

# Participatory Impact Pathway Analysis (PIPA)

## Workshop Report

### Rice Postharvest Project in Viet Nam

21-24 April 2009

Cao Su Hotel, VUNG-TAU City, Vung Tau, Viet Nam

IRRI - Vietnam Postharvest Project

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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**Figure 1: Workshop Participants**

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## 1. Background

Postharvest losses in Southeast Asia are typically 15–20% in weight loss. When quality is factored in, it can result in a 10–30% loss of value in the market. From 2005 to 2008, the Asian Development Bank (ADB) / Japan Fund for Poverty Reduction (JFPR) 9036 project *“Improving Poor Farmers’ Livelihood through Improved Rice Postharvest Management”* began pilot testing improved postharvest technologies in four villages in Viet Nam and eight villages in Cambodia. Results from this project and also from the Swiss Agency for Development and Cooperation (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 and Viet Nam but not yet sufficient for a 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 the limited number of villages, to a large number of farmers. The objective is to reach a minimum of 300,000 households in three countries (Viet Nam, Philippines and Cambodia) after five 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 can be understood as 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). We expect that they will provide more flexible and more participatory means for project management and the possibility to accommodate new partners.

## Objectives

- Clarify project objectives, its planning logic and guiding principles in Viet Nam.
- Identify key stakeholders, their roles and foster ownership of the project amongst different stakeholders.
- Identify the project's impact pathways (i.e. project strategies to bring about specified changes) and document inputs to develop an impact evaluation plan.
- Clarify the Learning Alliance concept and reach agreement on the next steps to launch one in Viet Nam as a multi-stakeholder platform to assist project planning, steering, monitoring and evaluation (M&E) and for capturing the learning.

## Workshop deliverables

- Network maps showing who is working with whom (useful for planning and monitoring sector level integration).
- Project vision for five years.
- Description for the project short-term expected changes resulting from project activities, and longer-term contribution to developmental impact in Viet Nam in so-called logic models.
- Identification of likely members of the Vietnamese 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).
- National Learning Alliance consisting of key stakeholders from private and public sectors (after the workshop)

## 2. The PIPA process

A major component of the workshop is a Participatory Impact Pathways Analysis (PIPA) which follows the road map shown in Figure 2. Guided along certain questions a group of project participants and stakeholders describe what they think is going to happen in their project and beyond. This is done by looking at two things: 1) the main problem the project tries to solve and why this problem exists; and 2) the stakeholders, their relationships and influences.

Project impact pathways specify who needs to change for the project to achieve its vision and what the project has done / needs to do, to achieve those changes. The changes are quantified as far as possible as a way of predicting actual and future project impacts as well as providing the basis for an evaluation plan. Through the PIPA process key leverage points are identified for achieving these changes as a basis for the activities of the Learning Alliance. All this are captured in a so-called outcomes logic model.

