

# Participatory Impact Pathway Analysis (PIPA) Workshop Report Rice Postharvest Management in Cambodia

15-19 December 2008  
Ministry of Agriculture, Forestry and Fisheries  
Phnom Penh, Cambodia

IRRI - Cambodia Postharvest Projects

ADB/JFPR 9036  
Improving Poor Farmers' Livelihoods through Improved Rice Post  
Harvest Technology

ADB RETA No. 6489  
Bringing about a Sustainable Agronomic Revolution in Rice  
Production in Asia by Reducing Preventable Pre- and Postharvest  
Losses

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*Funded by Asian Development Bank (ADB) and Swiss Agency for Development and Cooperation (SDC)*

## **Background**

Postharvest losses in Cambodia as in other Southeast Asian countries are typically 15–20% in weight loss and, when quality is factored in, can result in a 10–30% loss of value in the market. From 2005 to 2008, the ADB/JFPR 9036 project “Improving Poor Farmers’ Livelihood through Improved Rice Postharvest Management” pilot tested improved postharvest technologies in four villages in Vietnam and eight villages in Cambodia. Results from this project and also from the SDC-funded Postproduction Work Group of the Irrigated Rice Research Consortium (IRRC) with activities in Indonesia, Lao PDR, and Myanmar demonstrated that losses can be significantly reduced and income from rice harvests increased if farmers and processors are enabled to use improved postharvest management options and technologies like mechanized harvesters, paddy dryers, hermetic storage systems and improved milling practices. Additional benefits can come from the use of up-to date market information.

Both projects included private sector stakeholders as implementing partners in project activities. This was successful on a pilot basis in Cambodia but not yet sufficient for wider adoption. Farmers and millers in the project villages have now realized the benefits of the improved postharvest management

and are increasingly asking for more assistance in sourcing the technologies that they find beneficial (especially hermetic storage and drying systems).

## **Rationale**

IRRI's new ADB-funded postharvest initiative has the objective to scale out these postharvest innovations, which have been piloted in a limited number of villages, to a large number of farmers with the objective to reach a minimum of 300,000 households in three countries after 5 years. This will require an increased focus of project activities on strengthening agricultural and industrial extension provided by both public- and private-sector stakeholders. It will also need better linkages to support service providers for financing, for investment and operating capital and for marketing. A major component will be the development of business models for farmers and postharvest practitioners.

In order to facilitate the dissemination of the proven technologies listed above, the project will strengthen country postharvest innovation systems by facilitating in-country **Learning Alliances**. These Learning Alliances will be the platforms for working with established national partners from the public research and extension systems and for embracing new partners, especially from the private sector and NGOs. The Learning Alliances will seek to widen stakeholders' choice of technologies and business models, foster adaptation and innovation and, through regular reflection, lead to better understanding of what works where and why. Regular cycles of experimentation, reflection and adaptation is expected to promote interaction and learning among members. The Learning Alliances are expected to (1) increase diversity of options (through prototyping and experimentation), (2) increase interaction among stakeholders (through regular group reflection) and (3) improve stakeholders' ability to identify and choose what works (through research). It is anticipated that the Learning Alliances will provide more flexible, need- and capacity-based and participatory means for project management; allowing for the possibility of accommodating new partners as the need arises.

## **Objectives**

- Clarify objectives, planning logic and guiding principles of the project.
- Identify key stakeholders and their roles, and foster ownership of the project amongst different stakeholders.
- Identify impact pathways for the project (i.e., project strategies to bring about specified changes) and produce inputs necessary for developing an impact evaluation plan.
- Clarify the Learning Alliance concept and reach agreement on the next steps to launch one in Cambodia as a platform for project planning, steering, M&E and for capturing the learning.

## **Workshop deliverables**

- Identification of likely membership of the Cambodian Postharvest Learning Alliance.
- Identification of draft list of topics for investigation by the Learning Alliance, the inquiry/ experimentation needed and initial allocation of responsibilities (this would be firmed up after the workshop).

- Logic models for the project describing near-term expected changes resulting from project activities and longer-term contribution to developmental impact in Cambodia.
- Network maps showing who is working with whom, useful for planning and monitoring sector level integration.
- Project vision for 5 years.
- Draft operational plan with activities for year 1.

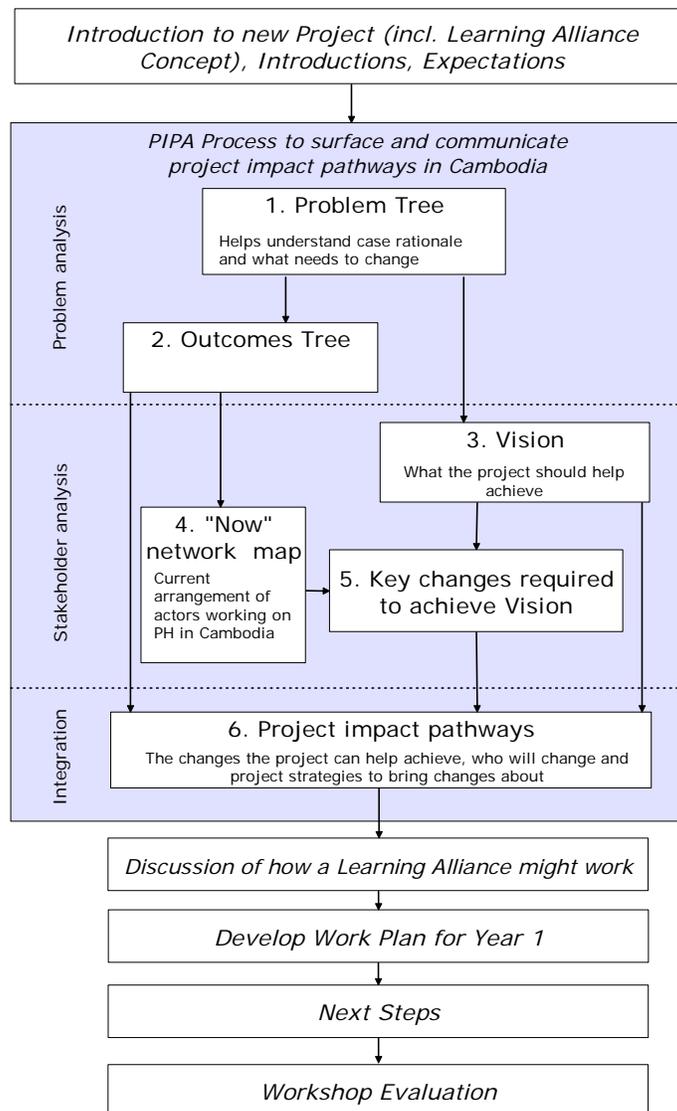
## Participation

The participants in the workshop were staff from ministries, scientists and researchers working on postharvest as well as representatives from the private sector, non government organizations and donor agencies. Figure 1 shows the workshop participants.

Boru Douthwaite, Innovation and Impact Director of the Challenge Program on Water and Food (CPWF) facilitated the workshop. The roadmap followed throughout the workshop is presented in Figure 2.



**Figure 1: Workshop Participants**



**Figure 2: Workshop Road Map**

## The Workshop

### ***Day 1: Review of progress, beginning impact pathways for new project***

The workshop was opened by the Undersecretary of State, His Excellency San Vanty and Dr. Grant Singleton, Irrigated Rice Research Consortium (IRRC) coordinator, who represented IRRI. The project leader, Martin Gummert, gave an overview of the current ADB/ JFPR 9036 project before Dr. Meas Pyseth, the Director of International Cooperation in MAFF, gave more detail on project achievements to date. Mr. Seang Choeurth and Mr. Yous Mony, the heads of the Battambang and Prey Veng Provincial Departments of Agriculture (PDAs) respectively, presented project achievements in their provinces. Ms. Rica Flor presented on initial project impact and implications for out-scaling. Martin Gummert closed the morning session by introducing the new ADB-funded postharvest project (ADB RETA No.

