfarm work. This involves either one or more family members working part-time or full-time (but still helping on the farm).

Surveys of farming households with and without migrants were conducted in rainfed and irrigated villages in Thailand (830), the Philippines (813), and Vietnam (831). Results showed that, among the male migrants in Thailand and the Philippines, more sons than principal males/heads of household migrate, leaving elderly parents to manage the farms. This is in contrast to Vietnam, particularly in the north, where more principal males/heads of households than sons leave the villages for employment, leaving principal females/wives with more responsibilities on the farm aside from their household and child care responsibilities. The push factors of rural migration are poverty, low income from rice, small landholdings, lack of jobs, low wages in the villages, and other natural calamities such as drought, floods, Avian flu, pig disease, etc., which affect farm production.

Remittance earnings and nonfarm income comprised a larger share than farm income of the total household income in the Philippines, Thailand, and North Vietnam. The share of remittance earnings to household income ranged from 28% (domestic migration) to 65% (international migration) in the Philippines, 30% to 49% in Thailand, 21% to 35% in South Vietnam, and 46% to 48% in North Vietnam. Nonfarm sources contributed 14% to 26% in Thailand, 19% to 28% in the Philippines, 8% to 10% in South Vietnam, and 10% to 17% in North Vietnam to total annual household income. However, in South Vietnam, rice income comprises about 39% to 57%, which was higher than the share of remittances. Families left behind spent their remittance income on food and daily expenditures, children's education, farm inputs, house repair/construction, and debt payments. Thus, migration is an escape from poverty and a part of livelihood strategy. Although migration has a positive impact on household income in Thailand and the Philippines, there is not much difference between rice yields per hectare between households with and without migrants. These results revealed that families left behind maintained rice yields on a par with those households without migrants, despite the reduction in family labor supply.

However, male migration has a greater effect on gender roles and women's empowerment. In Asian farming systems, there is gender-specificity in the division of labor in rice production and postharvest operations. Men dominate in decisions related to farm operations and crop management. Women are custodians of household cash and dominate in household decisions. However, in Thailand, where more sons and daughters are the migrants, the labor participation of principal females did not change. In the Philippines, labor participation of principal females declined as they were more engaged in nonfarm activities. In cases in which the principal males left, the principal females took over the management of farms. However, in Vietnam, principal females took over in traditional tasks of men such as irrigating the fields, spraying chemicals, and hauling and marketing of farm products. The principal females became the de facto heads of households with increased responsibilities in supervising labor and managing farms aside from their traditional roles in the household, family care, and farm activities. Thus, the principal

females left behind bore the burden of maintaining rice yields. Decision-making authority of wives on specific farm and nonfarm related matters was measured by calculating a women's empowerment index. WEIs of farming households with migrants were higher than those of wives without migrants. Multivariate analysis showed that women become empowered when a household has a migrant, and when they participate actively in farm activities. They are compelled to make "on the spot" decisions, particularly during the peak cropping seasons.

Women have less access to agricultural training and extension activities, new seeds, and technologies (labor saving and cost reducing) that can reduce their work burden and increase the returns of their labor. Several strategies and technologies validated through participatory action research focused on enhancing women's knowledge and skills on all aspects of rice production, with emphasis on improved seed health (Philippines), pest control management practices (Philippines and Vietnam), and use of biofertilizer, control of snails, and use of bio-insecticide (Thailand). In Vietnam, women farmers were given baseline questions to assess their knowledge on pest identification, weed management, cultural practices, how to reduce input use and obtain high yields, etc., to identify training needs and strategies for communicating the technologies. Rice technologies were disseminated through participatory experiments by men and women, the use of extension materials, real samples of pests, and news broadcasts through village loudspeakers as well as participation of local agricultural extension units. In Australia, participants of the Women's Rural Leadership Program (WiRL) were trained on running a farm as a business.

Labor outmigration will continue to increase as long as there are economic incentives for people to move and as long as the ownership and operation of agricultural land are no longer the predominant source of household income. The next generation of farmers who are getting better education no longer find rice farming as a major source of income and they will continue to seek greener pastures. The elderly parents and the women will be left behind to sustain household food security. The challenge is how to upgrade farming from subsistence to commercial farming using the latest advances in science and technology generated by international and national agricultural research institutions. There is a need to enhance the skills of family members left behind, particularly for the women with new skills and knowledge required by modern farming.

This project was coordinated by IRRI in collaboration with Khon Kaen University, Thailand; Cuu Long Rice Research Institute, Vietnam; and Muresk Institute, Curtin University of Technology, Western Australia.

3 Background

Migration is both a cause and a consequence of some major social and economic transformation, particularly in agriculture-based economies in developing countries. It is a dynamic process and encompasses various forms of temporal and geographical mobility (Afsar 2000). Migration in search of better employment opportunities is now an accepted part of the socioeconomic process. Some economic trends and changes in both the international and national arena further stimulate migration and affect the lives of the people engaged in agriculture. Trade liberalization and globalization may provide more rewarding employment opportunities abroad or in cities for rural workers. On the other hand, trade liberalization may lead to an inability of inefficient small farmers to compete with large farmers and the private sector. This compels members of farm households who normally work on the farm to seek off-farm work on either a part-time or semi-permanent basis, thus reducing the participation of family labor on the farm. Migration is also a livelihood strategy of small farmers located in unfavorable rainfed rice environments in Asia, where drought and floods result in household food insecurity. Remittances from domestic and international migration not only help in the sustenance of the family but also

cushion against income erosion, a recurrent threat faced by poorer households (Afsar 2001).

Policymakers are often concerned that outmigration of labor from agriculture might reduce crop production and endanger food security. On the other hand, remittances may facilitate on-farm investment or relieve credit constraints that impeded farmers from buying fertilizer or other key inputs. The unresolved question concerning migration and agricultural production is whether remittance incomes enhance production enough to compensate for the reduced availability of male labor in any specific setting and improve intrahousehold welfare (better education of children, especially for girls, reduction in women's workload, empowerment of women, improved health and nutrition of the vulnerable members of the family, more leisure, access to basic goods and services, etc.). Another unresolved question is how migration increases or decreases vulnerability of agricultural production and food supply to weather, pests, diseases, as well as economic conditions, such as change in prices, job opportunities, etc.

Although there have been numerous studies on migration, what has not received much attention is how this process affects families and their members left behind, especially the women. According to Hugo (1992, cited in FAO 1995), migration has potentially far-reaching effects on household structure by increasing the incidence of female-headed households through sex-selectivity of migration. When farms are not efficient and cannot compete, then one of the recourses of farming households is to increase their participation in nonfarm activities and thus some members of farm families migrate for employment. Migration frequently involves moving to another area of the country (or another country) on a long-term or short-term basis (seasonal or circular).

Concerns about the effects of male labor outmigration in agriculture on the roles and responsibilities of women who are left behind were first raised in the workshop "Strategic research on gender issues in rice-based household economy" funded by the Australian Centre for International Agricultural Research (ACIAR) and IRRI. During this workshop, it was mentioned that it is now well recognized that rural women play crucial roles as food producers and income earners. However, they are not culturally perceived as farmers. Although there has been much talk on the "feminization" of agriculture and increasing female-managed farms because of increasing male migration and participation in nonfarm work, data that support this contention are patchy and anecdotal. The reduction in the supply of male family labor because of participation in nonfarm work and migration will have repercussions on rice productivity and on intrahousehold welfare, particularly on women's roles and responsibilities. However, little is known about the effects of migration on productivity, farming efficiency, and change in gender roles. Given these underlying issues, there is a need to establish the extent and nature of nonfarm work, migration, and its effects on the women who are left behind to manage farms. Understanding these issues will help prioritize research and policy interventions that can improve the well-being of members of farming households, especially for women. Migration is defined here as the movement of men and women across a specific boundary for the purpose of establishing a temporary or permanent residence. Assessment of the impact of male labor migration on rice productivity is likewise important given the significance of rice in Asian economies.

Based on the outputs of this workshop as summarized by Paris (1998), a concept note on "The impact of male migration on female headship in rice-based household economy" was developed by the participants as a starting point in developing a proposal for ACIAR's funding consideration. As a follow-up to the IRRI-ACIAR workshop, and to examine the above-mentioned issues, collaborative work began among IRRI, Curtin University of Technology (Australia), Khon Kaen University (Thailand), and Cantho University (Vietnam) to develop a project proposal to be funded by ACIAR. Australia was also included to provide the perspective of a country that has a strong agricultural sector that has undergone changes in labor patterns and diversified to nonfarm and off-farm work as a result of various factors, including increasing competition and globalization. To provide an

overview of the prevalence of migration of the principal heads of households and its implications for their wives who are left behind to manage the farms, exploratory research using IRRI funds was conducted in South Vietnam, northeast Thailand, and northern Philippines. Thus, ACIAR and IRRI funded a small workshop leading to project development on 22-24 September 1999 in Khon Kaen University in Thailand.

The synthesis of the workshop (Rola-Rubzen and Paris 1999) revealed that, of the respondents in Thailand, the Philippines, and Vietnam, 70%, 57%, and 49%, respectively, had at least one member who migrates because of employment reasons. In such a situation, females assume headship, on a de facto basis, and assume more decisions in the household as well as in agricultural production. After this workshop, the proposed project “Impact of migration and/or off-farm employment on roles of women and appropriate technologies in Asian and Australian mixed farming systems” was submitted for ACIAR funding. This project was aligned with the priorities of the countries involved. In the Philippines, consultation between ACIAR and the Philippines identified the need to increase international competitiveness of Philippine agriculture and the need to improve agricultural productivity to raise rural incomes. Among the agreed-upon priorities listed under ACIAR thematic focus areas are improving the productivity and efficiency of food crops. In the ACIAR consultation with Vietnam, it was agreed that collaborative research between Vietnam and Australia must be relevant to farming systems. The need to enhance farm incomes through agricultural diversification and quality improvements in agricultural products was also recognized. In Thailand, the emphasis is on ensuring that agricultural production is sustainable. The proposed project is in line with these areas. There is considerable divergence among and within developing countries in their engagement in economic activities and the effects on farming. The forces of both national and global markets, economic restructuring, and technology development are increasingly shaping agriculture. Likewise, in Australia, stronger global competition in agricultural markets is also pushing a change in the ways farms are being managed. Economic pressure pushes members of farm households, who normally work on the farm, to seek off-farm work, leaving one partner to look after the farm. This is particularly true in dryland farming areas in Australia, where the joint effects of globalization, economic conditions, and the inherently risk-prone environments of agriculture could have significant ramifications for farming (for example, the recent drought in some areas in Australia). To cope with these factors, a change in the pattern of management and decision-making on farms is often needed. It is increasingly recognized that women are major participants and contributors in the Australian agricultural sector (DPIE 1997). But accompanying this recognition is the concern that women face several constraints. Such barriers could lead to women’s skills being underused and inadequate services or resources made available that could hinder not only the advancement of women but also their potential contribution to the farm business. Understanding the change in the pattern of management and decision-making, identifying their needs, and applying appropriate action research will therefore potentially enhance their contribution as well as improve their welfare and the welfare of their families. Examining both a developing-country case and a developed-country case has certain advantages in that there are lessons to be learned from both situations. This is particularly true in dryland farming situations, which to a certain extent face problems similar to those of risk-prone farmers in Asia.

There is a need to anticipate the likely implications of this trend and to identify intervention strategies for farmers who are left to manage rice-farming systems. The assumption is that the patterns and dynamics of headship in rural areas have implications for both technology development and policy. Understanding the impact of migration on farming is important in improving agricultural productivity and the well-being of farm families in risk-prone farming environments. Collaboration among IRRI, Curtin University of Technology, Khon Kaen University, and the Cuu Long Rice Research Institute will be mutually beneficial for all parties concerned. All institutions involved will directly participate in the project, conduct surveys, test interventions or technologies, meet with stakeholders, etc. Exchange of in-

country experience will provide a global perspective on the impact of migration and therefore a better understanding of the issues and how to better meet this challenge.

In Australia, changing global market conditions and even factors such as drought and salinity are having a big effect on farming communities, families—and women. To cope, members of farming families at times have to find work away from the farm in nearby towns or even farther away. Furthermore, competition in labor supply from other industries such as the mining sector could affect the farm. Who leaves the farm or undertakes off-farm work and who works and manages the farm depends on job availability, opportunity costs of alternative employment, the educational level of men and women, and their skills that are easily marketable. In addition, who gets left behind and whether they've got the skills to operate the farm business is important for the survival and competitiveness of the farm.

The main objective of the Australian study was to better understand the changes occurring in rural agriculture in Australia and the impact on the changing role of women. Specifically, the project determined the occurrence and extent of off-farm work and work-related migration; assessed the impacts on productivity, efficiency, household welfare, and changing roles of women at the household, farm, and local level; and examined key constraints faced by women and identified strategies that could help overcome these constraints.

4 Objectives

The overall goal of this project was to better understand the changes occurring in rural agriculture in Asia in relation to the changing role of women as a result of migration and/or off-farm employment in Australia and the ways in which constraints and needs differ between male and female household heads. In particular, the project identified possible strategies and technologies to help women heads to better manage farms.

The specific objectives of this research were to:

1. Determine the occurrence and extent of work-related migration and off-farm work and female-headed households in major rice-based or mixed farming systems in Vietnam, Thailand, the Philippines, and Australia
2. Assess the effects of family migration/off-farm employment on agricultural productivity, farm efficiency, welfare, and the changing roles of women at the household, farm, and local level
3. Examine the key constraints faced by women heads of farms that are different from male heads and identify on-farm strategies and technologies that could help overcome these constraints
4. Evaluate identified on-farm local strategies and interventions through participatory approaches
5. communicate/disseminate information to stakeholders, including women, farm households, research institutions, government bodies, and NGOs and evaluate the implications of the project findings for promoting systems for institutionalizing gender-sensitive approaches in R & D programs at IRRI and partner institutions.

5 Methodology

This project combined strategic research and participatory action research. The strategic research included quantitative and qualitative approaches through the conduct of secondary data gathering, village and town level information collected through a rapid rural appraisal (RRA), focus group discussions and key informant interviews, reviews of

published and unpublished literature, and case studies and household surveys in Vietnam and Thailand, the Philippines, and Australia.

The impact of migration on household income, rice productivity, farming efficiency, and gender roles was analyzed using household survey data. The framework for understanding these linkages between migration of farming households, livelihood, and household welfare is shown in Appendix Figure 1. Based on this information, a subsample of farming households with male migrants and without migrants was selected to understand the key constraints of women in decision-making and elicit perceptions on the consequences of migration. For the Philippines, Thailand, and Vietnam, women farmer cooperators were involved in the participatory action research component such as in the technology development process (including in the identification and evaluation of the proposed interventions. For Australia, women identified the intervention they needed and actively participated in the design and planning of the delivery of the program.

The projects in Thailand, Vietnam, the Philippines, and Australia were synchronized and run in parallel with each other (Appendix Figure 1). The framework for understanding the methodologies used in achieving each objective is explained below.

Objective 1. Determine the occurrence and extent of work-related migration/off-farm employment and female-headed households in major rice-based or mixed farming systems in Vietnam, Thailand, Philippines, and Australia

Review of literature

Reviews of literature on labor outmigration and off-farm work on agricultural productivity and changing gender roles were conducted separately in Thailand, Vietnam, the Philippines, and Australia. The reviews included studies in migration and/or off-farm work, causes, pull and push factors, and impacts. The reviews also looked at the roles of women on farms and past and current government policies and training and extension programs that support women in agriculture.

Reconnaissance surveys

In Asia, government agricultural offices dealing with rice production, including extension institutions and NGOs, etc., were consulted in the selection of districts and villages for this research. Secondary data and information on the study areas (districts and villages) were gathered. A migrant was defined as an individual (rather than an entire family) that migrates or has left his family for a continuous 3 months or longer. Labor movement within a village and other villages for employment on a daily, weekly, or monthly basis was classified as nonfarm activity.