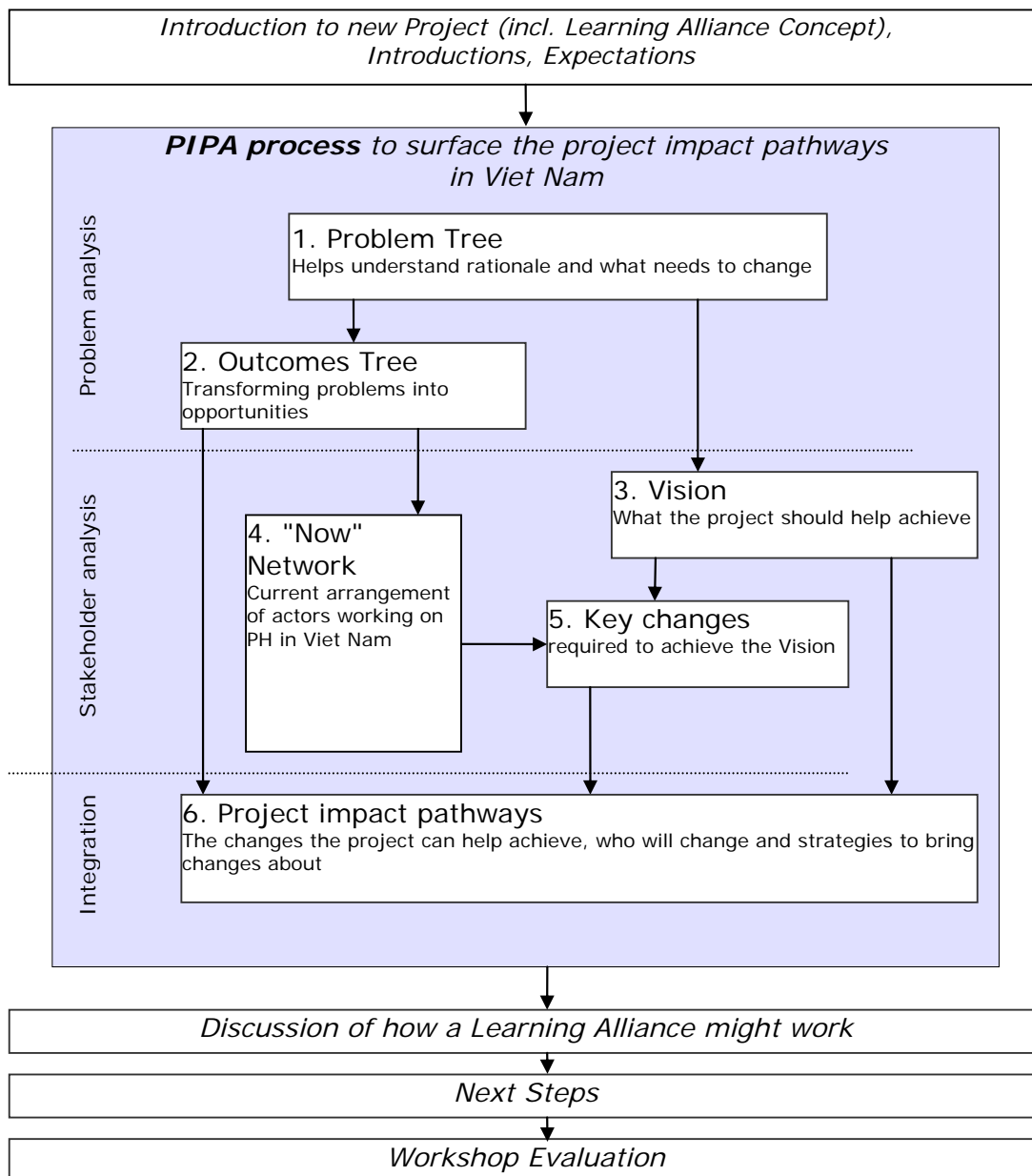
## Workshop Languages

Vietnamese was the working language for the participants during the workshop. However, results were captured in English for the workshop procedures, project coordination and communication with the donor. Presentations and discussions were summarized for the (few) non-Vietnamese speaking members. The gist of the discussion was translated for the IRRR participants.

### Participation

The 50 participants (see Annex Participants 40 men, 10 women) in the workshop were staff from ministries, scientists and researchers working on postharvest as well as representatives from the private sector, farmer collectives' representatives and non-government organizations. Figure 1 shows the workshop participants.

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



**Figure 2: Workshop Road Map**

### 3. The Workshop

#### Day 1

#### Opening

The workshop was opened by the Vice Minister of the Ministry of Agriculture Research and Development, Bùi Bá Bổng, and the Vice Rector of NLU, Nguyễn Lê Hưng. The project leader, Martin Gummert, gave an overview of past ADB/ JFPR 9036, and 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.

#### Review of Postharvest Situation

Participants had prepared prior to the workshop a brief paper focusing around three questions with regards to postharvest: where are we?, where do we want to be?, and what needs to be done? In a five-minute brief the participants gave a summary of their perspective on the three questions. See Appendix 5 for an English version of the abstracts of the papers. The snap shots of the participants' perception covered the spectrum of the various angles the different stakeholders have on postharvest.

#### Introductions and forming Working groups

Before lunch participants were briefly introduced to the Learning Alliance concept and the PIPA process. After lunch participants were put into five groups in a mix of various stakeholder categories (see Table 1).

**Table 1: Group composition**

##### Group 1

Name	Organization / Agency	Position / Title
Nguyen Thi Duong Nga	Hanoi Agric. University	Lecturer
Pham Van Tán	VIAE-PH (Sub-Institute)	Vice Director
Trương Vĩnh	NLU, Chem. Eng'g. Dept.	Senior Lecturer
Lê Văn Bám	MARD, Dept. of Science and Tech.	Vice Director
Nguyen Ngoc Đệ	Can Tho University	Lecturer
Nguyễn Lê Hưng	NLU	Vice Rector
Carlito Balingbing	IRRI	Postharvest Specialist
Rica Flor	IRRI	Impact Specialist
Alfred Schmidley	IRRI	Business Model and Development Specialist

##### Group 2

Name	Organization / Agency	Position / Title
Trần Thị Mai	VIAE-PH	Vice Director General
Đoàn Ngọc Phá	Dept. of Agriculture and Rural Dev't. (DARD), An Giang Province	Provincial Extension Staff
Hà Anh Dũng	Ag.Ext.Center, Can-Tho	Provincial Extension Staff
Đặng Ng Sou	Cooperative, CanTho	Cooperative Leader
Bùi Ngọc Hưng	NLU	Lecturer
Võ Hồng Văn	Báo Kinh tế Sài Gòn	Journalist
Ngô Văn Giáo	Southern Seed Company	Seed Producer
Võ Văn Lập	DARD, Tien Giang	Provincial Extension Staff
Lê Hữu Mã	CK Long An Mechanical Company	Private Manufacturer