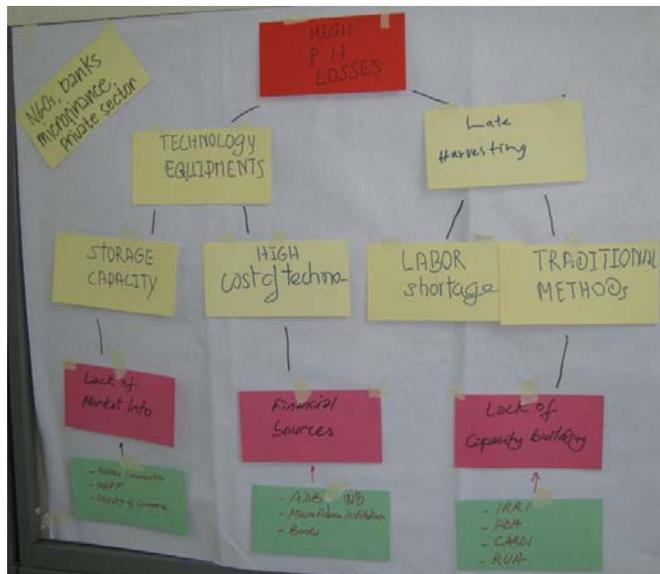
6489) including its proposed outputs and linkages to other programs. All presentations and workshop documentation were handed out to participants on a CD.

Construction of impact pathways for the new project began after lunch. Participants were put into four groups (see Table 1).

**Table 1: Group composition**

<b>Name</b>	<b>Organization / Agency</b>	<b>Position / Title</b>
<b><i>Group: MAFF</i></b>		
Hang Chuon Chamron	DPS, MAFF	Vice Chief Planning Officer
Um Bhopa	DIC, MAFF	Officer
Chea Sovandina	DAM, MAFF	Vice Chief of Planning; Accounting Office
Leang Sambhoth	MAFF	The Minister Advisor
Chan Saruth	DAM, MAFF	Director
<b><i>Group: Private Sector</i></b>		
Chea Hong	DAM, MAFF	Vice Chief; Project Mgt. Office
Van Thy	Battambang Province	Manufacturer
Outh Renne	SMI Cambodia/Rice Miller Association B.B.	Secretary General
Nou Sotiara	ACLEDA Bank Pk.	AVP and Head Marketing Division
<b><i>Group: PDA</i></b>		
Tith Sam Oeun	PDA, Pursat	Director
Ith Sarun	PDA, Takeo	Director
Sun Try	DAE, MAFF	Vice Chief Office
Yous Mony	PDA, Prey Veng	Director
Sorn Vichet	IRRC Project	Consultant
<b><i>Group: Research</i></b>		
Ty Bona	DIC, MAFF	Officer
Lay Sophal	TPD, MOC	Deputy Chief
Rica Joy Flor	IRRI	Researcher
Huon Sereyvuth	CARDI	Researcher
Carlito B. Balingbing	IRRI	Assistant Scientist
San Sophoan	DIC, MAFF	Officer
Sam Bona	SME Development	Director
Nuon Phanith	TPD, MOC	Deputy Chief

The process of developing impact pathways for reducing postharvest loss in Cambodia followed the process shown in Figure 2. The first step was to construct a problem tree to identify the main causes of high postharvest loss in Cambodia.



**Figure 3: Private Sector group discussing their problem tree, and the problem tree they developed**

Participants were shown how to convert a problem tree into an outcomes tree. The groups presented and discussed their problem trees to each other. Different groups picked up on different issues.

### **Day 2: Vision and network mapping**

Participants developed a vision of project success in reducing postharvest losses in five years time, in 2013. The following is a summary of what was presented back to participants while Table 2 gives the detailed vision of the research group.

#### **Box 1: Summary visions of the four groups**

**MAFF Group:** the changes are 1) MAFF and other stakeholders will have better communications. 2) MAFF and PDA will be stronger and get more confident. 3) Farmers will have ability to raise proposal and their problems to donors. 4) CMI trusts farmers and allows more loans to farmers. 5) Agricultural district officials play important role to provide services and transfer technologies to farmers, millers, traders and other NGOs. 6) PDA and district level staffs will be trained and strengthened their capacity and 7) Miller and thresher owners will provide good quality services to farmers.

**PDA Group:** MAFF is the main actor because MAFF has a power to talk with Donors, IRRI and Ministry of Commerce, MoC. PDA is the second actor as PDA has many agricultural offices and has a good relationship with authorities. PDA plays major role to transfer technologies to agricultural district officials, farmers, millers and traders. The changes are: PDA will get more confident from stakeholders, other NGOs, authorities on the other hand agricultural district officials have more knowledge and will be easy to work or communicate with other NGOs.

**NGOs Group:** Reducing post-harvest losses are: having marketing, rice standard is created and traders have a contract with millers to improved milled rice quality. The changes are: 1) Enlarged marketing. 2) Having a rice standard. 3) Farmers and traders are encouraged. 4) Millers equip modern equipment and get more support from government and other NGOs. 5) Farmers will be happy and get more income or yields and 6) MAFF and IRRI should work directly with traders and millers.

**Researchers Group:** Traders and millers will enlarge their business and they will focus on quality of product rather than quantity. Government and NGOs have a wish to work and improve the business of millers and traders.

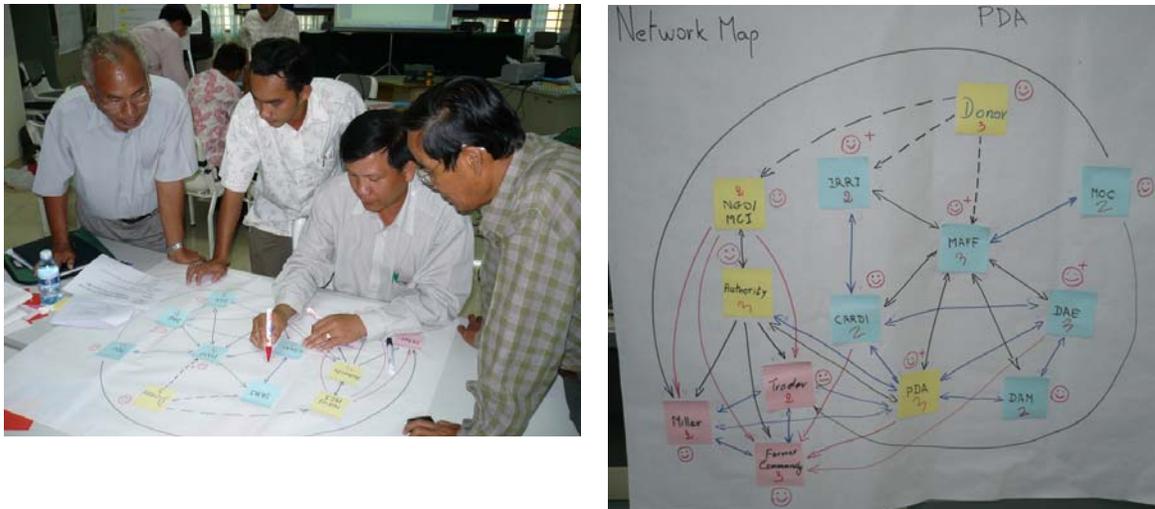
**Table 2: The vision of the research group**

<p>What are the next users doing differently? How are men benefiting? How are women benefiting?</p>	<ol style="list-style-type: none"> <li>1. Government projects geared towards improving rice production and postproduction now being implemented because project partners (ministries etc.) have successfully pushed for policy support</li> <li>2. Extensionists continue to teach new and effective PH knowledge that target both men and women</li> <li>3. Millers have arrangements with farmers (on by products and payments) and actually end up giving farmers more milled rice because of changed PH practices and good milling</li> <li>4. Technical people/manufacturers etc. have shops that could sell to, fix and assist users on PH equipment because they understand PH technologies</li> <li>5. Banks are giving loans for PH equipment (which farmers can easily apply for)</li> <li>6. Cooperatives/associations of farmers/dryer contractors offer drying services</li> <li>7. Buyers want high quality rice which they sell to compete with export standards</li> </ol>
<p>How are project outputs disseminating (scaling out)?</p>	<ol style="list-style-type: none"> <li>1. Farmers (who are considered to be knowledgeable/ are copied by other farmers) have high income and share their PH practices to those in their network –and so on</li> <li>2. Extension projects funded by the provincial governments produce effective materials which help extensionists bring out PH knowledge/skills –videos, radio programs with PH messages that get repeated</li> <li>3. Training of trainers who are in the villages to assist farmers in their questions on PH</li> <li>4. TV programs bring out PH knowledge</li> </ol>
<p>What political support is nurturing this spread (scaling up)?</p>	<ol style="list-style-type: none"> <li>1. Prime minister knows about this</li> <li>2. Minister of agriculture and provincial governors convinced of the need and supporting activities that promote effective PH practice</li> <li>3. PDA actively supporting this</li> </ol>
<p>What are the end users doing differently? How are they benefiting?</p>	<ol style="list-style-type: none"> <li>1. Farmers have high income from reduced loss and good quality grains</li> <li>2. Children are not absent from school to help in PH activities</li> <li>3. Women have more time for home and children (instead of doing PH labour)</li> <li>4. Consumers prefer high quality rice</li> </ol>

**Participants then drew network maps to describe how organizations are currently linked together in the postharvest sector in Cambodia (see**

Figure 4 and Figure 5). Participants drew maps with four relationships – funding flows; research links; scaling-out and scaling up. Scaling-out is the spread of technology and knowledge from farmer to farmer, community to community, within the same stakeholder groups. Scaling-up is an institutional expansion, based largely on first-hand experience, word-of-mouth and positive feedback, from adopters and their grassroots organizations to policy makers, donors, development institutions, and the other stakeholders key to building a more enabling environment for the scaling-out process. In other words, scaling-up is the process by which policies and norms change in such a way as to support a scaling-out (adoption) process. Participants also indicated the influence and attitude of organizations in the networks. They then identified the main network changes required to achieve their respective visions.