In Australia, the focus is on off-farm/nonfarm work and work-related migration. The main activities for the reconnaissance work included finding and gathering secondary data, conducting focus group discussions, and searching and reviewing literature on women in agriculture, gender studies, off-farm employment, and farming in general. Secondary data were gathered from government agency databases such as the Australian Bureau of Statistics (ABS) and the Australian Bureau of Agricultural and Resource Economics (ABARE) publications and databases.

Asia

Selection of study sites

Districts, provinces, and villages were selected representing distinct production systems (rainfed, irrigated) and accessibility to labor markets (low, high). The selected study sites in northeast Thailand were villages in Khon Kaen and Udonthani provinces representing both rainfed and irrigated production systems. The selected study sites in the Philippines were

Pangasinan, Bulacan, and Bicol. In Vietnam, villages in North and South Vietnam were included.

Data collection

A standard guide form was developed during the first Planning Workshop held at the International Rice Research Institute (IRRI) in September 2004. To facilitate the data collection from target samples, the guide questions were translated into local language. Data collectors were trained by the research teams in each country. The number of sample villages included in the RRA and number of households included in the census are shown in Table 1. Village-level information included the characteristics of the village, typologies of households (social differentiation), agriculture-related information, proximity to a labor market, occurrence and nature of participation of family members in farm, off-farm, and nonfarm work, and other migration-related information.

Table 1. Sample villages and number of farming households covered during the RRA for the Philippines, Thailand, and Vietnam.

Ecosystem	Thailand	Philippines	Vietnam
Rainfed	21	19	7
Irrigated	27	27	35
Total no. of villages	48	46	42
No. of households covered	6,162	5,913	3,130
Rainfed	3,030	3,062	462
Irrigated	3,132	2,851	2,668

Source of data: Rapid rural appraisal and census of farming households, 2004.

In Australia, focus group discussions (FGDs) were held at six locations in Western Australia: in Bunbury, Dowerin, Esperance, Katanning, Moora, and York. The FGD sites were chosen to give a good representation of women in different regions in WA where farming families are involved in mixed farming systems. The number of participants ranged from 4 to 27 in each of the FGDs. The FGDs were conducted to assess participation in off-farm and nonfarm work and work-related migration in farm households, the nature of the participation of women, and the changing roles of women in the agricultural sector in Western Australia. The FGDs were done only in Western Australia. It was assumed that, although farming systems may differ among the different states, the main conditions and challenges they face (such as declining terms of trade in agriculture, globalization, and greater competition) will be similar, so the views of WA stakeholders will be representative of Australian farmers.

Data analysis

The household migration rate (number of farming households with migrants/total number of farming households in the sample village), male migration rate (number of adult males from farming households/total number of adult males from farming households in the sample village), and female migration rate (number of adult females from farming households/total number of adult females from farming households in the sample village) were computed to establish the incidence and prevalence of outmigration. Qualitative information using PRA tools was collected to gain understanding on the diversity of activities of the household, livelihoods of households in the area, advantages and disadvantages of migration from the perspective of different members of the household with and without migrants, reasons to migrate or not, and social and institutional capital such as social networks and organizations. Both men and women were included in the FGDs.

Objective 2. Assess the effects and impacts of family migration/off-farm employment on agricultural productivity, farm efficiency, welfare, and the changing roles of women at the household, farm, and local level

Asia

Data collection

To achieve this objective, extension household surveys were conducted. Based on the information gathered from RRA and FGDs, research sites for the large-scale household surveys were selected and the questionnaires designed and pretested. In the Asian countries, sites were classified according to contrasting environments, for example, major rice ecosystem (rainfed, irrigated), high/low level of market integration, or near to/far from the labor market in relation to migration. Households with and without migrants among a total of 830, 813, and 831 farming households in Thailand, the Philippines, and Vietnam were included in the surveys (Table 2).

Table 2. Number of households interviewed, sample households.

Ecosystem	**Thailand**		**Philippines**		**Vietnam**	
	With migrants	Without migrants	With migrants	Without migrants	With migrants	Without migrants
Rainfed	175	212	206	206	117	107
Irrigated	240	203	200	201	269	338
Total no. of households	415	415	406	407	386	445

Source: Surveys of farming households, 2005.

The questionnaire contained two parts: Part 1 included farm-household information such as socioeconomic characteristics of the household members (type of household by kinship, age, level of education, sex, relationship to head, marital status, years in farming, major occupation, whether a migrant or not), migration-related information (number of years migrating, frequency of visits to place of origin, number of days migrant stays at home, reasons for migrating, frequency and means of communicating with families left behind, who migrates, premigration work and occupation of migrant in place of destination, source of information and financial support of migrant), perceptions on the impact of outmigration on crop production and livestock, amount of remittances received from male and female migrants, disbursement of remittances from short-term and long-term migrant, sources of household income (sales from crops, livestock, rents, off-farm and nonfarm employment, remittances from migrants, others), amount and value of assets (house, land, livestock, durable goods), and land ownership. Part 2 elicited agricultural information (size of landholdings/cultivated land, land use, area and yield of rice by season and type of production system), and inputs and outputs on the most important parcel of rice land (labor use by gender in major rice operations, by source of labor-family, exchange, hire of adult males and adult females).

Data analysis

Descriptive analysis was done to compare the characteristics of households with and without migrants by rice production system. Costs and returns analysis of rice production was done to assess productivity. Data were analyzed using various measures of descriptive and inferential statistics. Both parametric and nonparametric techniques were used. For example, statistical techniques such as t-tests, chi-square analysis, and analysis of variance (ANOVA) and regression analysis were used to analyze data. Ordinary least squares (OLS) was used in analyzing the effects of migration on household income. The frontier production function was used to determine maximum-likelihood estimates in

assessing the impact of migration on rice productivity. Efficiency in the use of resources (e.g., land, labor, water, and material inputs) in rice production was measured.

Objective 3. Examine the key constraints faced by women heads of farms that are different from those faced by male heads and identify strategies and technologies that could help overcome these constraints

Asia

Data collection

A purposive sampling design was applied to fulfil this objective. From previous household surveys (with 800 and more households), sample households with at least one male migrant were selected. The sample households interviewed were 143 in Thailand, 225 in the Philippines, and 226 in Vietnam (Table 3). The pretested structured questionnaire used in these surveys included general household information (type of household, size of landholdings, ownership of land, reasons for migration, women's perceptions on changes in labor participation in rice operations, time spent in household work, participation of young children in rice operations, problems in hiring and supervising labor, labor arrangements in case of problems in hiring laborers, problems in farm management, remittances received and how these problems were addressed). Other information obtained involved perceptions on the benefits from male outmigration, participation in agriculture and nonagriculture matters by husband and wife, sources of information on rice production and management, participation in training, and managerial responsibilities of husband and wife.

Table 3. Number of households interviewed, sample households.

Ecosystem	**Thailand**		**Philippines**		**Vietnam**	
	With migrants	Without migrants	With migrants	Without migrants	With migrants	Without migrants
Rainfed	35	35	58	53	23	31
Irrigated	39	34	56	58	99	73
Total no. of households	74	69	114	111	122	104

Source: Surveys of farming households, 2005.

Data analysis.

Descriptive analysis was conducted by comparing and analyzing differences between households with male migrants and without migrants by duration (short term and long term), by place of destination (domestic and international), and by production system (rainfed and irrigated). A women's empowerment index (WEI) was developed to measure the decision-making authority of wives alone, husbands alone, or jointly. We hypothesize that the absence of a husband would enhance the decision-making power of the wife. The scores assigned were husband alone—1; husband greater than wife—2; husband and wife—3; wife greater than husband—4; and wife alone—5. Thus, a wife who gets a score of 5 is most empowered. WEIs for agriculture and nonagriculture were derived. Topics on agriculture included decisions on choice of crop (what type of crops to grow, what varieties of rice to grow), crop management (when to apply fertilizer, how much fertilizer to apply, when to apply pesticides, how much pesticide should be applied, when to irrigate fields, when to weed, when to hire labor to do certain jobs, when to harvest rice, when to do rice threshing), postharvest operations (selecting crop types and seed for the next growing season, how much rice should be stored, when to sell rice and other crops); and livestock/poultry rearing (how many animals should be raised, when to sell animals). Nonagriculture includes decisions related to investments (amount of money to buy

production inputs, food, equipment; whether or not to buy animals, purchase land; children's education; house construction; managing remittances) and politics (deciding for whom to vote). The means of WEIs in agriculture and nonagriculture of households with and without migrants were compared and significant differences were tested. Tobit analysis was used in analyzing the factors that affect women's empowerment in decision-making in agriculture and nonagriculture. The hypothesized factors that influence women's empowerment are age of husband, age of wife, education of husband, education of wife, primary occupation of wife, primary occupation of husband, whether the wife has received training or not, type of production system, and whether there is a migrant member in the household.

Constraints identified by women were listed, prioritized, and matched with available technologies in the respective collaborating institution in Asia through focus group discussions and interviews with women heads of households. Strategies in communicating these technologies were developed by research teams in collaboration with local partners.

Australia

Data collection

The focus in Australia is the issues and concerns faced by women on farms and the identification of strategies to deal with these constraints. Subsamples were obtained from the large-scale survey. The emphasis was on the constraints faced (personal, social, economic, etc.) by the women as well as their needs and desires that will improve their status, working conditions, and the welfare of their families. The focus of the interventions is on training/skills needed.

Data analysis

Prioritizing the identified training was done by asking women to rate their importance. Training needs identified included farming, managerial, entrepreneurship, marketing, and leadership issues. Based on needs assessment, opportunities or options for possible intervention were identified taking into account social and cultural considerations and other relevant factors revealed through earlier PRA/FGD work and in-depth household surveys. Women were also asked to identify the social and cultural conditions that may support or constrain them to adopt/participate in the training intervention.

Objective 4. Evaluate identified on-farm local strategies and interventions through participatory approaches

Asia

Several technologies were evaluated through participatory experiments and demonstration trials. These were improved seed health and pest control management practices in the Philippines, use of biofertilizer, control of snails and bio-insecticide in Thailand, and integrated pest management in Vietnam. In the Philippines, before the participatory action research started, a training workshop on seed health improvement and pest management was conducted at the sites. These activities were coordinated with the assistance of local government units (LGUs) at the municipality level of the Department of Agriculture (DA), which helped organize and manage the meetings. Involving field technicians and other officials from the DA made them aware of the other issues in the farming community. By getting involved in the training workshop, they also gained additional knowledge on different aspects of rice farming, which they can share with or disseminate to the other farmers who were not selected as project participants. In Vietnam, the team first discussed the plans for a training course with the directors of the Extension Center of the provinces and officers of the Extension Station of the districts. They discussed the schedule of training, topics to be included, and the participants—women farm managers.

For Thailand, government offices, including agricultural extension, community development, and land development, and local administration organizations, including the Subdistrict Administration Organization and Village Development Committee, were contacted to seek their assistance in conducting surveys and action research activities of the project in Thailand. This is to ensure that promising outputs from the project will be accepted and carried out by these organizations. Some officers served as resource persons of the training workshops and some members of local government organizations were involved as training and/or field trip participants. Prior to implementing development intervention activities, village meetings were conducted at the three target villages to find out the needs and interests of local residents. As a result, village leaders and representatives of local people, most of them women, identified educational activities and development projects suitable for solving their problems on agriculture and income generation. The project organized field trips for them to visit some villages with successful agricultural activities and group management, carried out training workshops according to the needs of each village, and gave support and supervision during the implementation of the development projects.

Australia

Based on the assessment of needs and opportunities, a program was designed for women to improve their skills and hence enhance their capability to participate and lead/manage their business enterprise (farm or nonfarm) or increase their representation and leadership in organizations or institutions that will affect their lives. The Women in Rural Leadership Program (WiRL) was pilot-tested in Esperance. Esperance was chosen to be the pilot area because of the enthusiasm and willingness of the women to participate in the program. A reference group was formed comprising rural women, industry, staff from the Department of Agriculture, and a rural women's network to act as a sounding board and provide feedback on the direction of WiRL focused on skills enhancement and capacity building of women farmers. The training was provided in collaboration with an external facilitator and the Muresk Institute of Agriculture of Curtin University of Technology.

Linkages with other networks on women's issues in agriculture such as women in rural industries and rural and remote women were developed and fostered. These networks bring together women from agriculture and rural and regional areas and provide them with a mechanism for sharing and disseminating information that is relevant to women's needs in general as well as the development of rural communities. In particular, the project established links with the Australian Women in Agriculture and the Rural Remote and Regional Women's Network and sought collaboration in identifying potential women participants for project activities such as focus groups, surveys, and the action research component. The networks were tapped for disseminating information about the project as well as in communicating with rural and remote women in agriculture. The linkages with these women's networks facilitated reaching women in agriculture and rural industries, including those in remote areas.

Objective 5. Communicate/disseminate information to stakeholders, including women, farm households, research institutions, government bodies, and NGOs as well as evaluate the implications of the project findings for promoting systems for institutionalizing gender-sensitive approaches in R&D programs at IRRI and partner institutions

Information about the technologies

Philippines

Extension guides on "Improved Seed Health Improvement Practices" (SHIP) with pictures on the processes were distributed to extension officers and women participants. A series of training workshops was conducted by the research team with resource persons, such as a

plant pathologist and a sociologist with experience in dissemination of seed health improvement practices. The women grew selected seeds and their own seeds in their fields to assess the yield increase due to improved seed health practices.

Vietnam

The team released leaflets on “Gender Awareness in Technical Training” to the leaders of communes and villages. The leaflets were also distributed to women farm managers. As of now, about 1,000 leaflets have been released. They were released at both the study sites and other sites beyond the project sites. Training materials were prepared with the help of the director of the Extension Center at CLRRI as well as other CLRRI scientists. Booklets were simplified for easier understanding by women farmers. Aside from the booklets, actual samples of pests were borrowed from the Department of Plant Protection of Cantho University to train women to identify pests. White T-shirts were also made for women trainees. The T-shirts showed the slogan “Phu nu tao dung lai” in front, which means “Women are keys to a better future.” The women promised to wear the T-shirts every time they attended a meeting. The leaders of communes and the Farmers’ Association broadcast their activities on “extension for women” through loudspeakers installed in the villages.

Thailand

Producing liquid bio-fertilizer was first demonstrated in a village by the team and later on to noncooperators. Some team members also participated in the follow-up meetings held by the project in each village every few months. The women’s group in two target villages received additional financial support to carry their planned development activities from its local Subdistrict Administration Organization. It can be expected that some outputs of the project, especially making liquid bio-fertilizer, will be included in the annual development projects of the local government organizations and more local farmers will practice it in the future.

All the women participants in the participatory action research in the Philippines, Thailand, and Vietnam gained knowledge and skills in the specific training workshops given by the respective teams. “Knowledge is power” and women were empowered in making timely and sound decisions, particularly when their husbands are away.

Information about the migration project

Asia

The information about the project was reported in the annual reports submitted to ACIAR and shown on ACIAR’s Web site. This project is under IRRI’s Medium-Term Plan 2007-2009 under Program 7: Rice Policy Support and Impact Assessment for Rice Research. The results of this project were reported under this program in December 2007. A paper titled “Labor movement/migration from rural areas and implications for rice farming: a case study in Vietnam” (2007) authored by Chi T.T., Paris T., and Luis J. was presented at the Rice Research Conference held at the Cuu Long Rice Research Institute (CLRRI), Vietnam, on 8-9 September 2007. A paper titled “Labor out-migration: implications for farmers’ livelihood, rice productivity, and gender roles in the Philippines” authored by Luis J. and Paris T. was presented at IRRI’s Social Sciences Division Seminar on 29 November 2007.