**Group 3**

Name	Organization / Agency	Position / Title
Lâm Quang Hiền	DARD, Soc Trang	Provincial Extension Staff
Dương Thái Công	CanTho U.Fac.Engineering	Lecturer
Tạ Minh Tuấn	Báo KHPT	Private Sector
Nguyễn Văn Hiếu	DARD, Dong Thap	Provincial Extension Staff
Đào Quang Hưng	MARD, Dept.Agronomy	Central Policy Support
Nguyễn Văn Trãi	Cooperative: Dong Thap	Cooperative Leader
Nguyễn Duyên	DARD, Phú Yên	Provincial Extension Staff
Phan Hieu Hien	NLU	Lecturer
Nguyễn Xuân Hai	Ministry of Education	Staff
Bui Phong Luu	Bui Van Ngo Co.	Director

**Group 4**

Name	Organization / Agency	Position / Title
Phù Khí Nguyên	Ag. Ext. Center, Kien Giang	Provincial Extension Staff
Lâm Thanh Hùng	Dept of Ind. & C Kien Giang	Research Staff
Trình Hoàng Việt	Ag. Ext. Center, Long An	Provincial Extension Staff
Nguyễn Văn Xuân	NLU	Lecturer
Đỗ Thị Bích Thủy	Hue University	Lecturer
Phan Thế Toàn	Cooperative, Kien Giang	Provincial Extension Staff
Đoàn Vĩnh Phúc	Ag.Ext.Center, Dong Thap	Provincial Extension Staff
Nguyễn Nhu Kiên	DARD, Thai Binh	Provincial Extension Staff
Nguyễn Phú Hòa	NLU	Vice Head of International Relations Office
Lê Văn Bảnh	Cuulong Delta Rice Research Institute	Director
Ngo Thiên Lương	Vietnam Food Association	Private Sector
Mai Thành Phụng	MARD, Dept. of Extension	National Extension Staff

**Group 5**

Name	Organization / Agency	Position / Title
Lê Thị Nhứt	Dept of Ind.&C Kien Giang	Research Staff
Nguyễn Lương Hiền	Inst.Ar. Policy&Strategies	Rice Market Analyst
Nguyễn Quang Lịch	Hue University	Lecturer
Nguyễn Văn Thiện	Combine mf: Tu Sang	Private Manufacturer
Nguyễn Thế Hà	Bui Van Ngo Co.	Private Sector
Le Thanh Tung	MARD: Dept.Agronomy	National Policy Support Staff
Ngô Văn Hóa	Ag.Ext.Center : An Giang	Provincial Extension Staff
Nguyễn Thị Ngọc Dung	Bà Rịa DARD	Provincial Extension Staff
Trương T.Ngoc Chi	CuuLong Rice Res.Inst	Lecturer
Phan Thị Đoan	Journalist HTV	Journalist
Nguyễn Anh Quốc	DARD: Vung Tau	Provincial Extension Staff

**Support/Administrative**

Name	Organization / Agency	Position / Title
Nguyễn Đức Thanh	NLU	Lecturer
Nguyễn Trung Hậu	NLU	Staff
Trần Thiên Tâm Minh	NLU	Specialist

**Facilitators**

Name	Organization / Agency	Position / Title
Tonya Schuetz	IRRI	Facilitator
Boru Douthwaite	IRRI	Co-facilitator
Martin Gummert	IRRI	Project Leader/Postharvest Development Specialist

**Constructing the problem trees**

The process of developing impact pathways for reducing postharvest loss in Viet Nam followed the process shown in Figure 2. The first step was to construct a problem tree identifying the main causes of high postharvest loss in Viet Nam and asking 'why' this is a problem.



**Figure 3: Group 1 discussing their problem tree (right); presentation of problem tree developed by Group 2 (left).**

Participants were introduced to the concept of problems being opportunities and how to convert a problem tree into an outcomes tree. With the focus on the positive, participants developed a vision of project success in reducing postharvest losses in five years time, in 2013. They were asked to discuss in their groups and come up with a common vision describing the future scenario along the questions below in Table 2.

**Table 2: The vision of Group 1 (Research)**

<p>What are the next users doing differently? How are men benefiting? How are women benefiting?</p>	<ul style="list-style-type: none"> <li>- <i>Agri. machinery manufacturers improve their technologies, lower the cost, improve marketing strategies, increase their production scale and income</i></li> <li>- <i>Agri. service providers (harvesting, drying, processing, ...) operate agri. machines properly</i></li> <li>- <i>Agri. extension systems improve their knowledge/skill and performance in PH tech. dissemination</i></li> <li>- <i>Banks provide loans/credits to farmers and business sectors favorably</i></li> <li>- <i>Research Institutions/universities improve their capacity and methods in research and technology transfer strategies/activities in PH</i></li> </ul>
<p>How are project outputs disseminating (scaling out)?</p>	<ul style="list-style-type: none"> <li>- <i>Establishing local trainer groups for PH technology development</i></li> <li>- <i>Establishing learning alliances among farmers, farmers groups (farmers to farmers), interest groups</i></li> <li>- <i>Updating knowledge and experience exchange among learning alliances</i></li> <li>- <i>Training &amp; demonstrating PH tech. for farmers and service providers</i></li> <li>- <i>Documenting PH tech. and disseminating to farmers in various effective ways</i></li> <li>- <i>NGO help farmers access to different sources of capital and PH knowledge</i></li> </ul>