Note: The network maps and other materials from the other workgroups are contained in a CD including all the materials produced by the workshop.

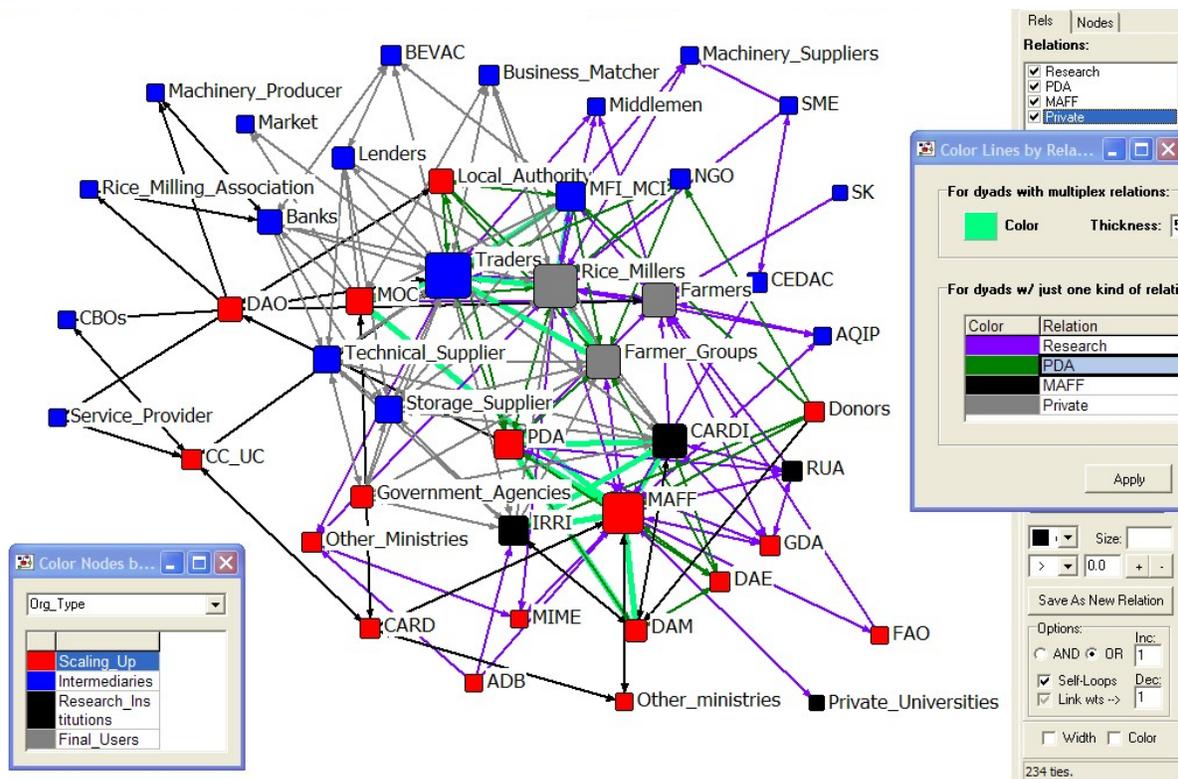


**Figure 4: The PDA group drawing a map of the postharvest network, and their final product**



**Figure 5: Key used for network mapping**

The data from the network maps was entered and mapped using NetDraw software. This allowed us to combine the maps drawn by the four groups to give a composite picture of the postharvest sector in Cambodia (Figure 6).



**Figure 6: Composite network map of the postharvest sector in Cambodia**

**Box 2: Description of what the map shows**

Note: The nodes (the squares) are coloured according to their primary function – as final users of postharvest technology, intermediaries, research institutions or politically-important organizations that can help with scaling-up of postharvest interventions. The size of the nodes is proportional to the number of links identified in total, and thus is a measure of their ‘centrality’ in the Cambodian postharvest network. The map shows that the most important nodes are traders, MAFF, rice millers, farmers and farmer groups. CARDI is the most important research organization followed by IRRI and RUA. The lines are coloured according to which group drew the links in. The light green, thick links were drawn by more than one group.

In general, the map shows that the postharvest sector in Cambodia is made of very many actors who have multiple linkages. That the final users are at the center of the map shows that taken together workshop participants were indeed thinking in terms of impact pathways that reach, or stem from, final users. The most important group identified are traders, which a number of participants viewed as a potential impediment to development of the postharvest sector, and who might have a negative attitude towards what the project wants to do. This suggests that the project needs to clarify its strategies towards working with traders as they clearly need to be part of any solution.

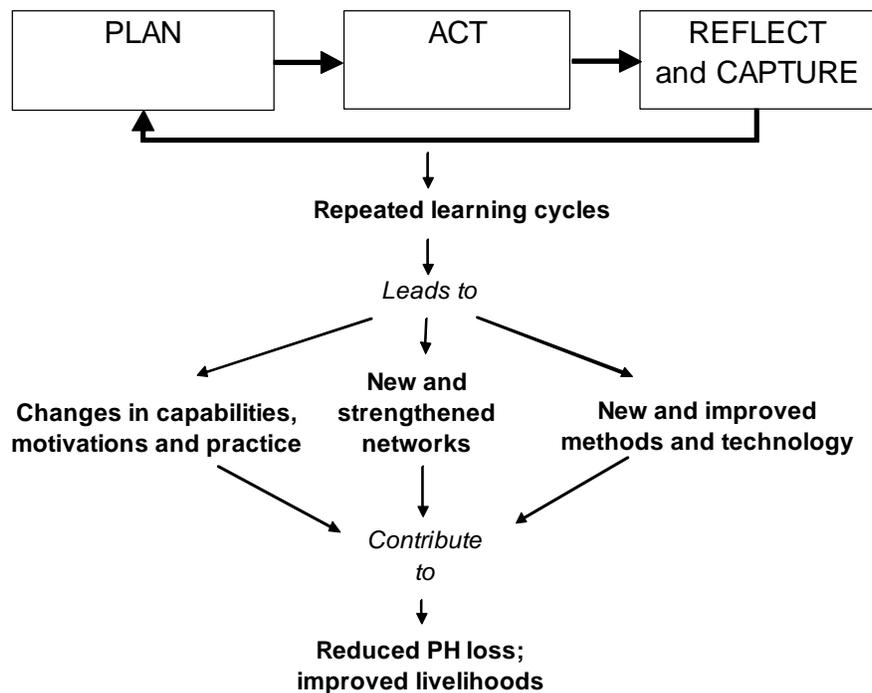
**Day 3: Outcomes Logic Models, Impact Pathways and Learning Alliances**

Day 3 began with the groups presenting their network maps and the main changes required to reduce postharvest loss in Cambodia. They then completed an outcomes logic model per group, in which each row describes an impact pathway (see Table 3).