Australia

Information about the project, including general information (at the beginning of the project) and findings, was communicated to policymakers, state offices, regional development commissions, women’s networks, and rural women through various media, such as workshops, seminar presentations, and conferences. The project has received wide

coverage, with the Australian project leader being interviewed by local and national radio and print media. To ensure that project results are well communicated to beneficiaries and the wider community, final results of the study will be disseminated as widely as possible through local and national workshops and conferences. Abbreviated reports will be distributed to stakeholder groups, women's groups, relevant government agencies/offices (e.g., Department of Agriculture), women farmers, and other stakeholders.

As alluded to earlier, a Reference Group was formed to provide guidance and direction for WiRL. In addition, women leaders/champions were identified. They were instrumental in mobilizing other women and disseminating information about the project and the WiRL program.

6 Achievements against activities and outputs/milestones

Objective 1: To determine the occurrence and extent of work-related migration/off-farm work and female-headed households in major rice-based or mixed farming systems in Vietnam, Thailand, the Philippines, and Australia

No.	Activity	Outputs / Milestones	Completion date	Comments
1.1	Review of literature, including past and current gender-sensitive government policies—PC	Separate reports on the review of literature of migration and off-farm work in the Philippines, Vietnam, Thailand, and Australia	Philippines 2006 Thailand Vietnam 2007 Australia 2007	A draft review of literature of migration and off-farm work in Australia was conducted in Year 1. This was updated and finalized in December 2007. Quantitative studies on linkage among the impact of migration on livelihood, rice productivity, farming efficiency, gender roles, and gender relations are scant.
1.2	Conducted RRA to establish the incidence and prevalence of outmigration and elicit perceptions regarding consequences of outmigration—PC	1.2 Report on the RRA, FGDs, and database on farming households with migrants and without migrants	2005	Had some difficulty in selecting farm households based on the purpose of the study. For example, households with identified migrants belonging to a separate household; migrant is no longer a migrant during the time of interview; households identified as farming households are not engaged in farming any more.
1.3	Training survey enumerators—A	Research assistants/ survey enumerators trained	October-December 2004	Enumerators/interviewers were trained. They were staff members of the Department of Extension.
1.4	Review of secondary data available & analysis of off-farm work using available data—A	Briefing paper on trends on Australian farms and importance of off-farm and nonfarm work (based on ABS and ABARE database)	June 2005	As part of Objective 1, existing databases in Australia (mainly ABS and ABARE) were used to analyze the changing structure of Australian farms, demographics, importance of off-farm income, and the farm and off-farm income of Australian farming households.
1.5	Focus group discussions, discussions with key women—A	Report on findings of the focus group discussions	June 2006	Focus group discussions (FGDs) were held at six locations in WA—Bunbury, Dowerin, Esperance, Katanning, Moora, and York.
1.6	Site selection for in-depth surveys—A	–	–	Not applicable for Australian site as the survey will be conducted in all states/territory.

1.7	Development and pretesting of questionnaires—A	Questionnaire for survey	August 2004	Questionnaires developed and pre-tested.
1.8	Training survey enumerators—A	Research assistants/ survey enumerators trained	October-December 2004	Enumerators/interviewers were trained. As we have several casual phone enumerators, training took several months, but was done whenever there was a new staff member/interviewer.

PC = partner country, A = Australia

Objective 2: To assess the effects and impacts of family migration/off-farm employment on agricultural productivity, farm efficiency, welfare, and the changing roles of women at the household, farm, and local level

No.	Activity	Outputs / Milestones	Completion date	Comments
2.1	Conducted farm household surveys—PC	Surveys completed	2006	This was the major activity of the project. Interviewers were first trained to obtain quality data.
2.2	Descriptive analysis of information gathered from 800+ farm households with and without migration—PC	Tabulation of the information gathered, using a two-way table by type of ecosystem (rainfed and irrigated) and type of household (with and without migrant members)	Oct 2007	Data entry, editing, and analysis took longer than anticipated.
2.3	Conducted in-depth surveys of farm households with male migrants only and without migrants (subset of 800+ households surveyed)—PC	Empowerment index was developed to assess women's decision-making authority in agriculture and nonagriculture.	June 2006	This is a test of methodology for measuring women's empowerment.
2.4	In-depth surveys—A	Surveys completed	June 2006	Surveys completed took a long time to complete due to the low response rates for the phone survey. To obtain the targeted sample, more than 15,000 farming households were contacted. A total of 633 interviews were completed.
2.5	Data entry, editing, and processing—A	Data entry completed	December 2006	
2.6	Train researchers on quantitative analysis and modelling household/intra-household impacts	Methodology for understanding intra-household and gender relations	September 2006 and April 2007	All researchers trained on quantitative methods and modelling methodology.
2.7	Econometric analysis was conducted to assess the impact of migration on household income, rice productivity, and efficiency—PC	Maximum likelihood estimate (MLE) was used to assess the impact of migration on rice productivity and assess whether farming with migration is technically efficient	31 August 2007	The methods of data analysis were discussed in the review and planning meeting. Findings were presented in the final workshop.

2.8	Analysis of results & modelling impact of migration on farm household systems—A	Analysis on impact of off-farm work on farming efficiency, productivity, household welfare, and changing role of women	July 2007	For Australia, the analysis was on the impact of off-farm work. Because of the sampling frame in which most farming households have at least one member working off-farm, we are unable to use the same analytical methodology as with the Asian countries. So a different methodology was used.
2.9	Preparation of report—A	Report on the changing role of women, including household, farm management, and decision making	October 2007	The findings on the impact of off-farm work as well as the changing role of women are included in this report.

Objective 3: To examine key constraints faced by women heads of farms that are different from those faced by male heads and identify on-farm strategies and technologies that could help overcome these constraints

no.	Activity	Outputs / milestones	Completion date	Comments
3.1	Conducted interviews of farming households with women-headed households to identify key constraints faced by women heads—PC	Prioritized list of needs and constraints faced by women heads with matching strategies and interventions	2006	Knowledge of constraints (access to and control of resources) led to identification of strategic options (technology and training)
3.2	Identified problems, constraints, and barriers faced by women in farming households and female-headed households—A	Report on the issues/ constraints and barriers faced by women, including prioritized list of needs and constraints faced by women heads with matching strategies and interventions	2006	Included in a joint report with women's needs analysis
3.3	Identification of appropriate & available interventions (training/ technologies)—A	List of training and technologies to improve management of female-headed farms	Jan 2007	Included in a joint report with issues/constraints faced by women
3.4	Development of case stories of female heads of households due to male outmigration	Case stories	2007	Case stories complemented results of household surveys
3.5	Development of relevant training and extension materials—A	Extension/ training materials (WiRL training package)	July 2007	Developed a training package that contained the highest-priority areas identified by women
3.6	Development of case stories on different categories of migration—PC	Case stories completed	Dec 2007	The case stories complement results and analysis of data collected from farm household surveys. The development of case studies was delayed because the participatory action research began first.

PC = partner country, A = Australia

Objective 4: Evaluate identified on-farm strategies and interventions through participatory approaches

No.	Activity	Outputs/ milestones	Completion date	Comments
4.1	Evaluated on-farm strategies and interventions through participatory approaches—PC	Members of the research team trained on participatory approaches	Still going on	The PAR started only in mid-2006; needed more time for evaluation
4.2	Training on participatory evaluation—PC	Project staff trained	April 2007	All project staff trained in participatory monitoring and evaluation
4.3	Participatory testing of selected interventions	WiRL developed and evaluated by stakeholders	Sept. 2007, November 2007	The Women in Rural Leadership (WiRL) Program was pilot-tested in Esperance; this was followed by a follow-up workshop as a response to the request of women as part of the participatory process.
4.4	Report writing	Report on recommendations for options and policies at the local and national level	December 2007	Included in the report of the participatory action research phase

PC = partner country, A = Australia

Objective 5: To communicate/disseminate information to stakeholders, including women, farm households, research institutions, government bodies, and NGOs as well as evaluate the implications of the project findings for promoting systems for institutionalizing gender-sensitive approaches in R&D programs at IRRI and partner institutions

No.	Activity	Outputs / Milestones	Completion date	Comments
5.1	Preparation of annual progress reports/papers for project output communication and dissemination —PC, A	Annual reports	Sept. 2005, Sept. 2006, Sept. 2007	Annual reports submitted in year 1, year 2, and year 3; Final report submitted in March 2008.
5.2	Communicate/ disseminate information to stakeholders—A	Workshops for stakeholders, farmers, academe, government policymakers, NGOs, and the research community about the project in local and national for a	Various (2004, 2005, 2006, & 2007)	Held several workshops and conducted seminar presentations in various local and national fora (see list below)
5.3	Farmer/stakeholder field days/demons-trations—A	Road show to present findings of the study in regional areas	July 2007	A joint road show with the RRR Network was conducted to present results of the study. A total of 7 presentations were made in 6 regions in WA (Bunbury, Moora, Esperance (2), Mullewa, Geraldton, and Katanning)

5.4	Prepare papers and brief reports, technology formats for wider dissemination —A	Summary reports on project, including interventions, impact on women and farm households, and lessons learned	December 2007	Included in the report of the WiRL: participatory action component

PC = partner country, A = Australia

7 Key results and discussion

7.1 Incidence of migration in Asian farming households

Migration is defined as the move or change in residence of an individual for a continuous 3 months or longer. A rapid rural appraisal (RRA) and census of farming households in 48, 46, and 42 villages in Thailand (northeast), the Philippines (Central Luzon and Bicol regions), and Vietnam (North and South) were conducted to determine the occurrence and extent of individual migration in rainfed and irrigated villages. Results show that migration occurs in both rainfed and irrigated ecosystems. However, migration is higher in rainfed villages than in irrigated villages. The incidence of migration is higher in northeast Thailand than in the Philippines and Vietnam. In Thailand, 54% to 63% of the households have at least one migrant in irrigated and rainfed villages. In the Philippines and Vietnam, about a quarter of the households have one or more migrants. The rate of male migration is higher than female migration in Thailand and Vietnam, which is the opposite in the Philippines (Table 4). In Western Australia, approximately 77% of farming families undertake off-farm and/or nonfarm work. This involves either one or more family members working part-time or full-time (but still helping on the farm).

Table 4. Incidence and prevalence of migration.

Rates of outmigration	**Thailand**		**Philippines**		**Vietnam**	
	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated
% of households with migrants	63	54	26	22	24	20
% of adult male migrants/total number of adult male population	34	26	20	22	25	34
% of adult female migrants/total number of adult female population	23	20	34	21	13	5
Total households	1,197	789	3,062	2,861	462	2,668
Total adult males	2,433	1,546	728	1,361	1,039	5,394
Total adult females	2,467	1,637	754	1,433	1,047	5,486

Source of data: rapid rural appraisal and census of farming households, 2004. Household migration rate (HMR) = number of farming households with at least one migrant divided by the total number of farming households in the area (sample size). Male migration prevalence rate (MMR) = number of male migrants in the area (sample) divided by the total number of males in the area (sample). Female migration prevalence rate (FMR) = number of female migrants in the area (sample) divided by the total number of females in the area (sample).

Migration patterns in Asia

Surveys of farming households with and without migrants in rainfed and irrigated villages were conducted in each participating country. Of these households, 813 were from the Philippines, 830 from Thailand, and 831 from Vietnam. A majority of the households with migrants have extended households, whereas those without migrants have almost an

equal distribution of nuclear and extended households. The average size of rice area in Thailand and the Philippines is less than 2 hectares. However, in Vietnam, rice areas are less than 1 hectare. A household has about 5 to 6 family members. Rice is the major crop grown in the wet season in rainfed areas. In the irrigated villages, two crops of rice can be grown. In Vietnam, a third crop of rice can be grown. Other nonrice crops are grown during the dry season, depending upon the availability of residual moisture or limited irrigation.

Who migrates? In Thailand and the Philippines, a higher proportion of sons and daughters migrated than principal males or heads of households. In contrast, principal males or heads of households migrated in Vietnam, particularly in North Vietnam. In Thailand, a higher proportion of the migrants were engaged in rural to urban migration (52–63%) than in rural to rural migration (23–25%) and rural to international migration (14–24%). In the Philippines, 55–83% of the households have migrants who worked overseas and the rest migrated within the country. In Vietnam, migrants from farming households took part in long-term and short-term migration within the country.

In northeast Thailand, of the total migrants, the highest proportion were the sons (40% in rainfed areas and 41% in irrigated areas), followed by daughters (39% in rainfed areas and 32% in irrigated areas). About half of both male and female migrants, in both areas, were 25–34 years old. About a quarter of both male and female migrants who are left behind are older family members (more than 54 years old). Wives who are left behind comprised about a quarter of all family members. More than 80% of the migrants finished only primary or secondary education. In the Philippines, daughters comprised the highest proportion of migrants (44%), with 46% in both rainfed and irrigated villages), followed by sons (30% and 42%, respectively, in rainfed and irrigated villages). In South Vietnam, a higher proportion of the migrants from the rainfed villages in the south were sons and daughters, while principal males and sons migrated from the irrigated villages. In contrast, a higher proportion of principal males than sons from the north migrated to urban and rural areas. A higher proportion of the migrants from the south migrated on a short-term basis, whereas those from the north worked outside their villages for longer periods.

In Thailand, almost half of the migrants worked in farming before migration, but only about 10% of them were hired in agricultural jobs in their new workplace. On the other hand, about half of them had to work in unskilled jobs at their work destinations. Slightly more than one-fourth of them worked as salespersons in stores. The capital (Bangkok) was the most popular destination among migrants, with 63% and 57% for those coming from rainfed and irrigated villages, respectively. In the Philippines, female migrants mainly work as domestic helpers within the Philippines and are engaged in varied occupations in the Middle East, Italy, Singapore, and Hong Kong. Others do factory work in Taiwan, Japan, and Korea. Male migrants work in the Middle East as construction workers, drivers, operators of heavy equipment, or seamen. In Vietnam, male migrants work as hired laborers in agriculture, factory workers, construction workers and masons in cities, as hired fishermen in sea fishing, and in shrimp or squid catching in other provinces. Women work in waste trading and small trading, as hired laborers in rice farming, as sand boating workers, as domestic helpers, and as factory workers, or in other industrial areas near rural areas.

Family members from farming households prefer to migrate to other countries because of higher compensation. For example, domestic helpers or drivers have higher salaries and better benefits if employed in other countries than in their respective countries. All the migrants are literate and have been to school from elementary to college. International migrants are better educated (a majority are college graduates or high-school graduates) than domestic migrants. However, because of higher wages abroad, college graduates, especially women, accepted jobs, even as domestic helpers and caregivers, which are jobs in demand.

Gender roles in rice-based farming systems

In Thailand, the Philippines, and Vietnam, rice production has gender-specific tasks. While men are exclusively responsible for preparing the land, spraying chemicals, transplanting, weeding, and postharvest activities are women's responsibilities. Harvesting is jointly done by men and women, although more women than men are engaged in this activity. Female family members are also responsible for cooking and taking food to farm workers. Female heads also visit the farm, especially in the absence of the male heads, and oversee the work of the hired laborers. In addition, female heads purchase material inputs, which are listed by the male head or hired farm supervisor. In most cases, female heads are aware of the different kinds of chemicals applied on the farm and the varying prices of these chemicals. They have some knowledge on specific pests or diseases and the recommended brand of pesticide and dosage on rice. Their knowledge and experience in farming make them legitimate managers of farming enterprises. The use of machinery is the exclusive responsibility of men. Female heads of households are mainly responsible for keeping money and they have some control of disbursement for different expenditures. Thus, in cases of limited cash, they find ways to borrow money from private money lenders or friends or they find other income-generating activities. In case of labor shortage, they exchange labor with other women.