What political support is nurturing this spread (scaling up)	<ul style="list-style-type: none"> <li>- <i>Strengthening the agri. &amp; industrial extension activities</i></li> <li>- <i>Implementing several support programs/policies (Credits, taxes, land, ...) to agri. Machinery manufacturers and improves rural infrastructure</i></li> <li>- <i>Establishing the price stabilization funds</i></li> <li>- <i>Creating favorable competition environment among State and private businesses</i></li> <li>- <i>Supporting research and training systems</i></li> <li>- <i>Facilitating feedback mechanisms for policy making process</i></li> </ul>
What are the end users doing differently? How are they benefiting?	<p><i>Farmers:</i></p> <ul style="list-style-type: none"> <li>- <i>Active practices of appropriate PH tech. due to better KAS in PH</i></li> <li>- <i>Reduction in PH losses, Improvement of grain quality, Increase in farm income/profit, improvement of rural livelihood</i></li> <li>- <i>Liberation of women field hard works, more opportunity for children to school</i></li> <li>- <i>Improvement of physical &amp; mental life</i></li> <li>- <i>Having suitable rice varieties for mechanization</i></li> <li>- <i>Better access to market information</i></li> <li>- <i>Large scale production</i></li> <li>- <i>Stable market for farm produce</i></li> </ul> <p><i>Consumers:</i></p> <ul style="list-style-type: none"> <li>- <i>Enjoy of high quality product</i></li> </ul>

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 groups

<p><b>Group 2:</b>  <u>Producers</u> focus on expanding their suitable machinery and equipment manufacturing; <u>husking factories</u> (rice mills) invest in technology innovations; <u>researchers</u> apply production research results in reality.</p> <p><b>Group 3:</b> ...  <u>Millers</u> perceive the necessity of proper training on correct moisture content before milling, have a different attitude to purchasing raw material, improving equipment and innovative technology; <u>Machine manufacturers</u> produced high technology and fuel efficient combine harvesters suitable for the field conditions producing low losses; produce high technology dryers with low cracking and low labor requirement; produce silos for storage; and produce rice mills with more than 65% head rice recovery and competitive with foreign equipment.  <u>Farmers</u> reduce postharvest loss, reduce production cost using less labor, especially women, increase income and have better livelihoods</p> <p><b>Group 4:</b> ...  <u>Reserachers</u> encourage farmers to use modern equipment; <u>Contract service providers</u> apply new technology innovations; <u>policy makers</u> support technology transfers; <u>Service providers</u> provide credit with low interest, commercial promotion support and experimental production support  <u>Producers</u> meet the existing demand</p> <p><b>Group 5:</b> ...  Farmer Intermediaries difuse project model through local offices, media, workshops, training, study tours etc. Policy makers support financing, training, techniques.  Farmers make machine investment, apply improved knowledge and skills and increase productivity, women's labor input is reduced</p>
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Each group presented and discussed their problem trees and visions to each other. Different groups picked up on different issues.

To ensure that the facilitators received informal feedback from the participants - despite the

language gap - on the process and content of the workshop a Monitoring Committee of three people was invited to speak on behalf of the group in a briefing after the close of the day.

**Day 2:****Network mapping**

The day started with a feedback of the discussions of the Monitoring Committee (see Box 2) and summary of the previous day. Three presentations of the problem trees and visions were left to be presented at the beginning of the day, before participants were introduced to network concepts and the possibilities how to visualize networks.

Then the groups developed their network maps to describe how organizations are currently linked together in the postharvest sector in Viet Nam (see Figure 4a and 4b). 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.

**Box 2: Feedback from the Monitoring Committee****Day1:** ☺ Overall

- lots of experience and knowledge
- good group work
- translation works well

**Suggestions**

- To produce an integrated problem tree from all groups
- To provide a brief summary of the workshop in addition to the full documentation
- To have further detailed discussions on specific topics

**Day2**

- + Participants are very active
- + People have many ideas and are energetic

**Suggestions**

- It takes to get the group started on the exercises; How and where to start; → Clear directions (Day2 better than Day1)
- Presenting work of 5 groups take too long, Reduce number of groups
- Stress what the project can do for farmers → Should be explicit (← Will be result of the workshop)
- Workshop should produce a summary of key issues



Figure 4: Group 5 drawing a map of the postharvest network (right), their final product (right)

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 Viet Nam (Figure 5).