**Table 3: Outcomes logic model developed by the MAFF group**

Actors	Change in practice	Change in KAS	Strategies
MAH, P, PH & A.	රජු කාර්යාල පදනමක් ලෙස ක්‍රියාත්මක කිරීම ප්‍රජා සංවිධාන සහ සේවා, ආරක්ෂණ ක්‍රමාලයන්, ආරක්ෂණ, ආරක්ෂණ සහ සේවා, ආරක්ෂණ, CBO	ආරක්ෂණ ක්‍රමාලයන් සහ සේවා ආරක්ෂණ PH	වෙනත් ප්‍රභේද: ආරක්ෂණ PH - වෙනත් ප්‍රභේද ප්‍රදානය PH - වෙනත් ප්‍රභේද ප්‍රදානය PH
Farmer and ...	ප්‍රජා සංවිධාන ක්‍රමාලයන් ආරක්ෂණ ක්‍රමාලයන් සහ සේවා	ආරක්ෂණ ක්‍රමාලයන් PH	- වෙනත් ප්‍රභේද PH සහ සේවා - වෙනත් ප්‍රභේද PH සහ සේවා
වෛද්‍ය සේවක Moc, ---	වෛද්‍ය සේවක සහ සේවා වෛද්‍ය සේවක සහ සේවා	වෛද්‍ය සේවක සහ සේවා වෛද්‍ය PH	වෛද්‍ය සේවක සහ සේවා වෛද්‍ය සේවක සහ සේවා

Participants were introduced to the concept of a learning alliance, which is explained in Figure 7. They understood that the PIPA workshop represented the first stage in planning for a learning alliance.



**Figure 7: Learning Alliance concept as described to workshop participants**

In different groups participants then discussed what a postharvest Learning Alliance might look like. Each group said they agreed with the overall concept. They identified the following potential learning alliance membership:

- MAFF
- MOC
- MIME (Ministry of Industry, Mines and Energy)
- PDAs
- Millers
- Traders
- COC (Chamber of Commerce)
- Relevant NGOs incl. SME
- Donors
- International Institutions
- Local Authorities

Participants also identified the following institutional arrangements to be desirable:

- Meetings
  - Every three months (about implementation)
  - Annual Congress
    - Every year a congress where all stakeholders invited including farmers, venue change every time, not too long, not too many resources. Develop common vision for 5 years
    - Invite people powerful enough
- Establish technical working groups
- Implement M&E
- Coordinated by voting, election of steering committee by actors
- Mechanism for dealing with members who are not active

#### ***Day 4: Field Trip***

##### **Written by Sorn Vichet**

During the field trip, the project team had arranged demonstrations for mini combine, granary improvement, a commercial and village rice mills and dryers. The delegation observed the project and met with key farmers who worked hard with the project. They appreciated that many materials will be left at the community after the project finishes. Moreover, the key farmers will continue the activities such as market information board and dryers although the project finishes.

*Mini Combine Demonstration:* Although the combine is small, with low capacity, and it cannot be used during wet season in wet fields, it can help farmers who grow dry season rice when they experience labor shortage. The problem of the combine is that it has high percentage of impurity in the grain but the key farmers in Prey Veng say that farmers are willing to pay about \$70 per hectare, which makes using the combine an economic alternative.

*Granary improvement:* Improving the traditional granaries was a good way to protect grain from rats, birds and moisture. The contribution policy between farmer and project was also good, the delegation said.

*Dryers:* There are two dryers in the Po Chrey Community, of which one is initially made by IRRI and the other by ABK in cooperation with the community. The dryer was installed using ABK’s funds and will belong to the community after using it for 5 years. Within this 5-year use, the community leaders have to make a contract with ABK on how to dry and how much drying fee to charge. In this year, the problems encountered between community and ABK were:

- 1) Moisture content of ABK’s paddy was more than 30%, sometimes the moisture meter could not read it (out of range) so it took more than 10 hours to dry the paddy;
- 2) Paddy was still unripe and some already damaged; and
- 3) ABK wanted farmers to dry paddy 2 times per day per dryer but farmers could not do as it already took more than 10 hours per batch.

Comment by MG: Drying rate of the flat bed dryer is typically 1%/h and therefore the long drying time is to be expected if the moisture content is that high. This is not a problem related to the technology but to postharvest management, time of harvesting, etc.

### **Day 5: Agreement on Postharvest Impact Pathways and Next Steps**

During Day 4 the project leader and facilitator (Martin and Boru) worked to combine and integrate the impact pathways from each of the four groups (see Table 4).

**Table 4: Combined impact pathways to reduce postharvest loss in Cambodia.** Unshaded rows represent the core business of the project. Shaded rows represent necessary change to which the project will contribute in terms of production of outputs shown in bold.

Actor (or group of actors who are expected to change in the same way)	Change in Practice	Change in Knowledge, Attitudes or Skills	What are/were the project’s strategies (e.g., co-development of outputs, communication, political lobbying, etc.) for achieving these changes in KAS and Practice?
Farmers (men and women and children)	Adopt appropriate technologies	Accept/adapt the technologies based on clear understanding of needed improvements Develop more skills and knowledge on PH	Training, demos, study tours Funding support to pilot interventions
Farmer organizations and cooperatives	Adopt PH technologies own more of their own equipment, provide high-quality affordable service (e.g., drying, combine) and increase in number	Clear understanding of the needed improvement: Loss reduction, reduced time, good quality, reduce labor, good market	Training, demos, study tours, strengthen farmers' groups, funding support to pilot teams
Village and small commercial millers/traders	Change from traditional to improved modern methods	Understand PH skills	PH technology demo to compare effects

Actor (or group of actors who are expected to change in the same way)	Change in Practice	Change in Knowledge, Attitudes or Skills	What are/were the project's strategies (e.g., co-development of outputs, communication, political lobbying, etc.) for achieving these changes in KAS and Practice?
Local rice traders/village and small commercial millers/farmers	Traders, millers and farmers enter into fair contracts based on quantifiable quality traits and up to date market information Farmers are producing better quality and selling a surplus Farmers are maximizing profit by storing and selling at a profit	Traders, millers and farmers trust each other based on the realization that there can be benefit for all Farmers know how to apply the technology to produce quality grains	Building capacity and infrastructure (e.g. MIS) to provide information about price, market access, provide farmers with marketing assistance Training on networking Knowledge to operate & maintain milling and proper grain storage Training farmers, traders and millers on grain quality Support government on national rice quality standards
Rice traders selling regionally and internationally	- Rice traders are selling more in higher value regional and international markets	- Rice traders know quite well about buyers (and regional and international market demand) and sellers demand (farmers, millers) - Committed <i>policy</i> support from MOC, Gov't agencies and NGOs	- Matching supply and demand in including networking (business matching) - Market research and updates - Storage to build sufficient stock for export - Foster cooperation among relevant agencies - <b>Policies and standards</b> to promote rice marketing and export
Standardized Rice millers	- Investing more capital into their businesses - Using advanced technologies and best practice - Using a definite business plan	- More knowledge of use and benefits of business plans - Aware of rice standardization to comply with international market	- Business grouping - Banks or Financial institutions support funding for improvement - Develop <b>business models</b> with rice millers - <b>International field-trip</b> and market demand (MOC, gov't agencies and IRRI) - <b>Seed provision and technical support from IRRI (pre-harvest)</b>
Government agencies	- More proactive in supporting private sector to strengthen and coordinate trading - Strongly support and encourage financial institutions to help private sectors	- More appreciation of potential of benefits of public-private partnerships at all levels of government	- More involvement of gov't. agencies and private sector in <b>learning alliance</b> to improve rice production and marketing - <b>Engage with existing fora</b> (e.g. Work Group for Agriculture and Water; Private Sector Forum at CDC). Regular <b>discussion with private sectors</b> under the coordination of IRRI, International Trade Centre and other relevant agencies - Laws and procedures of incentives need to be developed and implemented to support rice trading
Project partners ( <i>policy</i> ) MAFF: <b>CARDI, GDA, PDA</b> , MOC: TPD	- To be working in a synergistic/coordinated manner with each other as they promote policies and implement projects on rice technologies - To make and implement policies that support the PH sector, including extension and local manufacturing	- Staff of different Ministries see benefit in working more closely together	- Encourage MAFF to lead in coordinating the other agencies with policy capacity - Encourage stakeholder participation in <b>PH Learning Alliance</b> to strengthen coordination, in particular between Ministries