Changes in women's work load after male migration

In the Philippines and Thailand, the absence of principal males and sons did not change women's workload because they used remittances for hiring labor for land preparation, spraying of chemicals, and other heavy tasks. However, in South Vietnam, a high proportion (79% in irrigated areas and 67% in rainfed areas) mentioned that their workload increased after their husbands migrated. In North Vietnam, 53% said that their workload increased, while 47% mentioned that there was no change in their workload. The response "no change" means that the women had been actively participating in almost all farm activities without the help of husbands; husbands migrate only after the rice season when all the major rice operations are completed, and other family members help in farm tasks. The important activities that increased wives' workload when husbands left were fertilizer application, and pesticide application. In the north, wives increased their labor inputs in land preparation and dike building.

A shift in the role of women from unpaid laborer to manager

In the Philippines and Thailand, principal females had been engaged in their traditional tasks along with being managers in terms of allocating a limited budget, arranging for hired laborers, and borrowing money from private lenders. Thus, migration did not change their traditional roles. As mothers of migrant sons, they worried about their health, accidents, job security, and money shortage/management. For the Philippines, parents worried about the fate of their daughters who work in the Middle East and other countries. Principal females whose husbands left for long periods suffered from psychological problems such as loneliness, depression, insecurity, and difficulty in disciplining their children, especially their sons. A higher proportion (85% and 73%, irrigated and rainfed) of the households with male migrants in South Vietnam revealed that their roles shifted from unpaid family labor to manager. In North Vietnam, 62% said that their roles did not change even before their husbands migrated because traditionally they had been managing their farms even before the husbands migrated. Aside from managing all operations, they also look for laborers to hire during peak cropping operations. If hiring of laborers is difficult, women exchange labor with other women from other households. On the other hand, if principal females migrate, husbands find it difficult to perform the roles the women play as mothers, housekeepers, etc.

Despite women's roles in managing their farms, membership in farm organizations and agricultural cooperatives is dominated by men. Women are more engaged in organizations that deal with home-based activities and not agriculture. They are rarely involved in

extension and training programs due to the perception that the principal males are the only decision makers in the farming household. As de facto farm managers, women are not equipped with new knowledge on crop management decisions that is required for making better decisions to increase rice productivity.

Problems in managing farms

When women were asked whether they had encountered problems in managing their farms, at first, they said they had no problems since they had long-term experience in farming. However, after gaining rapport with the women, they said that they faced much pressure to maintain rice yields despite the lack of family labor, lack of capital for inputs, and high input costs but low rice price. They also had low access to technical information. They wanted to know more information about varieties, fertilizer, and pesticides. They faced problems in field management such as application of fertilizer, spraying pesticides, irrigating fields, drying paddy during the rainy season, and high costs of inputs (fertilizer, pesticides, labor) and low price of paddy. When remittances did not come on time, the women purchased inputs on credit and paid back the moneylenders with interest and sold rice, chicken, or pigs to buy inputs. In Vietnam, irrigating fields in the evening alone without a male companion was cited as a problem.

The share of remittances and nonfarm sources in livelihood

Individual migration within and outside the country on a seasonal and long-term basis leaving other family members to manage farms is increasingly a routine livelihood strategy in Asia. Appendix Tables 1, 2, and 3 show the share of different sources of livelihood in household income. The share of remittance earnings in household income ranged from 28% (domestic migration) to 65% (international migration) in the Philippines, from 30% to 49% in Thailand, from 21% to 35% in South Vietnam, and from 46% to 48% in North Vietnam. Nonfarm sources contributed 14–26% in Thailand, 19–28% in the Philippines, 8–10% in South Vietnam, and 10–17% in North Vietnam to total annual household income. The share of remittances is higher than the share of rice income in Thailand, the Philippines, and North Vietnam. In South Vietnam, rice income comprises about 39–57%, which is higher than the share of remittances. In North Vietnam, the share of rice income is below 20%. To assess the effects of migration on household income, rice productivity, and farming efficiency, farming households in northeast Thailand (830), the Philippines (813), and Vietnam (831) were interviewed. Remittances comprised a significant share of annual household income in the Philippines, northeast Thailand, and Vietnam (Appendix Tables 1, 2, and 3). In the three countries, the share of remittance earnings in household income ranged from 20% to 50%, with the highest share in the Philippines coming from international migrants. In the Philippines, the proportion of remittances from international migrants comprised 65%, while remittances from domestic migrants comprised 28%. Income from rice was only 25% and 13% from households with domestic and international migrants, respectively. Nonfarm sources comprised 28%, 19%, and 58% for domestic migrants, international migrants, and households without migrants, respectively. In northeast Thailand, remittances from long-term migrants were higher (46–49% in rainfed and irrigated areas) than for short-term migrants (30–35% in rainfed and irrigated areas). Nonfarm income of households with migrants was higher among short-term (ST) and long-term (LT) migrants. For nonmigrants, nonfarm income ranged from 42% to 49% in irrigated and rainfed areas, respectively. Income for LT migrants is higher (13%) in irrigated areas than for LT migrants in rainfed areas (9%). In Vietnam, there is much difference in the share of remittances across location rather than by duration of migration (ST and LT). Remittances in the irrigated villages in the north are almost double those of the irrigated villages in the south. Male migrants from irrigated villages had higher monthly income that those from rainfed villages. Short-term migrants sent home a higher proportion of their monthly income than long-term migrants. The remittances earned from migration

contributed about a quarter to the total income of rice-farming households, and equally in rainfed and irrigated areas.

Remittances were mainly used for basic needs (food and daily household expenditures), children's education, farm inputs, house repair/construction, and payment of debts (expenditures of migrants), whereas others saved their remittances for major expenditures such as purchasing additional land. Remittances relieve credit constraints when used for paying for hired laborers and purchasing inputs (Appendix Tables 4, 5, and 6).

Impact of migration

On household income

Ordinary least squares estimates reveal that migration has a positive and significant effect on household income in Thailand and the Philippines but not in Vietnam. In the Philippines in particular, many migrants work overseas, receiving higher compensation and thus sending larger remittances to their families left behind. In Vietnam, remittances are too small to improve household income but they do help in poverty alleviation.

On rice productivity and technical efficiency

A comparison was made between households with and without migrants in terms of rice productivity and costs and returns in rice production during the wet season. Results revealed that, in general, there are no significant differences in rice yields between these two groups. However, there are significant differences in irrigated wet-season rice yields in Thailand and Vietnam across the two groups. Rice productivity is influenced by many factors, such as varieties used and crop and resource management practices. These results revealed that families left behind maintained rice yields on a par with those of households without migrants, despite the reduction in family labor supply. Production frontier estimates revealed that increased income from remittances increased rice productivity in the rainfed and irrigated villages in Thailand. This proves the hypothesis that increased income from remittances increased rice productivity as a result of access to funds to finance agricultural inputs. However, this is not the case in the Philippines and Vietnam for different reasons. In the Philippines, remittances mostly coming from international migrants were spent more for college education. In Vietnam, remittances were too small a large proportion of which were spent on food than on farm inputs. The maximum likelihood estimates (MLE) of the inefficiency model revealed that migration is one of the factors of technically inefficiency in the irrigated villages. In contrast, absence of migrant/s in the household led to technically inefficiency in the Philippines and Vietnam in the same production systems.

On women's empowerment

Rice productivity depends on adequate crop and resource management and making better decisions. Better decisions depend on what and how much farmers know. To better understand women's decision-making authority on farm -related matters, a women's empowerment index (WEI) was developed. WEIs were found to be higher among households with migrants than among those without migrants in Vietnam. Wives are compelled to make "on-the-spot" decisions when husbands are away on a long-term basis. Their roles have begun to shift from unpaid family workers to *de facto* farm managers. Traditionally, women manage the allocation of cash for household expenditures. However, with male absence, they are now getting involved in allocating a limited budget for farm inputs as well. In Vietnam, the factors which increase women's decision-making authority in farm-related matters are migration and household size. Women from the North are more empowered because of their greater participation in agriculture compared to the women in the South. In the Philippines, household size and women's participation in agriculture are factors which increase women empowerment. Migration does not have any effect on women's empowerment in agriculture because in this case, the principal males still

dominate in farm-related decisions. Principal females still remain to be the major decision makers on household matters and custodians of household cash. With the rising costs of farm inputs, they bear the stress in making hard decisions in allocating limited cash between household, family welfare, basic needs vs farm inputs.

Major constraints faced by women heads of farms in the Philippines, northeast Thailand, and Vietnam

Focus group discussions (FGDs) were also conducted with women farmers in the Philippines, Thailand, Vietnam, and Australia to examine the key constraints faced by women heads of farms and to identify on-farm strategies and technologies that could help overcome these constraints.

In northeast Thailand, among nuclear households with a principal male as the migrant, the work burden of female family members increased. They also managed day-to-day farm and household management when husbands worked in nonfarm jobs. They complained of high expenditures on fertilizer and herbicides to control weeds, especially in direct-seeded plots. They also had problems with snails, which damage young rice seedlings; low yields due to drought; and a reduction in paddy area because of increasing area cultivated to other crops (sugar cane, eucalyptus, cassava). Based on these constraints, technologies to reduce input use and control pests were explored.

In Vietnam, women took over the responsibilities and workload of men in rice operations such as water management, land preparation, dredging field canals, pest management, pest identification, pesticide spraying, fertilizer application, and hauling of paddy sacks. The women complained of a lack capital to pay for hired laborers and cash to buy material inputs since remittances were small.

In the Philippines, the women complained about a lack of irrigation (in the case of rainfed farms); poor germination ability of rice seeds; a lack of machinery, for example, a tractor for land preparation; high costs of inputs (chemicals, hired labor, costs of irrigation); and a low paddy price, which makes rice production no longer profitable. Because they are mainly responsible for the household budget, they find it difficult to allocate their limited budget among expenditures, such as children's education, health, and farm inputs.

Constraints to increasing women's productive capacity were a lack of access to technical knowledge in all aspects of rice production, particularly in the efficient use of inputs and reducing the costs of rice production. A majority of the women have not received any training on new methods of crop/farm management.

On-farm strategies and technologies that were evaluated to overcome these constraints

On-farm strategies, technologies, and training needs were identified through focus group discussions conducted in the villages. Participatory action research (PAR) included evaluation of improved rice production and postharvest practices, with emphasis on seed health and pest management in the Philippines, the use of biofertilizer, golden snail control, the use of bio-insecticide in Thailand, and rice pest management such as IPM in Vietnam. Women heads of households were the direct recipients of the training activities. In the Philippines, male farmers were also included in the training workshops. In Vietnam, before the training, women were given tests on their existing knowledge of pest identification, weed management, cultural practices to maintain healthy plants, reduction of inputs, and high yield, as well as methods of pest control.

Results of the RRA, FGD, and secondary data gathering in Australia

Secondary data were also gathered from government agency databases such as the Australian Bureau of Agricultural Statistics (ABS) and the Australian Bureau of Agricultural

and Resource Economics (ABARE) publications and database. Links were also established with women networks and related networks/organizations such as the Women in Agriculture WA Branch, Rural and Remote and Regional (RRR) Network, the ALCOA Research Centre for Stronger Communities, and the Department of Agriculture Western Australia (DAWA). Six focus group discussions, with 4–20 participants each, were conducted in six different regions in Western Australia (Bunbury, Dowerin, Esperance, Katanning, Moora, and York). Focus group discussions with key informants were conducted to assess participation in off-farm and nonfarm work, the nature of the participation of women and the changing roles of women in the agricultural sector, and the challenges faced by women in farming families in Western Australia. The discussions revolved around six core issues:

- Main roles of women in farming households, including their roles on the farm, in the household, in off-farm and nonfarm work, and in the community
- Changes in women's roles from that of the traditional role of women on farms
- Incidence of off-farm and nonfarm work and the driving force for undertaking such work
- Effects (both positive and negative) of off-farm and nonfarm work on agricultural production, household income, gender roles, decision making in the household, decision making on the farm, and overall household welfare
- Constraints encountered when looking for or undertaking off-farm work by women and their families
- Challenges and constraints encountered by farming families today and suggested strategies that could help overcome these constraints.

The key findings of the FGD and the secondary data/literature study follow.

Roles of women in farming households

Generally, women's roles were not fully "hands on" with the farm, though there was a significant variance in the role combinations or sets, which indicated diversity in the farm context and the skill sets of women. This multiplicity of roles included completing domestic home duties with a farm-based business; professional city work with a minimum contribution to farm work; a previously self-employed woman who now works only on the farm; a widow operating a farm with her children; working in the household and working on the farm; and attending to administrative farm tasks and a farm-based enterprise. Women were considered to be indispensable in their domestic, farm, and support roles though their active participation in decision making was low.

The women mainly identified their roles as farmer, consultant, network marketer, teacher assistant, clerical worker, retired farmer, off-farm retailer, homemaker, teacher, company director, off-farm retail worker, and part-time off-farm worker. The issue of voluntary community work was rarely mentioned, though women did make such claims.

The women considered that they were of substantial support to their husband/partner because they did hands-on farm work either regularly or on a needs basis; provided hospitality to guests, visitors, and business clients; or assisted generally by attending to tasks such as collecting machinery parts from town, etc. There appeared to be minimal input (if any) into the decision making that concerned the farm and inheritance issues for the women and children were of concern. The management and operational aspects of the home together with child rearing and support were predominantly assumed by the woman with minimal involvement by the husband/partner.

Changes in women's role from the traditional role of women on farms

The women were able to identify changes that they had directly experienced or had observed through their interactions with more longstanding farming people. These changes related to the impact of technology, the increased size of farms, the expectations and demands of sexual equality, communication, and intergenerational issues. These changes involved having less face-to-face contact with neighbors due to distance but email communication was prevalent. More on-farm work has meant less time for community and voluntary groups, different expectations of generations as to decision making and responsibility of farm partners, and the blurring of roles, for which merit rather than gender is the major factor. In addition, expectations and traditional practices were problematic.

With the acknowledgment of the financial contribution of off-farm and nonfarm work to the household and farm comes respect from the family as well as the strength of a peer group that has common challenges and demands. Also, the value of women who work on-farm appears to be more appreciated as they have established formal agricultural organizations, and received acceptance from government agencies that their contributions to farming are significant, that is, their "actions speak for themselves."

Type of work women do on the farm

It seems that women take on farm tasks that are required at a particular time for a particular season. For some, it means total responsibility and decision making because of personal circumstances, whereas for others a set of tasks must be attended to routinely. The allocation of tasks is largely at the whim of the husband/partner with merit often not used as a deciding factor, for example, operating expensive machinery is not permitted though the woman may be qualified and competent. Typical tasks include bookkeeping, moving sheep, homemaker, delivering grain to a silo, moving machinery, and cattle work.

Incidence of off-farm work in Australian farming households

The findings of FGD and secondary data/literature showed that most farming families have at least one family member working outside the farm in either part-time or full-time work. Approximately 77% of farming families in Western Australia undertake off-farm and/or nonfarm work. This involves either one or more family member working part-time or full-time (but still helping on the farm). The off-farm part-time work and onfarm work varies in duration from several hours to several days, with all women still continuing to maintain their significant lead roles in child rearing, homemaking, and farm support. Off-farm income is used for a variety of purposes, including supporting the farm, purchasing household items, providing for holiday social obligations, and contributing to educational and university costs.

Within the age group of 21 to 35 years, the majority of women are working off-farm. Those who work on the farm in nonfarm enterprises have the facilities and support from relatives to provide child care. Other women are able to gain seasonal employment, which brings an income but often does not relate to previous training or qualifications and can also limit the availability of employment opportunities for youth.