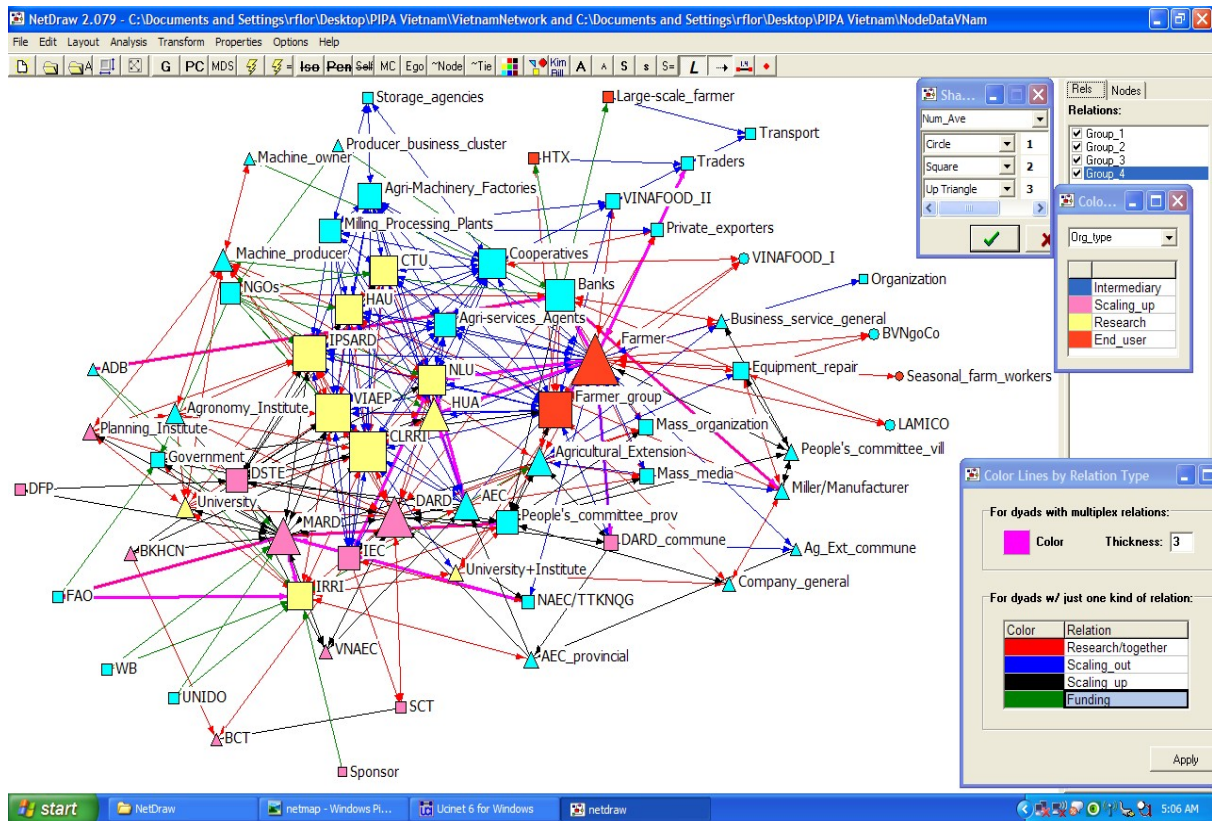


Figure 5: Composite network map of the postharvest sector in Viet Nam

**Box 3: Description of what the map shows**

In total all groups identified 66 stakeholders in four stakeholder groups, **color** coded in the map as follows:

End users	5 (8%)	red nodes,
Intermediary	37 (56%)	blue nodes,
Research	12 (18%)	yellow nodes,
Scaling up	12 (18%)	pink nodes.

The intermediaries are mainly usually on the outer part of the network. The stakeholders involved in research, as end user and for political support / scaling up are more situated within the network.

IRRI was perceived as an intermediary by two groups rather than a research institute. This can be interpreted from the nature of this projects addressing mostly down stream research.

The **shapes** of the nodes indicate the average perception of workshop participants regarding how influential that particular stakeholder is for the project success:

Circle:	1	=	not influential
Square:	2	=	influential
Triangle:	3	=	very influential

The map shows that the most important nodes are farmers and farmers groups followed by the policy-makers, MARD and DARD.

The **size** of the nodes is proportional to the number of links identified to be connected to that stakeholder, and thus is a measure of their 'centrality' in the Viet Nam postharvest network.

The **lines** connecting different nodes show the relationship between different stakeholders:

red line	research or working together
black line	scaling up or providing political support
blue line	scaling out or extension
green line	funding.

In cases where there are multiple relationships between two stakeholders, the line is thicker.

The arrows show the direction of the flow, e.g. one way for a grant funding, two way for a loan.

In general, the map shows that the postharvest sector in Viet Nam is made of many actors who have multiple linkages. That the final users, farmers and farmer groups, 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 connected and influential group identified are the farmers. The manufacturers and producers are shown to have few linkages and are at the edge of the network. It might be a possible strategy to be addressed in the project to strengthen linkages to the manufacturers and include them more into the PH network.

**Developing the outcome logic models**

After the presentation of the network maps the groups started to capture the main changes required to reduce postharvest loss in Viet Nam and filled an outcome logic model, in which each row describes an impact pathway (see Table 3 and 4).

The outcomes logic model, i.e. the table below, synthesizes the information from the Vision (worksheet 1), Network Maps, Table of Network Changes (worksheets 2a and b), and Outputs (derived from the Problem Tree). It describes who needs to change, how knowledge, attitude and skills (KAS) need to change, and what the project will do to make these changes happen, so that the project can achieve its vision.