Actor (or group of actors who are expected to change in the same way)	Change in Practice	Change in Knowledge, Attitudes or Skills	What are/were the project's strategies (e.g., co-development of outputs, communication, political lobbying, etc.) for achieving these changes in KAS and Practice?
MAFF	- Strengthen/delegate, support departments and PDAs	- Each unit of MAFF is clear about its PH mandate and roles, supported by a ministerial strategy. - <b>Improved technology modules</b> available and MAFF staff know their benefits - MAFF depts. are willing to allocate resources according to their mandate and roles - Ministerial strategy available	- <b>Capacity building</b> of relevant MAFF staff wherever necessary
Local authorities and relevant organizations	- Support and push project to run smoothly - Facilitate/provide fund to support provincial and national committee on decentralization (?)	Understand the importance of PH technologies and how they benefit farmers	- <b>Invite Local Authority staff key activities and to participate in workshops at the beginning, middle and end of the project</b> - <b>Extension of technologies to other provinces</b>
<u>Intermediaries</u> PDA, CARDI, RUA, MOC: PDOC GDA: DAE, DAM NGOs: SK, SME, CEDAC,	Use improved extension methodologies and technologies according to best practice PDOC to offer seminar on OVOP Improved network for transfer of market information, extension techniques to farmers	Intermediaries have more technical knowledge and skills Are more client oriented Clear understanding of PH technology extension	Adapt training materials that they can be used by farmers Capacity building for intermediaries to include PH technologies in service to end users Meetings - opportunities to improve
Dept of Agric. Machinery, Machinery office at the province (all under MAFF)	Extension of PH technologies to farmers, machinery users, manufacturers, providers/dealers of services through the intermediaries with DAM facilitating these Use research findings from international and national institutes	Have knowledge and skills in PH technologies, have extension skills to transfer PH knowledge to stakeholders	Training course on PH technologies, demo of PH technologies Linking MAFF to national and international research
NGOs	- NGOs disseminate PH technologies through their village networks	- NGOs more open to collaborating with Gov't and Gov't more willing to work with NGOs	-Link to NGOs engaged with relevant village networks Encourage NGO participation in <b>PH Learning Alliance</b>
Banks, MFI, Lenders	More banks providing low interest loans to farmers and millers	To consider farmers as good customers for lending See rice millers as good customers because businesses run smoothly and have enough income for loan repayments Better understanding of PH business opportunities and risks	Demonstrate how improved PH technologies can reduce risk of PH loss Use of business plans Entrepreneurship training by MOC or IRRI or related sectors Make agricultural loans more understandable for bankers Training on how to use funds so farmers can develop business plans

Participants discussed the composite impact pathways and made some changes (in blue in Table 4).

### Outline of the new project

Martin then presented a few slides outlining the new postharvest project; a summary with some explanations is included in Appendix 3. This includes the project objectives, link with other projects at IRRI, potential links with projects in Cambodia, potential technology interventions, activities and the basic approach of linking with existing national programs that have an agricultural/postharvest component to include support service provision and to reach thousands of end users.

### Major activities for 2009

The presentation included a list with proposed project activities for 2009 based on the IRRI-ADB project document, which constitutes the framework for the project in all three countries. The detailed national work plans need to be developed by the project team in consultation with the Learning Alliances:

- Meeting to finalize membership and likely organizational structure for the Cambodia Learning Alliance (by Feb 09)
- Initiate Cambodia Learning Alliance (by May 09)
- Collaboration agreements based on planning meetings (by April 09)
- Select provinces, establish baselines in new provinces (by June 09)
- Postharvest Training at IRRI (October/November 2009)
- Adapt dryers to local conditions (continuation)
- Develop technology specific business models (Dec 09+)
- Develop and adapt extension methodologies (Dec 09+)
- Conduct mid year workshop (Learning Alliance)
- Analyze existing market constraints and MIS
- Expand pilot rice MIS or integrate into national MIS
- Conduct year end workshop (Learning Alliance)

### Next Steps

A concrete action plan for 2009 could not be developed originally envisioned since the participants required some time to discuss the concept of the Learning Alliances internally and how to operationalize it. Also, some key stakeholders identified during the workshop were not present, some of the decision makers had only participated in the first day, and the detailed budget data was not then available. The group identified the following follow-up measures and activities that could be started immediately:

- Workshop report will be send by Boru to IRRI and IRRI will distribute to participants (end of Jan. 09)
- Extend local consultants contracts by IRRI (immediately)
- Need assessments in the new provinces conducted by PDAs (Jan/Feb. 09). Rica will send questionnaires (early Jan. 09).

- One day planning workshop with PDAs from the new provinces (Feb. 09)
- Baseline surveys in the new provinces by previous team (Feb.09 after the planning workshop)  
Rica will travel to Cambodia discuss the methodology and questionnaire with the team, train and test with the team. The team will conduct the survey.
- Workshop participants should generate some ideas how to operationalize the learning alliance

### **Workshop Evaluation**

The workshop finished with an after action review which involved participants writing on cards what they liked about the workshop and what could have been improved.

#### **What participants liked:**

- General Arrangement
- Good workshop structure
- In general good
- Achieved workshop objectives
- Met expectations
- Good facilitator
- Considerate facilitator!!!
- All the points and strategies learned in training workshop was good
- Contents of the workshop link the needed situation in Cambodia
- Hard and innovative team
- Feel proud to get this workshop organized in Cambodia
- Good action plan
- Learning alliance method
- Workshop meaningful and interesting
- More knowledge about extension, postharvet technologies and business models
- Interest and contributions from participants
- Workshop provided detail on postharvest technology
- The workshop was meaningful, developed knowledge by sharing experience in a group
- Got new knowledge
- Satisfied with the workshop activities
- The workshop went well. There was new knowledge to absorb. Overall I rate it as well

#### **To improve:**

- Provide sufficient documentation on time
- Preparation of handouts
- Preparing handouts was slow
- Translation was not good on first day but improved after that
- Need more visual translations (i.e., typing a simultaneous translation)
- Toilet facilities
- Time constraint
- Should hold in the province so participants are not distracted by their offices
- Workshop location

- More participants for each organization (more than just one)
- Include more of the key actors
- Have at least 2 facilitators

## Annex 1: List of Participants

**List and Directory of Participants**

No.	Name	Office	Designation	Contact No./Email Add
1	Huon Sereyvuth	Ag. Eng'g. Division, CARDI		<a href="mailto:hsereyvuth@yahoo.com">hsereyvuth@yahoo.com</a>
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15	Sin Sovith	AusAID	Senior Program Manager	<a href="mailto:sovith_sin@ausaid.gov.au">sovith_sin@ausaid.gov.au</a>
16	Sun Try	Farming Systems Office, Dept. of Agricultural Extension	Vice Chief	<a href="mailto:suntry@online.com.kh">suntry@online.com.kh</a>
17	Leang Sam Hath	MAFF	The Minister Advisor	Celfone No.: 012759445
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<b>No.</b>	<b>Name</b>	<b>Office</b>	<b>Designation</b>	<b>Contact No./Email Add</b>
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29	Boru Douthwaite	CIAT-Colombia	Impact Specialist	<a href="mailto:b.douthwaite@cgiar.org">b.douthwaite@cgiar.org</a>
30	Marie Kim Leng	IRRI-Cambodia	Admin. Coordinator	<a href="mailto:m.kimleng@cgiar.org">m.kimleng@cgiar.org</a>

## Annex 2: Outcomes logic model developed by Sam Bona after the workshop

Actor	Describe the most important in network changes	Why it is important to make the change?	What are potential strategies for achieving these changes ( Proposed intervention )	Responsibility and role
MAFF	<p>Provide better facilitating services to PDA or Extension workers to get access to more information on <b>post harvest/ and market information</b></p> <p>Plan to educate <b>more specialists</b> on post harvest or knowledge bank for improving extension capacity</p>	<p>MAFF is the policy maker on national strategies towards agriculture commodities</p> <p>MAFF is the government agency who received more funds and TA from Donors such as IRRI, ADB, World Bank</p>	<p>Use farmer associations and PDA directors to <b>advocate</b> agricultural Minister and to present the real critical points of post harvest to improve productions and quality</p>	<p>NGOs and Project coordinator or consultant facilitate the movement of the advocacy NGOs to build advocate capacity, Projector coordinator and consultant provide fund and technical support to propose action plan for minister's decision making ( List of activities needs to be identified)</p>
MOC	<p>Provide trade facility or trade negotiation to import more agricultural machinery; Or use exchange trade commodities</p> <p>Promote local trade on specific commodity such as rice, by provide market link to other countries such Africa, EU or Australia</p>	<p>MOC have a responsibility to facilitate trade negotiations and trade agreement</p>	<p>Bring the issue to National level, or to discuss at inter minister at the ministers cabinet,</p> <p>Using agricultural working group committee to bring the issues during the private sector forum</p>	<p>Project staff and consultant</p> <p>Farmers association Millers association Rice exporters working Together to document issues and present at private sector forum</p> <p>List of activities needs to be formalized to make sure work is properly done to avoid distorted market and abuse to WTO rules. <b>SME Development</b></p>