The review of literature showed that off-farm income contributes a significant portion of total household income. Average off-farm income was valued at $29,300 for broad-acre farms and $35,700 for dairy farms (ABARE 2003). Small farms with lower incomes are more likely to be dependent on off-farm income, with broad-acre farmers experiencing a greater rise in average off-farm income than dairy farmers. A major part of off-farm income comes from off-farm employment. ABARE reported that, in 2000-01, spouses (mostly women) on broad-acre and dairy farms were more likely than owner-managers to participate in off-farm employment (29% and 17%, respectively).

Discussions during FGD highlighted some of the underlying drivers of off-farm work: farming and rural communities face problems of low prices and price fluctuations, market

volatility, environmental risks (climate/weather variability), cost-price squeeze, and succession problems. To cope with these challenges, some farmers adopt a strategy of diversification of enterprises (wheat, sheep, cattle, oats, hay, lupins, crafts, etc.) and, in many farming families, members undertake off-farm and/or nonfarm work. The types of off-farm work include nursing, retail, information technology, child care, secretarial, and hospitality (restaurants, bars). In some instances, farmers are moving out of agriculture. Other driving forces for off-farm work and/or work-related migration are to supplement household income, social reasons, and to deal with isolation issues. The major constraints households and women face when looking for and undertaking off-farm work are the lack of employment opportunities, the tyranny of distance, and low wages. The effects of off-farm and nonfarm work on agricultural production include additional (higher) household income and that women believe they are contributing to household finances, leading to empowerment (i.e., increased participation in decision making in the household and on the farm.

The costs associated with traveling and time away from the farm were cited as aspects that were not supportive of off-farm work. It was seen to be more preferable to run one's own business than incur such challenges. Many women considered themselves to be critical to the financial and compliance aspects of the farm administration and believed that this role was extremely valued by their husband/partner.

Off-farm work of the husband or any other family members

The off-farm work of the husband/partner and other family members is extremely varied in time, role, work orientation, qualifications, and attitude. Such scenarios include all members working off-farm so as to contribute the majority of their income to maintain the sustainability of the farms. Always, one of the partners works off-farm with this dependent upon qualifications and their relationships; the husband/partner taking on contract work for a specific period, which is mainly farming oriented because it applies skills acquired on the farm such as fencing and truck driving; both partners work off-farm at times though this may not be at the same time so that there is always someone farm-based; and the husband/partner engages in off-farm work grudgingly as he is resentful of not being the "boss." Voluntary and community work was also claimed as off-farm work though no specific examples were provided.

Factors influencing the decisions of household members to undertake off-farm or nonfarm work

Many women felt that they were undervalued by the family as to the worth of their contributions to the farm, their qualifications, and their previous careers. Many were not permitted to be involved in any decision making or access farming information, particularly the financial aspects. As a consequence, many women took on off-farm or nonfarm work so as to have financial independence, purchase assets for the home such as a kitchen upgrade, provide for holiday social obligations, provide opportunities for children such as outings and attendance at an elite school, further their career, address personal and professional isolation, and contribute financially to the farm income. However, child care, lack of support when another child required medical attention, access to services that were mainly metropolitan-based, and ages of children all affected the decisions of when or if and the time duration of taking on off-farm or nonfarm work.

Results of the survey

The survey was conducted Australia-wide. A total of 633 interviews were completed. Of these, 196 respondents (31%) were from Western Australia, about 23% were from New South Wales/ACT, and 17% were from South Australia (Table 5). Most farms in the survey are commercial farms (partnership).

Table 5. Distribution of survey respondents.

State	No.	Percent
Western Australia	196	31.0
Queensland	103	16.3
Victoria	71	11.2
New South Wales & ACT	143	22.6
Tasmania	8	1.3
South Australia	112	17.7
Total	633	100.0

The survey looked at the roles of women, the incidence of off-farm work, the impact of off-farm work, and the challenges and constraints faced by women.

The average years in farming of respondents were 28. Most have completed university or have had some tertiary education. About 29% of the women respondents are in the 41–50 age group, while about 32% are between 51 and 60 years.

Women's roles

Women's roles on the farm varied from farm work to office work. Some are involved in livestock (moving livestock) and in crop production and management (seeding and harvesting, helping move machinery, and driving machinery such as tractors and headers). Women are also involved in farm safety and in quality assurance. But a significant number of women are involved in the financial aspects of the farm from bookkeeping and dealing with tax matters to banking and accounting. In addition, women do a significant amount of unpaid voluntary work, contributing about 19.5 hours per month on average. Men's contribution to unpaid labor was about 6.5 hours per month.

There also seems to be a change in the roles of women. For example, according to one respondent, as more and more women are getting off-farm work (where there is employment), the men, who weren't thus inclined before, are slowly being trained in traditional female-dominated roles such as housework and child care.

Decision making

About half of the men make decisions on the farm but women also share in decision making (32%) on farm-related matters. When the husband is away, a significant number of women make the decisions (about 36%). About 15% of men continue to make the decisions even when they are away from the farm. Women participate in various community activities, including health, sports, crafts, farmers' organizations, women's organizations, school extracurricular activities, and other community activities. However, only a few women are members of boards of significant rural organizations.

Main issues and challenges

The main issues and challenges confronting farming households include more competition locally and internationally (this means that farmers have to be more efficient in their activities), the movement from on-farm production to wage employment (off-farm work), farm labor shortages, succession planning, and youth not returning to rural areas.

The key findings of the Australia-wide survey follow.

Incidence of off-farm work

Most farming households in the survey have at least one family member working outside the farm in either part-time or full-time work. About 89% of the farm households interviewed

have at least one family member working off-farm or in nonfarm work. Both men and women work off-farm, but a higher percentage of women work off-farm. Men mostly do the farm work while women work off-farm to supplement household income, but women also work on the farm. About 46% of women's income is derived from off-farm work. In many rural families, some household members seek off-farm employment as a result of social, economic, financial, and environmental factors. Some work off-farm to supplement household income. Others do it for social reasons as a strategy to avoid isolation, common on many farms located in remote areas.

Impact of off-farm work

On income

Off-farm work leads to additional (higher) household income. About 78% of respondents said off-farm work has increased their income. Women believe they are contributing to household finances, leading to empowerment (i.e., increased participation in decision making in the household and on the farm).

On agriculture

Some 90% of respondents perceive that off-farm work has no significant effect on cropping area and crop yield. It also did not affect the number of enterprises on the farm and farm productivity.

On workload and time use

Women claimed that undertaking off-farm work increased their workload. About 45% indicated that off-farm work reduced their time spent with family members, while about 70% indicated that their time for leisure decreased. They also have less time to contribute to community activities and other voluntary community work.

Main issues faced by women

One of the main constraints faced by women is a lack of child care. There is a lack of suitable child care in rural areas and the cost of nannies is prohibitive. Second, women identified the lack of health facilities and/or services in the bush. In some areas, breast clinics and skin cancer clinics are no longer available. Women also mentioned a lack of educational facilities. Because of a lack of adequate educational facilities, families often have to send their children to the cities, which can sometimes have social implications for the children. Other issues are the lack of employment opportunities and the tyranny of distance. There is quite a distance involved to obtain reasonable employment and child care, which can be a discouraging factor in doing off-farm and community work. This is also related to isolation issues. Because people are working off-farm, they have less time to put into their communities and thus lack social interaction. Another major concern mentioned by women is intergenerational change and succession. One woman commented, "*What if something happens to my partner* is a big concern for me. I am in partnership with my husband and we lease our land from his parents. His father has been reluctant to hand over the reins as such and I always think that despite being in partnership with my husband and working alongside my husband if anything was to happen to him I would have to find another arrangement as there is no way I could see my father-in-law allowing a woman to 'run the farm,' whether I am able and wanted to or not…." This has important implications for women and is a source of angst in some farming families.

Major constraints faced by women and by their families in Australia when looking for and undertaking off-farm work

The major constraints women and their families face when looking for and undertaking off-farm work are a lack of employment opportunities, the tyranny of distance, low wages, high

travel cost, lack of services (e.g., health, child care, education), and isolation. The opportunities are harnessing women's skills, revitalizing communities by providing opportunities for off-farm work, opportunities for value adding, attracting youth back to the countryside, and stimulating business in rural communities. During FGDs, farm women identified training in leadership programs as an area for capacity building. Caring for children and aging family members was highly rated as a constraint to seeking off-farm work. Most locations did not have such services or, if they did, they were very limited. The availability of "home help" was negative due to the high salary scales and indeed the real lack of a labor force prepared to work in a rural area and particularly on an isolated farm. Employment opportunities are limited, often seasonal, have no career path, or do not build upon qualifications and are often perceived by the community as jobs for young people that have remained. Thus, there is tension for women whether to apply for a position for which they may be overqualified and assuming a role for which a young person may have been appointed. Traveling distances, road conditions, and work hours can be extreme and, despite employment providing a sense of positive mental well-being, the income derived when combined with these conditions was not sustainable. Women appeared to be concerned about the safety of their children and their need to be contributing to the welfare of the household, even when they were not on the farm. Women who worked, despite making arrangements, still continued with the major responsibilities for child rearing, household management, and voluntary community service, which all contribute to ongoing concern about health, well-being, and resilience.

Results of participatory action research in Australia

As part of participatory action research, a needs analysis was conducted, followed by the identification of a training intervention desired by women and then the design of an action research intervention. The key findings of the needs analysis and training prioritization were broken down by region and are outlined as follows.

For Bunbury, analysis of the mean scores showed that women are most interested in building leadership skills. In particular, women indicated their interest in negotiation and conflict resolution, managing change, and occupational health and safety. This is followed closely by strategic planning, which incorporates identifying and setting key business goals, other leadership aspects (i.e., human resource management, decision-making skills, succession planning), business enterprise planning and management (i.e., identifying and evaluating new enterprise opportunities, monitoring and evaluating existing enterprises, legal issues), marketing (i.e., conducting market research, assessing new markets, new product development, and value adding), and self-management (i.e., setting personal goals, prioritizing efforts, and handling stress).

For Esperance, analysis of the mean scores showed that women are most interested in building leadership and business management skills, with the following aspects rated as very important: strategic planning—developing a business vision; leadership—negotiation and conflict resolution; business enterprise—monitoring and evaluating existing enterprises and opportunities; financial planning—financial risk management; computer technology—computer skills; marketing—pricing policy and price risk management; farm production—land management; and self-management—setting personal goals.

For Geraldton, results showed that the areas of interest to women are financial skills, computer literacy, marketing, and peer support networks.

For Mullewa, analysis of the mean scores showed that women are most interested in building leadership and business management skills, with the following aspects rated as very important: strategic planning—developing a business vision; leadership—decision making, managing change, communication; business enterprise—legal issues; financial planning—financial management; information technology—computer skills and farm software; marketing—pricing policy, price risk management, forming and participating in

market and supply alliances; farm production—managing the production system, monitoring and evaluating energy efficiencies, quality assurance, land management; and self-management—setting personal goals, time management, and handling stress.

For Moora, analysis of the mean scores showed that women are most interested in financial planning and management, followed by marketing and leadership. The aspects that were rated as very important are strategic planning—identifying and setting key business goals; leadership—(all equal) decision making, managing change, communication, succession planning; business enterprise—(all equal) business planning, monitoring existing enterprise opportunities, and legal issues; financial planning; information technology—computer skills; marketing—(all equal) pricing policy, price risk, accessing new markets, and value adding; farm production—land management; and self management—(all equal) goals, time management, and handling stress.

For Katanning, analysis of the mean scores showed that the women are most interested in building skills in business enterprise planning and management, followed by leadership. The aspects listed as very important are strategic planning—identifying and setting key business goals; leadership—communication; business enterprise planning and management—(all equal) starting an enterprise, identifying new enterprise opportunities, monitoring existing opportunities; financial planning—managing investments and risk; information technology—computer skills; marketing—new markets and value adding; farm production—understanding the production system; and self-management—(all equal) goals, time management, and handing stress.

The needs analysis and prioritized lists of women were collated and summarized. It was evident that leadership (including strategic planning), marketing, communication, and self-management were strong themes coming out in the study. Moreover, one of the main findings in the FGD, interviews, and discussions with women is that, although women are significant contributors on the farm, in the community, and in the household, their participation in significant rural organizations is still lagging, particularly at the management level. Hence, it was decided that the action research component of the project will be a comprehensive program that will strengthen the capacity of women in leadership and management skills, which will enable them to increase their leadership and representation in their endeavors, whether they be the farm, nonfarm enterprises, off-farm work, local organizations, the community, or even national rural organizations. Hence, the Women in Rural Leadership (WiRL) Program was conceptualized. WiRL aims to develop a pathway for women to increase their participation, representation, and leadership by developing essential skills for rural women that will lay the foundation for future leadership roles in their own farm business, communities, agribusiness, and influential organizations. WiRL has two streams: stream 1 is on building the foundations, and focuses on leadership, planning, and communication; stream 2 is the next step, and focuses on making it happen.

Results of the WiRL pilot program

The WiRL program was pilot-tested in Esperance. The Esperance program focused on stream 1: building the foundations. Partnership was developed with a local consultant to deliver WiRL in collaboration with a project at Muresk Institute, Curtin University of Technology. A total of seven women joined the pilot program.

The profile of women participants varied from younger women to more experienced women. The focus and leadership aspirations of the women participants were varied, with some women planning to use their skills in their own family business, another to support her leadership role in the community, while another was interested in participating on boards of rural organizations. All WiRL participants received a certificate of completion from Curtin University of Technology.

A follow-up workshop focusing on developing résumés and preparing professional portfolios to apply for leadership positions was held in November 2007.

The program is designed around eight modules reflecting the key roles of women involved in rural leadership. These modules consist of a number of units based on key competencies required to successfully fulfil these roles.

Stream 1. Building the foundations—leadership, planning, and communication.

Themes	Elements
1.1 Leading, managing, and working with people	Understanding yourself, your organization, and your community Goal setting and time management: ensuring a work-life balance Motivating and maximizing others' input—great teams
1.2 Strategic and business planning—making it stick	Effective strategic and business planning—knowing where you want to go and how to get there Improved decisions—forecasting trends and developments Managing change—the process, the people
1.3 Women in leadership	Women's strengths and unique style—maximizing yours Getting gender on the agenda—structures and processes that work with and for women Getting on boards
1.4 Marketing and communication	Effective communication Leading meetings that make a difference Marketing magic

Stream 2. The next step—making it happen.

Themes	Elements
2.1 Project management and continuous improvement	Improvement processes Planning and submitting proposals or grants Effective project management
2.2 Corporate governance	Principles of effective financial management (including budgets) Ethical decision making Managing risk
2.3 Impacting on policy	Government and rural politics Lobbying and advocacy skills
2.4 Creating enduring change	1. Participants will develop their own strategy for a project they wish to undertake

Assumptions on which the program is based

A traditional program	This program
Deficit model: "You have a gap in your skills and knowledge; this is what you need to learn."	Builds on and uses the experiences and knowledge participants bring to the program.
Passive learning, theoretically based, ignoring contextual realities.	Based on individuals and their context, with participants immersed in action-based learning.
Content and assessment are preset and rigid for the whole group.	Content and assessment are dynamic and focused on the needs of the individual and the group.
A one-off "fix" rarely leading to analysis and application to context.	Development occurs over time, in a cumulative manner, and is directly linked to the "real" work of the individual.
One person participating in an external program.	Critical mass: many people from the same background or community participating, sharing, and networking.