**Table 3: Outcomes logic model template**

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 for achieving these changes in KAS and practice?

Each line in the table below contains an outcome hypothesis and impact hypothesis:

- 1) That the strategy or strategies the project proposes will bring about the desired outcomes;
- 2) That the outcomes, if realized, will contribute to livelihood impacts on the ultimate beneficiaries.

The former are tested by the project's Monitoring & Evaluation, which is the project's responsibility. The latter will generally be tested by external ex-post impact assessment, either at or after the end of the project.

When filling out the table the groups were asked to consider all four types of actors: Intermediaries (people and/ or organizations, who directly use project outputs, e.g. technology, methods, knowledge), Final Users (people and/ or organizations that ultimately benefit), Politically-important actors, (people and/ or organizations whose support is needed for project success), and Project Implementers.

### Day 3

#### Presentation of the Outcomes Logic Models of the individual groups

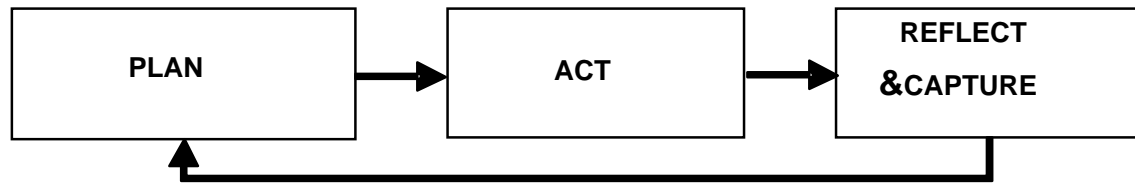
After a short reflection of the previous day by one of the Monitoring Committee members, Day 3 began with the groups finishing and presenting their outcome logic models.

**Table 4: Example: Outcomes logic model developed by manufacturers**

Actor	Changes in practices	Changes in KAS	Strategies
Manufacturers of dryers, silos and rice processing lines	Understanding that: <ul style="list-style-type: none"> <li>- There are high requirements in drying and storing of paddy.</li> <li>- These equipment have potential markets</li> </ul> They should: <ul style="list-style-type: none"> <li>- Have appropriate investments in study and production of the machinery.</li> </ul>	<ul style="list-style-type: none"> <li>- Produce appropriate dryers and silos.</li> <li>- Have qualified staff and workers</li> <li>- Have enough land for larger factory</li> </ul>	<ul style="list-style-type: none"> <li>- Co-operate with institutes and universities to receive technical training</li> <li>- Receive loans from banks</li> <li>- Receive supports from the local government</li> </ul>

## Introducing the concept of the Learning Alliance

Participants were then introduced to the concept of a learning alliance, which is explained in Figure 6. They understood that the PIPA workshop represented the first stage in planning for a learning alliance.



**Figure 6: Learning Alliance repeated learning circle**

In different groups participants then discussed what a postharvest Learning Alliance in Vietnam might look like along some five guiding questions. 1. Who should participate as a stakeholder (individuals as well as institutions) and what could be their role? 2. What could be topics of interest to be discussed in further detail among members of the Learning Alliance? 3. How can we share what we learn? 4. How can we capture and document what learn? 5. What are necessary next actions (for individuals as well as organizations)? Ideas were collected and generated in a World Café<sup>1</sup> Session. All the ideas were brought together to populate the Learning Alliance concept for Vietnam, see Appendix 7: Learning Alliance in Vietnam components.

## Afternoon program: Field Trip

(by Balingbing, Carlito)

### ***Visit to a rice mill and reversible FBD site***

The group visited a private rice miller, Mr. Minh's at Hoa Long Commune, Ba Ria province around 20 km from Vung Tau City proper. The rice mill has three (3) units of 8-tons reversible flat bed dryer (SRA-8) with rice husk furnace which were designed and manufactured at Nong Lam University (NLU) led by Dr. Phan Hieu Hien. The dryers were installed in 2002 and 2005 each costing US\$6,000. With the three dryers installed the rice mill is able to dry 10,000 tons of paddy per year. Drying time vary from 8-10 hours depending on the initial moisture content of the paddy and the prevailing weather.

Mr. Minh's rice mill is able to process 700 tons of paddy per season (three months) or a total output of 2 tons/hour of milled rice. The rice mill involves multiple passes in milling - rough rice or paddy is dehulled with a rubber roller husker and then husked and unhusked paddy passes thru paddy separator before brown rice is polished in the series of abrasive and friction polishers, milled rice then goes through the grader until they are finally sealed in a bag ready for selling.

Price of milled rice at the rice mill ranges from VND7,500-8,600. Quality of rice being sold in the market is classified according to percentage of broken rice. Normally, 5% broken (paddy basis) is being produced in the rice mill for sale to local consumers. In the market, the best quality rice would fetch a price of \$1 per kilo while the low quality rice cost \$0.56 per kilo (VND10, 000/kg).