Actor	Describe the most important in network changes	Why it is important to make the change?	What are potential strategies for achieving these changes ( Proposed intervention )	Responsibility and role
				can provide some guidelines
Donor	<p>Coordinate well with donor community in order to avoid overlapping work or interventions or un planned actions that impact long term goal</p> <p>Provide real need TA to improve skill and ability or expertise in a sustainable manner</p>	<p>More donors are focused on fast and real and intermediate outcomes and with less consideration on long term impacts</p> <p>Donor are most effective points to change behavior of development agencies</p>	<p>Focus on development of human resource at the Village level (Farmers extension or farmer network) Community level (cooperative, farmer groups) PDA level (well educated specialists)</p>	
Extension workers	<p>Extension worker is an official channel to reach numerous farmers</p> <p>Farmer consider Extension worker as a consultant</p> <p>Extension worker is a Market information disseminator</p>	<p>Extension workers have to have an expertise on post harvest</p> <p>Extension workers have to have KSA</p> <p><b>Skill</b></p> <ul style="list-style-type: none"> <li>• Planning</li> <li>• Computer use</li> <li>• Information collection Market analysis</li> <li>• Competition analysis</li> <li>• Profitability analysis</li> <li>• Business planning and management</li> <li>• Communication</li> <li>• Networking</li> <li>• Training</li> <li>• Monitoring</li> <li>• Household</li> </ul> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• economics and livelihoods</li> <li>• Business principles</li> <li>• Markets and marketing</li> <li>• Production technologies and practices (agronomy,</li> </ul>	<p>Conduct hands on and intensive training to extension workers</p> <p>Set up net working with other extension workers in the country as well international</p> <p>Subscribe as member of international extension worker or university programme to receive up to date information on post harvest practices</p> <p>Conduct exposure trip to advance technology country or manufacturing place to understand harvest technology or post harvest mechanization</p>	<p>SME Development and Project consultant can develop extension worker capacity building curriculum / training / exposure to Thailand</p>

Actor	Describe the most important in network changes	Why it is important to make the change?	What are potential strategies for achieving these changes ( Proposed intervention )	Responsibility and role
		<p>animal husbandry, forestry and fisheries)</p> <ul style="list-style-type: none"> <li>• Post-harvest technologies and management</li> </ul> <p><b>Attitude</b></p> <ul style="list-style-type: none"> <li>• Flexible</li> <li>• Dynamic</li> <li>• Open-minded</li> <li>• Creative</li> </ul> <p><b>See farmers and agro-enterprises as clients</b></p>		
Miller	<p>Millers are the main focal point to get access to farmers, farmers association</p> <p>Millers can play roles of trader and exporter</p> <p>Millers are the actors who process milled rice for market so there are more market information available free of charge for farmers</p> <p>Millers can also play the role of extension worker for their informal contact farmers</p> <p>Millers can also play a role as input supplier credit and access to capital for the farmer.</p>	<p>Be the central link and access point</p> <p>To improve quality and post harvest loss minimization millers need to change: Post harvest handling practices</p> <p>Upgrade milling system</p> <p>Improve business practices and behavior (initiate mutual benefit trade)</p> <p>Build trust and network among the producers, traders, exporters and millers (Vertical and horizontal links)</p>	<p>Exposure to high technology of milling as well post harvest practices</p> <p>Improve Business association management</p> <p>Provide opportunity for all actors to talk together to understand the real situation of <b>post harvest and market demand</b></p>	<p>List activities need to develop Project???</p> <p>NGOs???</p>
Traders/ collector	<p>This we can call market intermediaries, they play the role of adding value to products</p> <p>Sometimes they are the partners of farmers but sometimes they</p>	<p>Because they work closely with farmers especially with the small farmers who has less ability to access market then, I can play the role of market information disseminator or buyer from and help farmers</p>	<p>Improve relationship between farmers and traders to be business partner (win-win partner)</p> <p>Introduce post harvest handling: storage, drying,</p>	<p>Action need to be indentified</p> <p>Consultant</p> <p>SME</p> <p>Development</p> <p>Project facilitator</p> <p>....</p>

Actor	Describe the most important in network changes	Why it is important to make the change?	What are potential strategies for achieving these changes ( Proposed intervention )	Responsibility and role
	are not so friendly with farmers	get access to credit	other quality inspection equipments ...  Introduce paddy purchasing procedure (standard of paddy, weight measurement, credit)	
Agro. Machinery Input suppliers Manufacturers	This the main gate for accessing post harvest equipments and other mechanization equipments	<p>Improve understanding of the usage of equipments</p> <p>Understand method to transfer know-how and skill to users such as farmers and millers</p> <p>Introduce more post harvest equipments resources</p>	<p>Joint training with Extension workers</p> <p>Expose to modern technology</p> <p>Improve business penetration strategy</p> <p>Promote link between agro. input supplier with farmer to farmer association</p>	Social communication has to break through to keep communication gap less.
Local NGOs	<p>Most of NGOs have their beneficiary or target area</p> <p>They already have some skills and knowledge to improve production, post harvest as well as marketing</p>	<p>Improve post harvest skill and practices to NGOs who working with rice farmers</p> <p>Promote the understanding of market demand (quality and product differentiation)</p>	<p>Set up network for exchange skill and experiences</p> <p>Capacity building on postharvest and marketing works (improve every 6 months)</p>	
Bank / MFIs	Capital or access to finance is the critical issue for farmer, traders, and millers to improve their farming system/equipments or processing facilities in agricultural sector; So bank has to play the role in providing capital resources	<p>Most bank and MFIs do not consider agribusiness as priorities for loan debar. So, it needs to be improved</p> <ul style="list-style-type: none"> <li>- The understanding of agri. Machinery and agro. business rather than focus on high collateral</li> </ul>	<p>Improve understanding of bank officers on post harvest equipment (how to of the ROI of equipment)</p> <p>Promote group loan for farmer</p>	

Actor	Describe the most important in network changes	Why it is important to make the change?	What are potential strategies for achieving these changes ( Proposed intervention )	Responsibility and role
		<p>cost only</p> <ul style="list-style-type: none"> <li>- Development of financial product which help farmer to get post harvest equipments and payback in longer period</li> </ul>	<p>associations or Farmer self-help group to bankers or policy maker of banks</p>	
<p>Extension Farmers</p>	<p>It is customary, farmers always share successful cases to her or his peer or communities It is an effective way to scale up other farmers to joints project activities</p>	<p>Change post harvest practices of farmers Improve learning curves of the farmers toward new technology adaptation</p>		
<p>Farmers' group or farmers' association</p>	<p>Farmers' association or farmers groups have collective activities to improve their society, business, and voices of the farmers</p> <p>Farmers' groups can influence banks or MFIs to get better loans</p> <p>Farmers' association can run cooperative business, collective market for their agriculture products</p>	<p>Build up trust and group work/ informal group busines.</p> <p>Promote culture of share works, capital, experiences, and risks for their association members</p>	<p>Prepare and push the concept of informal business group</p> <p>Self-help group</p> <p>Formal association</p>	<p>Project facilitator and SME Development may join resources to development or lead the business association, informal business formation group or farmers self help group</p>

### Annex 3: Key information about the new ADB funded project and it's linkages

#### ADB Reta No. 6489

Title: Bringing about a Sustainable Agronomic Revolution in Rice Production in Asia by Reducing Preventable Pre- and Postharvest Losses

Timeframe of project design: 5 years

Approved by ADB: Initial phase to be implemented within 1-2 years

Funding ensured: 1 year

Project start: November 2008

#### Project sub components

<b>ADB Reta No. 6489, IRRI component</b>	<b>Subcomponent 1: Reducing vulnerability of crops to preharvest losses caused by plant hopper outbreaks.</b>	<b>Subcomponent 2: Reducing postharvest losses and increasing income by producing better-quality rice.</b>
<b>Countries</b>	China, Thailand and Vietnam	Cambodia, Philippines and Vietnam
<b>Timeframe</b>	5 years, 1-2 year inception phase	5 years with a 1-2 year inception phase 10 years for wide scale impact
<b>Approach</b>	Mainly research Some field trials Multi stakeholder meetings	Outreach to min. of 300,000 of farmers Impact pathway orientation Learning alliance platforms

#### Key Issues / Gaps identified in ongoing ADB/JFPR 9036 project:

During the ADB/JFPR 9036 project baseline studies, need assessments, adoption studies and initial impact assessments were conducted. Based on these studies and the regular project monitoring activities the following key issues and gaps were identified:

- **Time needed to generate awareness and impact for**
  - Initiate local production of equipment, pilot, adapt and disseminate
  - Generate ownership for project at farmers' intermediaries level
  - Let users experience of benefits themselves in the villages (impact)
- **Only 8 villages were reached – how to reach more farmers and processors?**
  - Weak extension systems
- **How to provide Support services**
  - Financing, market linkages, business development
- **Additional partners needed to provide support services**
  - Need for a more flexible partnership model

## Postharvest Subcomponent of the ADB Reta No. 6489

- **Objectives**

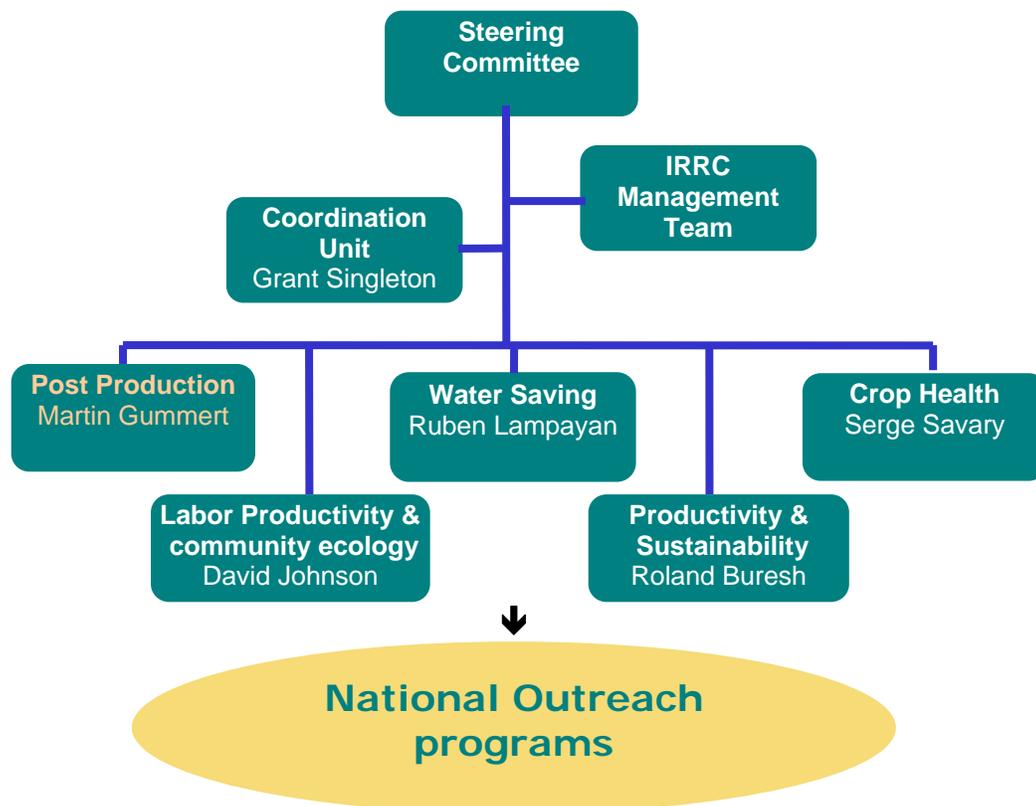
- The **reduction of postharvest losses** by wide scale out-scaling of the pilot postharvest interventions.
- Increasing farmers' incomes from their rice harvests.
- Strengthening national public and private **extension systems**
  - For rice farming communities (agricultural extension)
  - For manufacturers of postharvest equipment (industrial extension).
- Facilitate a **policy dialogue** for sustainable development of PH sector

- **Goals, in line with national policy and MDGs**

- Contribute to **food security** nationally and globally
- **Poverty reduction** in poor rice farming communities

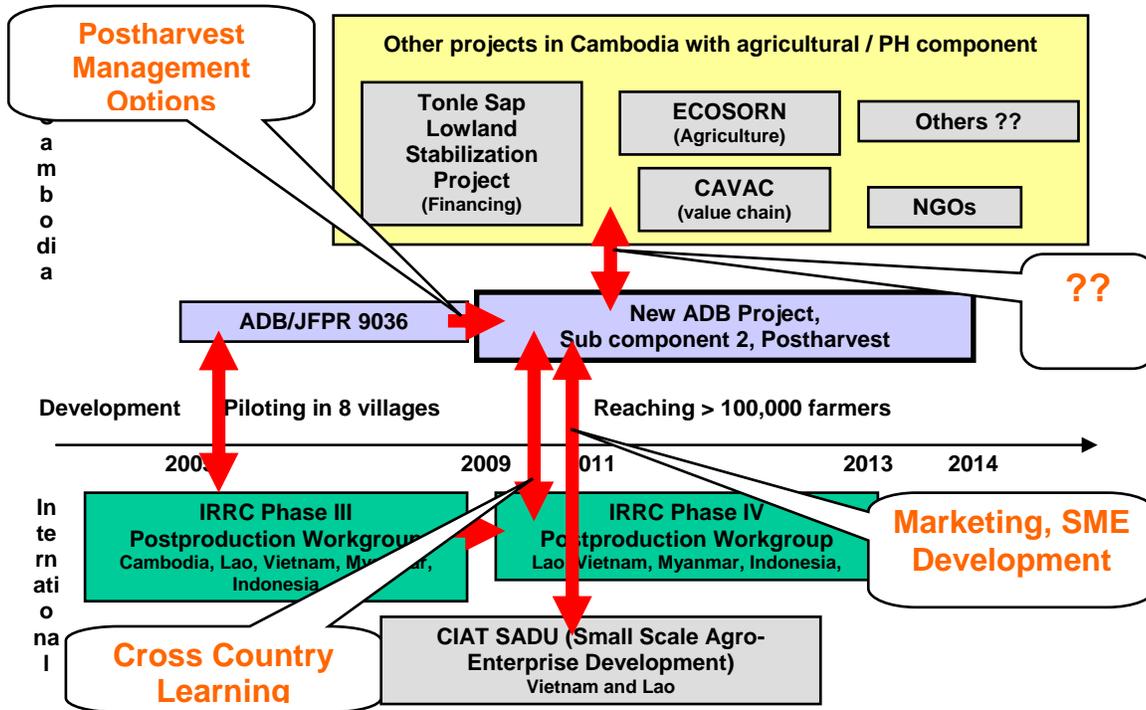
## IRRC Country Outreach Programs (ICOPs)

At IRRI we consider the new ADB Reta No. 6489 postharvest component as part of the Postproduction Workgroup of the Irrigated Rice Research Consortium (IRRC). The IRRC is a consortium consisting of IRRI and NARES in Southeast Asia working on best agricultural practice in five problem oriented workgroups. The consortium is coordinated by a Coordination unit, which also supports the work groups with socio economic expertise, baseline and impact studies etc. The Postproduction Workgroup of the IRRC has activities in Cambodia, Lao, Myanmar, Indonesia, Vietnam and the Philippines and through this consortium the ADB project will be linked with a bigger international postharvest network for information exchange and cross country technology transfer.



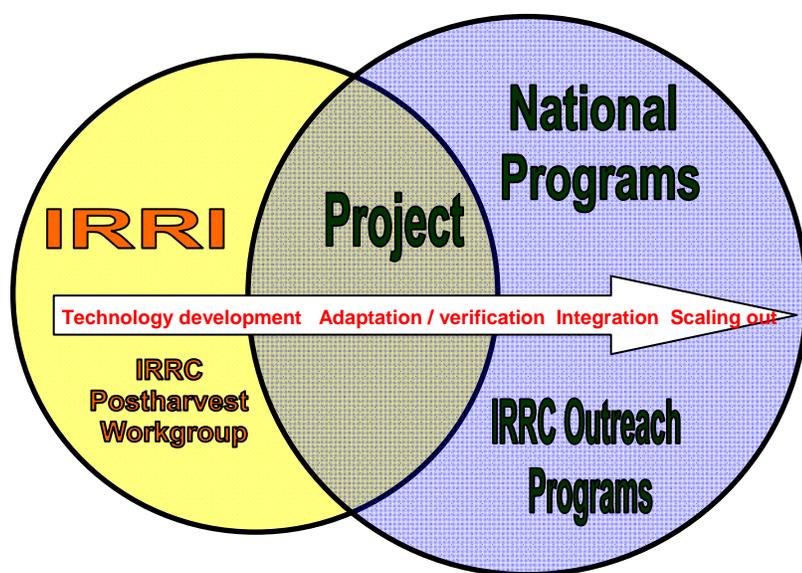
## Timeline and relation to other projects

The graph below shows the new ADB project on a timeline in relation with other international projects (below the timeline) and potential links within Cambodia with projects that have an agricultural/postharvest component. We envision that the Learning Alliances will be the platforms to establish these links and facilitate the communication and information exchange needed for cooperation between the projects.