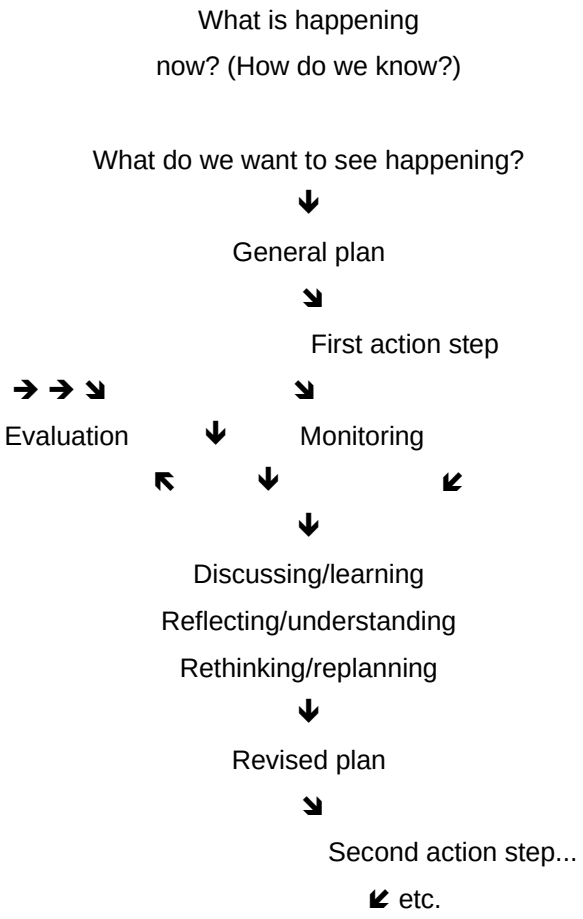
The WiRL program is based on a model of action-based learning, encouraging participants to enhance their competencies by using their knowledge and experience and linking these to well-known theories and/or elements of best practice to improve both individual and

organizational performance. Participants are encouraged to collaboratively research, reflect, problem-solve, and develop, implement, and monitor strategies to bring about change.

This is an ongoing model of learning that can be applied to many situations, whether they are specific production or technical problems, or larger strategic initiatives that need to be developed. It is a model that many managers and leaders use daily to meet the ongoing challenges of change. Specifically, the model begins by examining the situation as it stands and then identifying relative strengths and weaknesses, and threats and opportunities.

The learning model

Collaborative action learning



Adapted from Kemmis S. 1985. In: Ebbutt D, Educational Action Research.

The model requires clear statements about desired future states and the development of strategies to get there. Development of strategies involves collecting quality information about what is happening now both within the organization and in terms of best practice occurring elsewhere. Strategies are constantly monitored, reviewed, and reshaped as required. This learning model fits well with notions of strategic planning and continuous improvement.

Evaluation of WiRL

WiRL has received favorable feedback from women who participated in the program. All women participants (100%) claimed that the program supported their goals, and this was elaborated further in the two summarized themes—the management and planning of time that provided strategies for implementation into family, community, and business; and the affirmation that the practices currently undertaken were reinforced as being satisfactory and that improvement progressed from this asset base.

One of the WiRL participants commented that she liked that the whole learning week was flexible for group needs and able to capitalize on opportunities, for example, external resource persons. The concept of flexible learning, not just being stuck in a book, was an attractive feature. Likewise, this participant thought that there was a fantastic mixture of learning. Other women commented that it was a wonderful learning week. Other feedback refers to the value of networking. One woman valued the connections with a dynamic group of women, while one appreciated making some new strong connections. The evaluation showed that the program content that was to be transferred by the participants into their daily lives included the themes of managing time in a realistic way that aligned with personal goals and values, applying a time log to oneself and for use as a discussion tool with employees, updating résumés, and ongoing improvement in communication.

Topics considered to be most useful to the participants included the importance of effective teams and setting smart goals, the importance of family business meetings, examining one's own leadership skills and identifying one's own strengths and weaknesses, and evaluating team members.

The participants suggested the following topics for future training: models of learning styles, communication skills, and skills for co-leadership. One participant also suggested including activity sheets or other tools in the program folder for future use, while another participant suggested shortening some materials and concentrating on certain specifics as the program was very intensive.

There is a significant interest in WiRL in WA and several requests have been received from women's and rural organizations (such as the Wheatbelt Development Commission and the Mid-West Development Commission) to run the program in various regions. The WA Women in Agriculture and the Rural Remote and Regional (RRR) Women's Network are very supportive of WiRL, and the project has received numerous invitations to talk about it. Other organizations that supported WiRL are FarmBis, CBH Corp, and Prime Super.

Because of the excellent feedback WiRL has received, the RRR Network included WiRL in its submission to the Federal Minister of Agriculture, Hon. Tony Burke. The RRR Network is now trying to obtain funds to support the delivery of WiRL across Australia. WiRL fits in nicely with two of the focus areas in Labor's plan for primary industries, which is available from the Federal Labor Web site. In particular, a couple of items are of specific relevance to women in agriculture.

One of the issues the project is considering is the long-term sustainability of the WiRL Program. If the RRR Network is not successful in obtaining funds from the federal government to deliver the program, one possibility is to explore whether ACIAR or other funding bodies, such as RIRDC, are interested in supporting WiRL. Another possibility is to partner with other external service providers that could deliver WiRL to rural women. In the future, there is also potential for WiRL to be up-scaled nationally or internationally in the other partner countries (with some adjustments to suit the specific country situation).

8 Communication strategies

In Vietnam, leaflets (about 1,000) that mention the important roles of women in rice farming were also distributed in communes and villages. Training materials were developed with the help of the director of the Extension Center at Cuu Long Rice Research Institute (CLRRI) as well as other specialists. Women participants were given T-shirts with slogans on the front ("Phu nu tao dung tuong lai," which means "Women are keys to a better future"). An extension guide on "Improved Seed Health Improvement Practices" (SHIP) with pictures on the processes was distributed to extension officers and women participants. The women grew the selected seeds and their own seeds in their fields.

In Thailand, government offices, including agricultural extension, community development, and land development, and local administration organizations, including Subdistrict Administration Organization and Village Development Committees, were involved in most of the project activities, such as surveys and participatory action research to ensure that promising outputs from the project will be accepted and carried out by these organizations. Some officers of these government offices served as resource persons of the training workshops, and some members of local government organizations were involved in the project as training and/or field trip participants.

Prior to implementing development intervention activities, village meetings were conducted at the three target villages to find out the needs and interests of local residents. As a result, village leaders and representatives of local people (most of them women) identified educational activities and development projects suitable to solve their problems on agriculture and income generation. The project organized field trips for them to visit some villages with successful agricultural activities and group management, carried out training workshops according to the needs of each village, and gave support and supervision during the implementation of their development projects.

During the implementation of development activities, other farmers, aside from the project cooperators in each village, started making liquid bio-fertilizer by learning the technique from the project's members. Some of them also participated in the follow-up meetings held by the project at each village every few months. The women's group at two target villages received additional financial support to carry out their planned development activities from their local Subdistrict Administration Organization. It can be expected that some outputs of the project, especially making liquid bio-fertilizer, will be included in the annual development projects of the local government organizations and more local farmers will practice it in the future. Several communication materials were prepared and distributed: an extension guide on Making Liquid Bio-Fertilizer and an extension guide on Weed Control in Paddy Fields.

In Australia, the project completed a review of the literature, conceptualized action research, and conducted workshops and road shows. These workshops were conducted to communicate research results of surveys, introduce action research, and determine on-site needs. One project milestone is the organization of a training course for WiRL that aims to develop a pathway for women to increase their participation, representation, and leadership by developing essential skills that will lay a foundation for future leadership roles in their own farm business and community and in agribusiness and influential organizations. The course given in Esperance was successful. There is a demand for other areas and invitations have been received to hold WiRL in the wheatbelt, Midwest Bunbury, and Kimberley.

9 Impacts

9.1 Scientific impacts—now and in 5 years

Philippines

One of the findings of this study is that farmers use seeds for the next season from their saved seeds and through farmer-to-farmer exchange. Farmers replace seeds or buy new seeds after 2–3 years. Because of this practice, seeds lose their purity and vigor. Thus, after giving training on improved practices for seed health, women are more diligent in selecting off-types before harvesting and they manually separate contaminated seeds from healthy seeds. Those who grew clean seeds were able to obtain a 10% increase in rice yield.

Vietnam

Women received technical knowledge on integrated pest management (IPM), the 3 Rs (reduce seeds, fertilizer, and pesticides), and new varieties. At the rainfed sites, the women grew long-duration rice varieties (of 4 months) such as OM 1348, OM 1350, and OM 1352. After the training, they grew short-duration varieties (3 months) such as C10 and F1. They also reduced insecticide sprays from 4 to 2 times per season. They reduced fertilizer from 500 to 300 kg urea for 1 ha (urea has 46% nitrogen). They reduced the use of seeds from 150 to 120 kg/ha. The women were able to save from 350,000 to 400,000 dong/ha (US$22–25) due to the reduction in the cost of inputs. Average yield increased from 4 to 5 tons/ha. In the irrigated villages, the women had been using short-duration varieties. However, after the training, they reduced urea from 220–240 to 170–180 kg/ha and increased the dosage of potassium from 70 to 120–130 kg/ha. They also reduced spraying of insecticides from 5–6 to 3–4 times/season and seeds from 200 to 140 kg/ha. Yields in 2007 increased from 3.4 to 4.25 t/ha during the wet season.

Thailand

The costs of chemical fertilizer ranged from 45% to 55% of the total costs of farm inputs in this study (with and without migrants) in both irrigated and rainfed villages. Training women on the production and application of biofertilizer will help reduce expenditures on chemical fertilizers, increase profitability in rice production, and protect the environment.

Australia

At the scientific and community level, the project has increased awareness of the changing role of women in Australian farming systems. It has also highlighted the implications of rapid urbanization and globalization for farm organization and increased women's responsibility resulting from social and economic changes.

For individuals, the project seems to have highlighted women's important role in agriculture, thereby encouraging their increased participation in discussions on their changing roles, the issues and problems when males leave the farm to undertake nonfarm employment on a short- or long-term basis, as well as the challenges women face when they themselves undertake off-farm and nonfarm work.

At the project level, there is increased capacity of project team members for a systematic and rigorous research methodology and for combining qualitative and quantitative research methods. The training on research methodology, development of questionnaires, sampling and sampling design, focus group discussions, data management and analysis, and statistical and computer techniques has increased the capacity of project personnel and partners in the collaborating institutions.

9.2 Capacity impacts—now and in 5 years

Enhancement of research capacity of project and subproject staff

The research capacity of all participating collaborators was enhanced as a result of the project. Training was provided to all project staff in the following areas: (1) qualitative and quantitative research approach, (2) gender analysis, (3) farm household modeling, and (4) participatory R&D, which enriched their skills.

Apart from project staff training, subproject staff also benefited from increased knowledge and skills resulting from the action-research phase of the project. For instance, in Australia, an external expert organized WiRL and project staff who attended the program (in addition to the seven participants) also benefited from the training.

The research experience gained benefited all the partners. The team has engendered collaboration and goodwill and networks that, we hope, will lead to future research projects and outreach collaboration among IRRI, Curtin University of Technology, Khon Kaen University, Cuu Long Rice Research Institute, and other institutions or networks developed during the project.

Some of the topics included in the training activities were:

- Training on research methodologies (qualitative and quantitative methods, conceptual framework) and the monitoring process was conducted by Dr. Thelma Paris and Dr. Fay Rola-Rubzen in Sept. 2004 at IRRI, Philippines
- Training on data management and analysis was conducted by Dr. Fay Rola-Rubzen in Vietnam in June 2005
- Training on research methodologies was conducted by Joyce Luis in Thailand in Aug. 2005
- Training of in-country project staff on conducting surveys in Thailand, Vietnam, the Philippines, and Australia was conducted by each project coordinator
- Training on data entry in Thailand was conducted by Joyce Luis in August 2005
- Training on quantitative methods was conducted by Dr. Fay Rola-Rubzen at IRRI from 31 May to 3 June 2006
- Training on measuring technical efficiency, production analysis, and determinants of migration was conducted by Dr. Fay Rola-Rubzen at Curtin University on 31 August 2006
- Training on statistical and multivariate analysis was conducted during the 3rd meeting held in the Social Sciences Division, 30 May-3 June by Dr. Fay Rola-Rubzen
- Training on data analysis of 800 household surveys was conducted during the 4th meeting held at Curtin University of Technology, Muresk, Perth, Australia, on 30 August 2006 by Dr. Fay Rola-Rubzen
- Training on econometric analysis (modeling) was conducted during the 4th meeting held in Curtin University of Technology, Muresk, Perth, Australia, on 30 August 2006 by Dr. Fay Rola-Rubzen
- Training on data management and data analysis was given during the visit of Dr. Thelma Paris and Mr. Donald Villanueva to Khon Kaen University, Thailand, 2007

Enhancement of the capacity of women participants

All the women participants in the participatory action research in the Philippines, Thailand, Vietnam, and Australia gained knowledge and skills in the specific training workshops given by the respective teams. “Knowledge is power” and women were empowered in making timely and sound decisions, particularly when their husbands were away for a short- or long-term period. The gains from technical knowledge translate into an increase in rice productivity and a reduction in input costs.

Philippines

A series of five training workshops was conducted from March to May 2007 titled “Participatory training-workshop on improving farmers’ rice seed health practices for crop and pest management.” The number of participants ranged from 32 to 56, including farmer-respondents and agricultural technicians and other officials of the local DA office. The topics covered different methods of seed cleaning; field seed health selection processes at harvesting, drying, and storage; pests and diseases of rice plants; and use of the leaf color chart. Some methods had been practiced by the farmers but the training emphasized the importance of following the cleaning method rigorously to be able to attain high rice yield every harvest season by using own seeds or seeds from other farmers. The methods for cleaning seeds are winnowing, flotation, and manual sorting. Field selection processes include roguing and selecting a portion in the field with better crop growth and placing tall poles to mark it; harvesting by individual panicles; and using appropriate containers for storing seeds. After the series of training-workshop activities, this information was posted in the IRRI bulletin on-line.

Vietnam

Training was organized at the onset of the rice wet season at three study sites. In Long An (irrigated) and Ben Tre (rainfed), training was conducted in the first week of May 2007. In Tien Giang (irrigated), training was conducted in the third week of May 2007. The participation of women in the training programs caught the attention of the local government, which noticed that there was increased participation of women in local training programs organized by the local government. Before, women did not participate in these training programs.

Thailand

The main educational activities provided for project participants in the three target villages in Thailand were field trips and training workshops. The topics and objectives of these activities depended on the need for development activities identified at village meetings. Two one-day field trips were conducted in December 2006. The first one was conducted on 21 December for 18 participants to visit development activities in three villages in other districts of the provinces. Women and village leaders came from an irrigated area, Nong Bua Noi Village in Khon Kaen Province. The second field trip was conducted on 25 December for 29 participants from two villages in a rainfed area, Nafai Village and Tabhai Village, Udonthani Province, to visit development activities in two villages in a nearby province. During the site visits, the participants had opportunities to learn technical aspects of agricultural practices and income-generating activities as well as aspects of group management.

At Nong Bua Noi Village, Khon Kaen Province, three training workshops were organized for local people: (1) on 7 February 2007, training on making liquid bio-fertilizer was conducted for 32 participants: 27 women, 3 village committee members, 1 subdistrict leader, and 1 local land development volunteer; the two trainers were local technical officers of the Land Development Department; (2) on 3 May 2007, follow-up training on making liquid bio-fertilizer was conducted for 26 participants; and (3) on 15 May 2007,

training on weed control in paddy fields was conducted for 35 participants, including women, some of their husbands, and village committee members; the trainers were an associate professor in weed science from the Faculty of Agriculture, Khon Kaen University, and two local farmers from a nearby subdistrict.