<sup>1</sup> See <http://www.kstoolkit.org/The+World+Cafe>



The rice mill owner purchases paddy from farmers and traders and also accepts drying for a fee of VND200 per kilogram of paddy. Mr. Minh buys wet paddy at VND4,000/kg and dry paddy at VND4,500/kg which he processes in the rice mill. This leaves a profit margin of VND300/kg to the farmer even if the farmer is charged VND200/kg for drying. The introduction of the mechanical dryer also benefitted the miller with the improvement of milled rice quality with the increase in head rice yield (HRY). Before the SRA-8 came into the rice mill, HRY of milled rice was normally around 45% (paddy basis) but after the introduction of the dryer, HRY increased to 52-55% (paddy basis).



**Figure 7: Participants stepping on a platform, view the operation of the SRA-8 dryer at Mr. Minh's Rice Mill in Hoa Long Commune, Ba Ria Province.**

#### ***Stopover at Minh Dam Site***

After the visit to the Rice Mill, the group proceeded to Minh Dam Site, the highest mountain in the area. It is a famous historical site in Vietnam which served as the base camp of the Vietnamese soldiers during the Vietnam-American War in 1960's.

The last stop was at Moco beach where the participants had refreshing snacks after the 1.5-hour trek in the mountain.

### **Synthesizing the Impact Pathways**

While participants went on the field trip, the project leader and facilitators (Martin and Boru, Tonya and Rica) with the help in translation of Nguyen Thi Dường Nga from the Hanoi University of Agriculture (HUA) and Pham Van Tấn from SIAEP worked to combine and integrate the impact pathways from each of the four groups.

#### **Day 4:**

### **Agreement on Postharvest Impact Pathways and Next Steps**

The synthesized impact pathways from the groups were presented (Vietnamese version) in the morning and participants made comments and additions resulting in the Table 5 below.



**Table 5: Combined impact pathways to reduce postharvest loss and increase farmers incomes from postharvest in Viet Nam.**

The numbers in brackets - (1), (2), (3), (4), (5) - indicate from which group the item originates, (m) = manufacturers, (f) = farmers, **bold are the strategies the project can do**, *italic are strategies beyond the project*, normal are the strategies the project can influence, **red = not yet included in Vietnamese version**

Actors	Change in practice	Change in KAS to support changes	Strategies to bring about these changes in KAS & practice
Farmers	<p>Use advance cultural practices (1).</p> <p>Use combine harvester and mechanical dryers (1, 2, 3, 5, <b>f</b>).</p> <p>Clean paddy properly and determine moisture content before storage (4).</p> <p>Apply appropriate tech for rice storage (1, 2) incl. warehouses (5).</p> <p>Engage in large scale production (through land accumulation, cooperation) (1)</p> <p>Shift to market-oriented production (1)</p> <p>Increase cost effectiveness (1)</p> <p><b>Use new market channels for direct marketing of paddy (f)</b></p> <p><b>Sell dried paddy (f).</b></p> <p><b>Form group, e.g. through cooperatives (f).</b></p> <p><b>Farmers apply for low interest loans conditions using simple procedures (f)</b></p>	<p>Knowledge of post-harvest losses in quantity and quality (2, 3) - MC (5)</p> <p>Knowledge and skill (1) on PH tech.</p> <p>Knowledge about benefits from using PH tech. (3, f)</p> <p>- dryers (5)</p> <p>- storage (5)</p> <p><b>- combine (f)</b></p> <p>Benefits from land consolidation are known (3)</p> <p>Willingness to adopt PH tech. (1)</p> <p>Machinery operation &amp; maintenance K&amp;S (1)</p> <p>Better management K&amp;S (1)</p> <p><b>Know benefit of</b> working together on marketing &amp; linkage (1)</p> <p>Improved economic management capacity (1)</p> <p>Transfer of technology and change skills (scaling out skills – farmer trainers) (5)</p> <p>Better knowledge of factors affecting rice quality in processing and storage (3)</p> <p>Knowledge of effect of timely harvest on quality</p>	<p><b>Training delivery (1,2, f) training module development (5), training on machinery operation (3), study tour (1, 2), workshops (1,3), demonstration (1,3), pilot project (1), field visits to production models (3). Advertise on public communication means (3). Facilitate linkages b/w Farmers and other actors (1, 2); rice companies (3); and scientists (3)</b></p> <p><b>Value chain study for improvement (1)</b></p> <p><i>Gov. support for tech. development (buying Machines/equipment) (1,5)</i></p> <p><i>Policy support on capital (5, 4), employment and land (5)</i></p> <p><b>Research on storage systems for farmers (5)</b></p> <p><b>Provide information about markets, price, quantities, qualities, export potential (f)</b></p> <p><b>Provide information about new technologies (f)</b></p> <p><b>Government to set up system for buying rice at reasonable price (f), target higher price for good quality rice at farm gate (2)</b></p> <p><b>Make loans available for farmers with less than 3 ha and extend low interest loan program beyond 5 years (f)</b></p>
Farmer contractor / contractor (Farmer contractors: same as actor farmers plus the following)	<p>Invest in modern machineries such as combines, dryers (2)</p> <p>Operate, maintain and repair equipment like combines, dryers etc (5).</p> <p>Enlarge operation of scale (4)</p>	<p>Realize that PH loss reduced at larger scale of operation and with technology improvements (4)</p> <p>Become service oriented in providing services for harvesting and drying (2)</p>	<p><b>Workshop to introduce new PH technology (4)</b></p> <p><i>Capital support (4)</i></p> <p><b>Training in using, maintaining and repairing of combines and dryers (2)</b></p> <p><b>Users training by manufacturers (m)</b></p>