## How to reach out to thousands of farmers?

The do we envision to reach hundred thousands of farmers? The project does not have the resources to do wide-scale in-country extension activities. It is also not the purpose of the project to fund national extension activities or re-place national institutions with extension mandates. Instead the project will add value to national programs by using the approach championed by the IRRC where the project will feed into national extension and outreach programs. This is shown in the simple diagram below. The yellow circle constitutes the postharvest activities at IRRI and in the IRRC Postharvest Workgroup, where mainly technology and methodology development takes place. The blue circle represents the partner country, in this case Cambodia, which usually has many own national extension and outreach programs for technology verification, integration and scaling out. These national programs are implemented with own funding or supported by other donors. The ADB Reta No. 6489 Postharvest project is represented by the overlap in grey. These are the joint activities mainly on technology and methodology adaptation and verification which are directly supported with project resources as listed under “Project contribution”.



### Project contribution

- Training at IRRI
- Training in country
- Studies
- Facilitation and coordination (Learning alliances)
- Technology concepts,
- Cross country technology transfer
- Pilots in selected sites
- Extension methodology development
- Business model development
- Support for local team
- Capture the learning and make it available

It needs to be understood that we will not reach the targeted number of end users with the project resources alone. The project will rely on these national outreach programs for a wide scale dissemination of the postharvest technologies. A key task of the project management will therefore be to engage with these outreach programs and evaluate options and foster collaboration. This also will require a dialog on the decision making level so that national resources can be allocated to outreach activities that include the projects technologies and methodologies.

We propose the Learning Alliance as a platform for this engagement.

## Basket of interventions to choose from

Based on the previous ADB/JFPR 9036 and the IRRC Postharvest activities in other countries the following technologies and management options are verified in farmers' fields and are available for inclusion in the project based on the still to be determined need of the end users in the target areas. New promising technologies can be included as well, which might need some adaptive research component.

- Mechanical harvesting (mini combine harvester)
- Mechanical drying (Flat bed dryer)
- Hermetic storage systems for seeds and grain
- Rice mill improvement
- Marketing assistance
- Understanding quality
- Training
- Policy dialog

## Outputs

The project has the following outputs based on the functions and inputs needed for a successful wide-scale introduction of improved postharvest management options.

- Output 1: Appropriate **postharvest technologies** (PHT) and improved PH management options are available to farmers and processors.
- Output 2: Country- and technology specific **agricultural extension methodologies** are developed and agricultural extension systems are strengthened.
- Output 3: **Business models** for improved PHT are developed, links to financing established and support market oriented production established.
- Output 4: National **outreach programs** include postharvest technologies and management options on a wide scale. .
- Output 5: National **learning alliances** capture the learning experiences and feed them into project management, **policy**, decision making, and extension.

## Expected outcomes and impacts

We are expecting the following outcomes and impact from the project:

- Local manufacturers are producing equipment and adopting it to users needs and are getting the assistance needed in the adaptation.
- Improved postharvest equipment is available nation wide.
- Public and private extension systems are providing advice and training on postharvest technologies according to users needs.
- Postharvest chain actors have access to financing for purchasing equipment.
- National market info systems includes rice prices, timely data is available at the villages.
- Learning is captured and used in policy and decision making.
- Farmers sell more and better quality rice

(300,000 in 3 countries within 5 years)

## Activities

Activities will be planned and agreed on in annual planning meetings, for which the proposed Learning Alliance can provide a platform. The list below is included in the project document but will need to be discussed and fine tuned in the national context based on the need.

- o Baseline studies, need assessments, impact pathway workshops
- o Adaptive research to adapt technologies to end users needs
- o Industrial extension: technology transfer to manufacturers, manufacturers training, production techniques, advisory service
- o Agricultural extension: development of extension methodologies and materials, demos, training
- o Workshops for cross country learning and technology transfer
- o Training, capacity building
- o Linking to support services (financing, markets, etc)
- o Capture learning and make available in RKB
- o Initiate and facilitate a Learning alliance

## Guiding principles

Some of the guiding principles for the project are:

- o **Need based value chain approach.**  
Activities should be based on the actual needs of the end users for reducing losses and increasing their incomes. The project will consider interventions based on available technology options along the whole postharvest value chain and not focus on one simple operation.
- o **Building entrepreneurial skills.**  
Investment in postharvest means that a farmer often needs to make the transition from being a production focused farmer into being an entrepreneur using a business approach for investment in equipment and selling services (e.g. drying service) to others. The project will support this process.
- o **National learning alliances embrace all relevant public and private stakeholders.**  
The project will be inclusive and work with all key stakeholders in the value chain and not focus on one group only
- o Impact culture established with impact pathway analysis and fostered through learning alliance meetings
- o **Facilitation of cross country learning**  
Many technologies and methodologies are being used commercially in other countries. Rather than re-inventing the wheel the project will draw on existing solutions and assist with transfer and adaptation to local conditions.
- o **Subsidiarity**
  - o Work done and decisions made where they are done best
  - o IRRI building on and adding value to national initiatives
  - o (e.g. through IRRC outreach programs)

## Budget overview

The following budget overview gives a rough idea about the budget available for in country activities in Cambodia for 2009.

Supplies	8,000
NARES support including Cambodian Team	81,000
Equipment	6,000
Meetings and workshops	20,000
Other shared budgets (for Cambodian participants in training in other countries):	
- In country manufacturing training in VTN	14,917
- PH training course	11,833
Contingency for all three countries	50,000

## **Annex 4: Abbreviations and terms used in network maps**

### Final Users

Farmers	Individual farmers
Farmers organizations	Farmers' groups, farmers cooperatives
Farmer community	All farmers in a community
Manufacturers	Manufacturers of agricultural machines and postharvest equipment
Traders	Rice and paddy traders
Millers	Rice millers
Business matcher	Private or public entity matching supply and demand in international trade
Government agency	Any government agency
Authority	Provincial Government organizations

### Banks/Lenders

MFI	Micro Finance Institution
ACLEDA	Micro Credit Bank, private
Amfet	Cambodian MFI
AMK	Cambodian MFI
Harta Kasekor	Cambodian MFI

### Donors and International Organizations

ADB	Asian Development Bank
CGIAR	Consultative Group on International Agricultural Research
UNDP	United Nations Development Programme
CARE	Cooperative for Assistance and Relief Everywhere, Inc.
UNIDO	United Nations Industrial Development Organization
FAO	Food and Agriculture Organization
IRRI	International Rice Research Institute

### MAFF Departments and Units

MAFF	Ministry of Agriculture, Forestry and Fisheries
DoA	Directorate of Agriculture
DPS	Department of Planning and Statistics
DAI	Department of Agro Industries
DAM	Department of Agricultural Mechanization
DAE	Department of Agricultural Extension

### Other ministries

MOC	Ministry of Commerce
PDOC	Provincial Department of Commerce
MoWRAM	Ministry of Water Resources and Management
MIME	Ministry of Industry, Mines and Energy
MVT	Ministry of Work, Training, Vocational Training
MoWA	Ministry of Women Affairs

Research Institutions

CARDI	Cambodian Agricultural Research and Development Institute
RUA	Royal University of Agriculture
PLNAU	Preah Leap National Agricultural University (PLAS)
KCNAU	Kampong Cham National Agricultural University (KCNA, KCAS)

Other Institutions

CARD	Council for Agricultural Rehabilitation and Development
CC	Chamber of commerce (UC)
PDA	Provincial Department of Agriculture (MAFF)
POAM	Provincial Office for Agricultural Machinery
DAO	District Agricultural Office
CBO	Community based organization

Private

AQIP	Agriculture Quality Improvement Project
SME	Small and Medium Enterprise Development, Cambodia
Green Trade	(private company agric. Commodities)
MFI	Micro Finance Institution (general term)
BEVAC	Private company for certification

NGO	Non-government organizations
SK	Sraer Khmer (rice production)
CEDAC	The Cambodia Center for the Study and Development of Agriculture