For Nafai Village and Tabhai Village, Udonthani Province, three training workshops were organized for local participants: (1) on 26 April 2007, training on group management and skill development on reed mat weaving was conducted for 28 women (17 from Nafai and 11 from Tabhai); the trainers were two group leaders from a successful women's group in a district of Khon Kaen Province; (2) on 8-9 May 2007, training on designing and dying of silk products was conducted for 33 women (29 from Nafai and 4 from Tabhai); the trainer was a successful and famous silk weaver in a district of Khon Kaen Province; and (3) training workshops on making liquid bio-fertilizer and extracting bio-insect repellant substance from local herbal plants were organized for 39 participants (26 women and 13 men) at Tabhai Village on 29 May 2007 and for 30 participants (27 women and 3 men) at Nafai Village on 30 May 2007; the trainer was a successful land development volunteer from a district of Khon Kaen Province, and the participants received extension guides.

Australia

Participants in the WiRL Program learned skills in leadership, management, and working with people. They also learned effective communication and marketing skills. Modules in the WiRL program included goal setting and time management, dealing with the work-life balance, motivating and maximizing others' inputs, building great teams, effective strategic and business planning and managing change, and looking at the process as well as the people. Another component was understanding women's strengths and unique style and maximizing one's own personal style. Finally, another component was getting gender on the agenda, structures and processes that work with and for women, and getting women on boards. All these are expected to build the foundation for women to strengthen their capacity and this is expected to lead to increased representation and leadership for women in the future.

9.3 Community impacts—now and in 5 years

9.3.1 Economic impact (Thailand, Philippines, Vietnam)

Participatory action research (PAR) started only in the late part of the second year of the project. We anticipate that, in the Philippines, the anticipated yield increase due to improved seed health practices is 15–20%, thus providing poor farming households with a marketable surplus and increased income. In Thailand, the costs of chemical fertilizer ranged from 45% to 55% of the total costs of farm inputs in both irrigated and rainfed villages. Training women on the production and application of biofertilizer will help reduce the costs of chemical fertilizers and protect the environment. In Vietnam, the practice of IPM will reduce expenditures on pesticides and protect the health of family members, especially mothers. The results of participatory action research in Vietnam revealed that a reduction in the amount and costs of inputs (seeds, fertilizer, insecticides) and use of short-duration rice varieties increase rice yields and reduce expenses. In all the countries, technologies introduced will have positive benefits on the household, community, and women *de facto* farm managers. Women will have less stress in allocating limited cash for household and farm inputs. With increasing household expenditures and costs of children's education, reducing the cost of farm inputs without compromising input efficiency can help women manage their farms better.

9.3.2 Studies have also shown that increasing women's participation in decision making has a positive economic impact. Thus, increasing their leadership and representation is expected to yield positive results for women and their community.

Australia

It is difficult to measure the economic impact of the study in the short term, particularly as the participatory action research was done only last year. However, the main impact of this project will result from the improvement in management, leadership, and marketing skills and the expected increased participation and representation of women in their business on their farm and/or in their community. Also, benefits are expected from the changes in government policies and strategies that will give women support to participate more fully in economic activities. Economic benefits from the WiRL program are expected to translate into:

- Better strategic planning and management, leading to higher income.
- Better marketing knowledge, leading to better prices and higher income. Marketing decisions can be made that maximize returns to farmers. In particular, farmers will be able to identify markets that will offer them higher market returns from their produce.
- Improved information on appropriate quality management and supply chain systems required to develop and sustain these new markets.
- Improved networking with other women.
- Improved capacity of women farmers through training and knowledge of markets and new techniques and technologies. This will empower them and they will have long-term benefits, both socially and economically.

The major benefits derived initially from improvements in the skills/capability of project participants will lead to high productivity, improved income, and women's economic empowerment. These benefits in the long run will flow on to the rest of the community. Empirical evidence shows that removing barriers faced by women and improving their skills will result in higher agricultural productivity and economic benefit. Studies have also shown that increasing women's participation in decision making has a positive economic impact. Thus, increasing their leadership and representation is expected to yield positive results for women and their community. The research, development, and extension in this project are likely to have positive impacts on the rice industry of the collaborating Southeast Asian countries and farming systems in Australia.

9.3.3 Social impact (Asia and Australia)

As the project directly involves women, it is expected to have a significant positive social impact. In a broader sense, this project has social and gender relevance in terms of:

- Providing men and women equitable access to resources (knowledge and skills) to increase farm productivity
- Recognizing the shift in gender roles (from unpaid workers to *de facto* farm managers) due to male outmigration
- Contributing to the body of knowledge on the implications of migration and off-farm work for female headship and farm efficiency
- Identifying a basket of options (technologies, capacity enhancement) to enhance women's specific occupations, skills, and knowledge

- Considering women farmers by enhancing their knowledge and skills on all aspects of rice production so that they can make timely and sound decisions on farm-related matters when their husbands are away for a short- or long-term period
- Empowering women farmers in Asia by enhancing their knowledge and skills on all aspects of rice production so that they can make timely and sound decisions on farm-related matters when their husbands are away for a short- or long-term period
- Empowering women farmers in Australia by enhancing their knowledge and skills in management, leadership, and marketing so that they can make sound decisions
- Greater awareness of the increasing roles of women in changing rural Asia and Australia
- Considering flexibility in gender roles in technology design as a consequence of male outmigration
- Greater awareness of the increasing role of women in changing rural Asia
- Implications of the feminization of agriculture (more women in the labor force) for the future of the agricultural economy
- Identifying “who” is actually left behind to manage farms due to male outmigration will lead not only to efficient and relevant rice research but also to solutions to gender equity problems
- Increasing women’s representation in organizations will allow for diversity in views, which studies have found to be beneficial for communities and organizations
- Achieving a common goal of IRRI and ACIAR to improve human welfare through enhanced food and nutritional security, increased income, promotion of gender equity, and encouragement of sustainable natural resource management
- Poverty alleviation, sustaining household food (rice) security, and reducing hunger can only be achieved if women farmers, especially the *de facto* heads of households, are involved in agricultural research and development programs
- Producing a database on the prevalence of family migration and off-farm work will be useful in the formulation of policies on rural development and agriculture.

9.3.4 Environmental impact

Some impact on the environment could occur indirectly from some interventions. For instance, in Vietnam, knowledge and implementation of IPM could lead to positive benefits to the environment due to reduced pesticide use, less contamination of water, less air pollution, and preservation of flora and fauna. In Thailand, the use of bio-fertilizer and bio-insecticides could reduce or eliminate the harmful effects of chemicals on the soil and water. In the Philippines, improved seed health practices and pest problem identification could lead to a reduction in seed rates and costs of chemical inputs, thus reducing damage to the environment.

In Australia, no environmental impact is anticipated resulting from the project.

9.4 Communication and dissemination activities

Philippines

An extension guide on “Improved Seed Health Improvement Practices” (SHIP) with pictures on the processes was distributed to the extension officers and women participants. The women planned to grow the selected seeds and their own seeds on their fields to assess the yield increase due to improved seed health practices.

A manual on seed improved practices compiled by Francisco Elazegui and Catalina Diaz was distributed to the Local Government Units (LGUs) handling the extension of agicultural technologies. The training workshop organized by IRRI and the DA was featured in the IRRI Bulletin for 4-8 June 2007.

Vietnam

The team distributed about 1,000 leaflets on gender awareness in technical training to extension workers and women farm managers. The leaflets were released at both the study sites and other sites beyond the project sites. Training materials covered topics such as insect and disease identification, weed management, and cultural practices to maintain healthy plants while reducing the amount of inputs and getting higher yields. Women were also trained to record farm inputs, rice production and income, and computing the profits from rice production. These training materials were prepared with the help of the director of the Extension Center at CLRRI as well as other CLRRI scientists. Booklets were simplified for easier understanding by women farmers. Aside from the booklets, actual samples of pests were borrowed from the Department of Plant Protection of Cantho University to train women to identify pests. White T-shirts were also prepared for women trainees. The T-shirts showed the slogan “Phu nu tao dung lai” on the front, which means “Women are keys to a better future.” The women promised to wear the T-shirts every time they attended a meeting. The leaders of communes and the farmers’ association broadcast their activities on “extension for women” through loudspeakers installed in the villages.

Thailand

Government offices (including agricultural extension, community development, and land development) and local administration organizations (including Subdistrict Administration Organization and Village Development Committee) helped coordinate household surveys and participatory action research activities of the project. This was to ensure that promising project outputs will be accepted and carried out by these organizations. Some government officers served as resource persons of the training workshops, and some members of local government organizations were involved in the project as training and/or field trip participants.

Prior to implementing development intervention activities, meetings were conducted in three target villages to find out the needs and interests of local residents. As a result, village leaders and representatives of local people (most of them women) identified educational activities and development projects suitable to solve their problems on agriculture and income generation. The project organized field trips for them to visit some villages with successful agricultural activities and group management, carried out training workshops according to the needs of each village, and gave support and supervision during the implementation of their development projects.

During the implementation of development activities, other farmers, aside from the project cooperators in each village, started making liquid bio-fertilizer by learning the technique from the project’s members. Some also participated in the follow-up meetings held by the project in each village every few months. The women’s group in two target villages received additional financial support to carry out its planned development activities from its local Subdistrict Administration Organization. Some outputs of the project, especially making liquid bio-fertilizer, can be expected to be included in the annual development projects of the local government organizations and more local farmers will practice this in the future.

Several communication materials were prepared and distributed: an extension guide on Making Liquid Bio-Fertilizer and an extension guide on Weed Control in Paddy Fields.

Australia

At the start of the project, the Australian project leader made several presentations to introduce the project:

- Seminar presentation at Muresk Institute, Curtin University of Technology
- Rural, Remote, and Regional (RRR) Network
- Research Unit for the Study of Societies in Change (RUSSIC)

She also contacted key women and other institutions such as the Alcoa Centre for Sustainable Communities, Women in Agriculture, and the RRR Network.

A project Web site (www.genderrmigration.iinet.net.au) was created to promote the goals, objectives, and achievements of the project, and to ensure effective communication of results and project outputs to the stakeholders and the community.

As the project progressed, several presentations were made in various local and national fora in Australia (some where the Australian project leader was invited to give presentations and some initiated by the Australian project leader):

- Research Unit for the Study of Societies in Change (RUSSIC), by Dr. Thelma Paris
- International Women's Day, Curtin University of Technology, by Dr. Fay Rola-Rubzen
- 9th Annual Meeting of Australian Women in Agriculture held at Joondalup Resort, Perth, by Dr. Fay Rola-Rubzen and Dr. Thelma Paris

After the survey, a series of workshops was held across WA to communicate and disseminate the results of the study and to introduce the action research component. A total of seven workshops were held across WA, in Bunbury, Esperance (two different locations), Mullewa, Geraldton, Katanning, and Moora (with a further workshop to be held in the southwest in November). The workshops were held in conjunction with the RRR Network road show to maximize synergies between the project and the network.

Before the implementation of the Women in Rural Leadership Program, a reference group was formed to act as a sounding board for the action research program and to ensure that the program was relevant to women's needs. The reference group was very useful in providing feedback to the proposed program, linking with other women groups and other relevant organizations and planning for future directions.

The project has also received significant coverage from the media and significant interest from women's organizations and other rural organizations. Below is a list of press coverage on the project:

1. From the Chair, RRR Network News, Summer 2007
2. Women in Rural Leadership—an update, RRR Network News, Summer 2007
3. Women in Rural Leadership, Prime Tribune, Vol. 5, Spring Edition 2007
4. From the Chair, RRR Network News, Spring 2007
5. Rural women's leadership program, Esperance Express, 12 September 2007
6. Women on Farms study, Sun City News, July 2007
7. Research results from Women on Farms, Esperance Express, 20 July 2007
8. Sharing findings, Geraldton Guardian, 16 July 2007
9. Researchers tour WA to share findings of Women on Farms study, press release, Curtin University of Technology, 11 July 2007

10. Radio news on Women on Farms research findings, Radio National, Country Breakfast, 30 June 2007, by Tony Allen

11. Radio news on the findings of Women on Farms research, ABC North West WA, WA Country Hour, 25 June 2007, by Natacha Hammond

12. Women Unite: Working together for rural Australia, RRR Network, retrieved from www.rrr.wa.gov.au/womenunite.asp on 6 October 2006

13. Superwomen roles undergo change, Farm Weekly, 31 August 2006, by Jenna Friend

14. International Women's Day—8 March: Diversity and experiences of Curtin women living in rural, remote and regional areas of WA, Ethics, Equity & Social Justice, 2006, Curtin University of Technology

15. Radio interview with Dr. Fay Rola-Rubzen, Kirsty Sword Gusmao, and Margaret Twomey, ABC Radio Australia, 30 May 2006, by Adrienne Francis

16. Women in East Timor, ABC Rural, Country Breakfast, 13 May 2006, by Adrienne Francis

17. Role of Asian rural women, ABC Rural, 18 April 2006, by Adrienne Francis

18. The changing nature of women's affairs in East Timor, ABC National Radio, 25 May 2006, by Adrienne Francis

19. RRR Hosting Focus Group Discussion Online: Women on Farms Project, RRR Network News, Summer 2005

20. Interview on Women on Farms, ABC Perth Radio, 29 December 2005, by Sarah Knight

21. Curtin University Study on Roles of Women and Challenges and Constraints Faced by Women in Farms and Rural Areas, Muresk Messenger, Vol. 25, No. 1, December 2005

22. Radio interview with Dr. Fay Rola-Rubzen and Christine Storer, ABC Goldfields-Esperance WA, 6 December 2005

23. About Women on Farms, National Radio, 25 November 2005

24. Radio news on a study on women in farming by Curtin University, National Radio, 25 November 2005

25. Radio news on a new international study on women on farms, National Radio, 24 November 2005

26. Calling for women!, Esperance Express, 24 November 2005

27. Radio news on a project to identify the role of women in farming families, National Radio, 21 November 2005

28. WA uni to study women's farming contribution, Yahoo News, 18 November 2005

29. Study of women's role in agriculture, Countryman, 17 November 2005

30. Study investigates changing role of farm women, ABC News Online, 17 November 2005

31. Curtin University of Technology is to conduct a study to identify globalization and ICT effect on women in farms, ABC South West, 17 November 2005

32. Radio news on changed role of women on farms, ABC Regional, 17 November 2005

33. Curtin University of Technology is to conduct a study to identify globalization and ICT effect on women in farms, ABC Great Southern, 17 November 2005

34. Curtin University of Technology is to conduct a study to identify globalization and ICT effect on women in farms, ABC North West, 17 November 2005

35. Radio interview with Dr. Fay Rola-Rubzen, ABC Goldfields-Esperance WA, 17 November 2005

36. Exciting project for women in agriculture, RRR Network News, Spring 2004

37. Achieving Sustainable Research Development and Extensive Outcomes Workshop: Identifying and Assessing Methods, The University of Sydney, retrieved from www.vetsci.usyd.edu.au/research/farmanimal_health/workshops.shtml, 1 September 2004

38. Changes in Rural Agriculture, Muresk Messenger, Vol. 24, No. 1, June 2004

39. Study into farm women, Great Southern Herald, 14 July 2004

Dr. Fay Rola-Rubzen was invited and interviewed by several media people, and a number of articles were written or aired on radio programs, including regional programs and ABC National. In addition, Dr. Fay Rola-Rubzen was invited to make a presentation at the following fora:

- WA Women in Agriculture AGM, Sept. 2007
- Farm Safety AGM, Oct. 2007

IRRI will sponsor a conference on 21-22 February 2008 at IRRI to present the final results of this research to a wider audience. Experts on migration and gender issues, policymakers, extension workers, and other social scientists (economists, sociologists) in Southeast Asia and Australia will be invited.

10 Conclusions and recommendations

10.1 Conclusions

It is clear that labor outmigration and/or off-farm work are occurring in all countries involved, although at varying rates. The incidence of migration is highest in northeast Thailand, where 63% and 54% of farming households in rainfed and irrigated villages have at least one migrant on a short-term or long-term basis. Migration rates are lower in the Philippines and Vietnam, where about a quarter have at least one migrant in both ecosystems. Migration is higher in rainfed villages than in irrigated villages. However, the rate of male migration is higher than that of female migration in Thailand and Vietnam, which is opposite to that of the Philippines. In northeast Thailand and Vietnam, rural to urban migration is more prevalent because of more employment opportunities in nearby districts and provinces brought about by rapid industrialization and better communication and transportation facilities. In the Philippines, international migration is more prevalent than internal migration due to the better educational levels and skills of Filipino workers and encouraging policies of the Philippine government for overseas workers. Although there are benefits from migration, farming will still be the mainstay in rural areas. Farming households will continue to supply labor to urban and industrialized areas, which have more regular employment opportunities and higher compensation. Those family members who have higher opportunity costs tend to migrate and the elderly, uneducated are left behind to manage the farm. Remittances help provide food security, reduce poverty, ease credit constraints, provide more education for the children, and ease credit constraints in farming. Remittances from temporary migrants are used to educate other members left behind, pay for farm inputs (hired labor, material inputs, basic food and household

expenditures, housing, etc.), and can relax capital and risk constraints. Male outmigration can transfer responsibility for farm management to women and increase their decision-making authority in the household. Where women have less access to credit, technical knowledge, training, extension, and markets, farm productivity might fall as a result. The pressure of maintaining or increasing rice productivity falls on the women left behind, thus increasing their work burden and managerial responsibilities. Thus, enhancing their skills and knowledge as well as providing them with new technologies will help them increase rice productivity, ensure family food security, and alleviate poverty.

In Australia, participation in off-farm work by farming households is quite high. In recent years, women have become more involved in off-farm work. In the past two years, there seems to be an increasing trend for men to work off-farm. This is particularly true in WA and is probably due to the resources boom. In particular, males increasingly tend to work in the mining sector, which is causing stress in terms of labor shortage on farms. There are two main implications for women. First, if the husbands are working in mines, this means some women will increasingly be left to manage the farm. Second, the general labor shortage means more pressure for women to contribute with farm work, even when the husband or partner is not working elsewhere, but even more so if the husband is away and engaging in off-farm work. This is likely to have an impact on the organization of the farm, on productivity, on gender relations, and on the roles of women.

Women on farms face a multitude of constraints given their multiple roles on the farm, off-farm, in the household, in a business, and in the community. What strategies could help overcome these constraints and challenges? Below are some strategies in relation to the issues faced by Australian women.

Capacity building is needed to enhance women's capability to meet today's challenges as women on farms. Strategies need to involve life-long learning and build upon previous knowledge. Such training and learning needs to be delivered in a variety of modes, including face to face and via the Internet, while women cover their other responsibilities, such as children, home, and family. Topics identified include legal issues, financial management, government processes, decision making, maintaining networks, working and living in isolated communities, volunteering, and specific skills and knowledge within agriculture. It was also stated that others, particularly the older generation and in-laws within the farming sector, could benefit from such up-scaling so that discussions regarding succession planning could progress based on emerging issues rather than the traditional and closed perspective of women's role within the farming sector.

The main issues for women in the uptake of training as well as uptake of off-farm work opportunities include lack of support and services such as child-care facilities; safety issues; skills recognition—building a connection between these skills; lack of information on opportunities; slow acceptance by some sectors/individuals of role changes when women are better qualified; and sometimes a lack of awareness by both men and women of how things have changed.

10.2 Recommendations

Asia

a) Stereotypical notions that rural women are mere housewives should be discarded and replaced by recognition that their roles in production and their contributions to family income are crucial for improving household livelihoods.

b) All government development programs must target women farmers as equal partners as men. Indeed, much government assistance should be channeled through women to effectively reach the entire household.

c) “Knowledge is power,” but this has to be shared with women and not only with men. Women should be provided with technical knowledge and skills on crop management in production such as raising seedlings, how to identify pests and diseases, knowing the timely use of fertilizer and recommended amounts, etc.

d) Programs that combine technical with organizational and leadership skills are effective in building social capital. Thus, research and development workers should facilitate the formation of women’s groups to sustain adoption of different income-generating activities. Programming efforts should be made to empower women and help them to independently organize, manage, and control their resources. One strategy would be to train some women as female agricultural extension workers at the local level who can transfer their knowledge to other women.

e) Policies/interventions should be differential to suit the needs of women from different socioeconomic groups and social status (poor women from farming households, female-headed households—widows, separated persons, and de facto heads).

f) Government and NGO programs involving poor women in new activities that encourage efficient use of inputs and expenditure savings such as IPM, the 3 Rs (less seed, less fertilizer, less pesticides), use of bio-fertilizers, practices to improve seed health, vaccination of livestock and poultry, and production and marketing of products should be expanded.

g) A policy is only good when it is implemented. It is useful for an organization to complement a policy on gender with a gender strategy outlining the approach to implement as well as a gender action plan. To implement an organization’s commitment to gender equality, additional technical advice or expertise is needed. An effective strategy for mainstreaming is to ensure that gender sensitivity is included as a criterion in all development agendas.

h) Science and technology generated from international and national agricultural research institutes should directly benefit poor farmers, particularly those who live in unfavorable rice environments.

Australia

It is important to build skills that relate to leadership, strategic planning, business enterprise, marketing, and self-development and that acknowledge the diversity of experiences and knowledge of rural women from a range of demographics. However, the training has to be delivered within a structure that supports the various roles of women, for example, in timing, venue, and duration. Alternative ways of delivery can also be used such as IT (Web, email, and video conferencing). In some instances, supporting mechanisms need to be in place to allow women to take advantage of these capacity-building opportunities, for example, provision of child care, training subsidies, and flexible modes of delivery. Likewise, providing follow-up support and advice for a designated time and ensuring an interactive and supportive teaching and learning environment are helpful.

In terms of the uptake of WiRL, although there is significant interest in it in WA and several requests have been received from women and rural organizations (such as the Wheatbelt Development Commission and the Mid-West Development Commission) to run the program in various regions, its long-term sustainability is at stake. There is a need to find funds for its continuation in the interim while strategies to build its long-term sustainability are being put in place. As some women pointed out, it is a pity that an excellent program will die out as the project finishes. One possibility is to explore whether ACIAR or other funding agencies (such as RIRDC) are interested in supporting further uptake of WiRL, perhaps Australia-wide and in other countries (with appropriate adaptations).

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11.2 List of publications/reports produced by project

Papers presented in conferences

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Luis J, Paris T. 2007. Labor out-migration: implications on farmers’ livelihood, rice productivity, and gender roles in the Philippines. Paper presented at the Social Sciences Division, IRRI, 29 November 2007.

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12 Appendixes

Table 1. Share of different sources of income, northeast Thailand

Source of income	Rainfed			Irrigated		
	Short term	Long term	No migrant	Short term	Long term	No migrant
	(n=58)	(n=117)	(n=212)	(n=72)	(n=168)	(n=203)
Source of household income (%)						
Cash income from rice	9	9	9	18	13	20
Cash income from other crops	33	23	28	8	8	28
Sale from livestock	5	5	7	9	7	4
Rent	1	a	1	a	a	1
Off-farm sources	6	3	7	4	2	5
Nonfarm sources	16	14	48	26	21	42
Remittances from migration	30	46	–	35	49	–
Total	100	100	100	100	100	100
Annual household income (baht)	73,005	97,160	77,401	77,368	111,791	111,922
Annual household income (US$)	1,795	2,389	1,903	1,902	2,749	2,752
Per capita income (baht)	14,021	15,636	16,214	14,031	18,856	23,184
Per capita income (US$)	345	384	399	345	464	570

a = less than 1%. Source: Surveys of farming households, 2005.

Table 2. Share of different sources of income, Philippines

Source of income	Domestic	International	No migrant
	(n=35)	(n=171)	(n=206)
Cash income from rice (%)	25	13	33
Cash income from other crops (%)	a	a	–
Sale from livestock (%)	3	2	6
Capital gains from land and nonland assets (%)	13	–	a
Off-farm sources (%)	3	1	2
Nonfarm sources (%)	28	19	59
Remittances from migration (%)	28	65	–
Total	100	100	100
Annual household income (Php)	103,023	235,263	83,195
Annual household income (US$)	1,849	4,222	1,493
Per capita income (Php)	16,600	36,536	16,509
Per capita income (US$)	298	656	296

Source: Surveys of farming households; a = less than 1%. US$1 = Php 55.72.

Table 3. Share of different sources of income, South and North Vietnam.

Source of income	South Vietnam						North Vietnam		
	Rainfed			Irrigated			Irrigated		
	Short term	Long term	No migrant	Short term	Long term	No migrant	Short term	Long term	No migrant
Cash income from rice (%)	40	39	51	57	54	61	19	19	18
Cash income from other crops (%)	2	–	2	–	2	1	1	2	2
Sale from livestock	9	8	13	10	9	19	16	21	46

Capital gains from land and nonland assets (%)	1	–	–	1	–	–	–	–	1
Off-farm sources (%)	5	8	10	2	1	3	1	–	1
Nonfarm sources (%)	8	10	24	9	9	16	17	10	32
Remittances from migration (%)	35	35	–	21	25	–	46	48	–
Total	100	100	100	100	100	100	100	100	100
Annual household income (000 dong)	12,996	14,571	11,213	35,070	55,898	27,206	20,755	26,554	24,914
Annual household income (US$)	826	926	713	2,230	3,554	1,730	1,320	1,688	1,584
Per capita income (000 dong)	2,329	2,535	2,491	6,895	8,868	5,797	4,143	4,868	4,484
Per capita income (US$)	148	161	158	438	564	369	263	309	285

Source: Surveys of farming households; US$1 = 15,729 dong

Table 4 Percentage disbursement of remittances received, northeast Thailand.

Disbursement of remittances	**Rainfed**		**Irrigated**	
	Short term	Long term	Short term	Long term
Male migrant	(n=41)	(n=113)	(n=84)	(n=159)
Food	38	23	33	20
Farm inputs	15	13	14	15
Children's education	10	13	7	7
Savings	6	4	5	10
Payment of debts	7	25	10	27
House construction/repair	6	6	10	6
Medicine	2	3	4	3
Social events	4	2	4	3
Clothing	1	2	3	2
Household durables	8	6	8	5
Others	3	3	2	2
Total	100	100	100	100
Average monthly remittances sent by the migrant (baht)	1,758	2,471	1,646	3,290
Average monthly remittances sent by the migrant (US$)	45	63	42	84
Average annual remittances sent by the migrant (baht)	17,581	29,655	16,459	39,483
Average annual remittances sent by the migrant (US$)	447	755	419	1,005
Percent of remittances over income from migration work	23	26	18	29
Female migrant	(n=54)	(n=68)	(n=60)	(n=98)
Food	27	21	37	22
Farm inputs	8	14	14	13
Children's education	13	14	12	8
Savings	3	2	4	9
Payment of debts	5	32	8	16
House construction	24	4	3	15
Medicine	3	3	7	2
Social event	2	2	3	3
Clothing	4	2	2	2
Household durables	9	4	8	8

Others	2	2	2	2
Total	100	100	100	100
Average monthly remittances sent by the migrant (baht)	1,258	1,500	1,568	1,796
Average monthly remittances sent by the migrant (US$)	32	38	40	46
Average annual remittances sent by the migrant (baht)	12,579	17,997	17,250	21,550
Average annual remittances sent by the migrant (US$)	320	458	439	548
Percent of remittances over income from migration work	16	21	21	23

Source: Survey of farming households; US$1 = 39.29 baht. Note: Other migrants have no response.

Table 5. Percentage disbursement of remittances received, Philippines

Disbursement of remittances	**Rainfed**		**Irrigated**	
	Domestic	International	Domestic	International
Male migrant	(n=23)	(n=73)	(n=61)	(n=61)
Food	21	21	24	15
Children's education	19	22	22	28
Farm inputs	16	16	24	15
Medicine	17	5	6	10
Savings	5	9	6	11
Payment of debts	5	4	2	2
House construction	3	5	1	7
Social events		3	1	1
Clothing	1	2	3	3
Others	13	13	11	8
Total	100	100	100	100
Average monthly remittances sent by the migrant (Php)	1,850	12,565	1,864	13,862
Average monthly remittances sent by the migrant (US$)	33	226	33	249
Average annual remittances sent by the migrant (Php)	20,350	138,220	22,370	152,486
Average annual remittances sent by the migrant (US$)	365	2,481	401	2,737
Percent of remittances over income from migration work	23	40	24	45
Female migrant	(n=18)	(n=103)	(n=49)	(n=74)
Food	31	23	20	17
Education	11	30	30	21
Farm inputs	19	18	16	12
Medicine	16	3	7	9
Savings	11		3	9
Payment to debts	1	5	2	3
House construction	3	11	2	17
Social events		1	4	1
Clothing	1	1	4	5
Others	7	8	12	6
Total	100	100	100	100
Average monthly remittances sent by the migrant (Php)	2,739	9,200	1,811	10,008
Average monthly remittances sent by the migrant (US$)	49	165	32	180
Average annual remittances sent by the migrant (Php)	30,129	110,406	21,730	120,095
Average annual remittances sent by the migrant (US$)	541	1,981	390	2,155
Percent of remittances over income from migration work	31	35	25	36

Source: Surveys of farming households; US$1 = Php 55.72. Note: Other migrants have no response.

Table 6 Percentage disbursement of remittances received, Vietnam.

Disbursement of remittances	South Vietnam				North Vietnam		Total
	Rainfed		Irrigated		Irrigated		
	Short term	Long term	Short term	Long term	Short term	Long term	
Male migrant	(n=20)	(n=22)	(n=56)	(n=21)	(n=62)	(n=121)	(n=302)
Food	36	43	23	21	10	9	19
Farm inputs	25	22	25	19	3	2	12
Children's education	11	10	8	7	14	17	13
Medicine	4	11	6	8	3	3	4
Social events	11	5	12	29	9	6	10
House construction or repairs	1	2	4	4	18	14	10
Clothes	1	0	2	1	1	1	1
Debt payments	4	2	6	4	7	8	6
Savings	7	5	14	7	35	40	25
Total	100	100	100	100	100	100	100
Average monthly remittances sent by the migrant (000 dong)	213	323	569	604	693	774	583
Average monthly remittances sent by the migrant (US$)	14	21	36	38	44	49	37
Average annual remittances sent by the migrant (000 dong)	2,552	3,881	6,833	7,248	8,314	9,283	6,997
Average annual remittances sent by the migrant (US$)	162	247	434	461	529	590	445
Percent of remittances over income from migration work	35	37	55	52	68	71	60
Female migrant	(n=52)	(n=22)	(n=39)	(n=13)	(n=2)	(n=8)	(n=136)
Food	35	36	27	19	–	8	29
Farm inputs	33	21	30	23	2	1	27
Children's education	7	13	8	4	–	3	7
Medicine	5	5	4	4	–	3	5
Social events	7	5	10	22	5	2	9
House construction or repairs	2	1	4	2	–	–	2
Clothes	–	–	2	1	3	6	1
Debt payments	4	10	3	5	40	–	5
Savings	7	9	12	20	50	77	15
Total	100	100	100	100	100	100	100
Average monthly remittances sent by the migrant (000 dong)	253	225	242	421	229	688	282
Average monthly remittances sent by the migrant (US$)	16	14	15	27	15	44	18
Average annual remittances sent by the migrant (000 dong)	3,033	2,699	2,907	5,050	2,750	8,250	3,385
Average annual remittances sent by the migrant (US$)	193	172	185	321	175	525	215
Percent of remittances over income from migration work	45	33	29	36	37	84	39

Source: Surveys of farming households; US$1 = 15,729 dong.Note: Other migrants have no response.

Fig. 1. Project implementation framework.