Actors	Change in practice	Change in KAS to support changes	Strategies to bring about these changes in KAS & practice
Farm machinery manufactures	<p>Produce machinery appropriate to local conditions at affordable cost (1, 2, 3)</p> <p>Use standardized design / components (1).</p> <p>Use better marketing strategies (1).</p> <p>Apply advanced technology for production (5, m).</p> <p>Manufacturers establish linkage among themselves (4) and with component manufactures.</p> <p><b>Produces silos with 2,000 t (m).</b></p> <p><b>Uses human resources suitable to manage production machines (m).</b></p> <p><b>Invest more in R&amp;D for technology development (m).</b></p>	<p>Improved technical knowledge and skills (1)</p> <p>Researching manufacturing conditions and capabilities (5)</p> <p>Awareness of advantages of standardized production</p> <p>Realize that machines/equipment should meet requirements of farmers (4)</p> <p><b>Know market potential of silos (m)</b></p>	<p>Lobby government to invest more for R&amp;D (1, 3), policy (5), interest rate (5) and tax (5). Training (2), <b>study tour, workshops, (1), technology transfer (m).</b></p> <p><i>Lobby gov. support for tech. development (equipments) (1).</i></p> <p><b>Organizing machinery competitions in realistic (incl. problematic) conditions (3).</b></p> <p>Provide improved production technologies (2).</p> <p>Support standardization.</p> <p>Promote collaboration between manufacturers and researchers from universities and institutes to improve machinery design and quality (3, 5, m).</p> <p><b>Workshops among machinery producers (4)</b></p> <p><i>Capital support (4), linking to financial institutions (m)</i></p> <p><i>Establish research center for higher technology (m)</i></p>
Traders and processors	<p>Move from secondary processing to one step processing (3)</p> <p>Buy dry grain at higher price (2)</p> <p>Monitor grain quality traits (2)</p> <p>Set-up network to buy paddy efficiently (3)</p> <p>Traders are truthful trading partners and pay farmers a fair price (1)</p> <p>Apply trade mark &amp; confidence (1)</p> <p>Diverse &amp; faithful (1)</p> <p>International market relation (1)</p>	<p>Apply strategy for long term business ? (2)</p> <p>Traders and processors know their responsibilities and rights of farmers (3)</p> <p>Improved relationship between rice traders (5)</p> <p>Anti dumping in price (5)</p> <p>Better knowledge of factors affecting rice quality in processing and storage (3) Consider farmers as essential business partners (1)</p> <p>Apply quality control &amp; management (1)</p>	<p>Lobby for loans for building dryers and storage facilities / silos (2)</p> <p>Lobby for favorable trade policies (2)</p> <p><b>Workshops; local / international study visits to learn about new technologies (3)</b></p> <p><i>Enhance export rice management of Viet Nam Food Association (5)</i></p> <p><b>Providing information about the factors that affect quality and (5)</b></p> <p>Provide information about rights and responsibilities of farmers and processors and traders (5).</p> <p>Provide loans for facility improvement and material procurement (1)</p> <p>Formulate favorable trade policies (1)</p>

Actors	Change in practice	Change in KAS to support changes	Strategies to bring about these changes in KAS & practice
Rice storing & processing plants	Use improved technology to suited to their conditions and at affordable cost (1, 3) Use better marketing strategies (1) Build high capacity warehouses, silos and processing plants (3)	Improved technical knowledge and skills (1)	<i>Make available more / more suitable financing schemes (1)</i> <b>Training, study tours, workshops (1)</b>
Food company	Buy paddy instead of brown rice	Change vision and strategy in rice trading Food company realize that farmer is their most important partner is business and the	Build model for integrated processing
Rice millers	Enlarge operation of scale (4)	Realize that PH loss reduced at larger scale of operation and with technology improvements (4)	<b>Workshop to introduce new PH technology (4)</b> <i>Capital support (4)</i> <i>Trade promotion (4)</i>
Research institutions/ Universities	Apply bottom-up / participatory research (1) Conduct more effective & practical research based on needs (1, 2) Engage in collaborative research between institutions (1) Provide effective tech. support/training to farmers & others (1,3) Get engaged in policy advocacy (1) Produce new (PH?) methodology (2) Research rice PH machines (5)	Improved R&D capacity (1, 2) Connect research to reality (3, 4, 5)	Lobby for more government investment in research (facility, equipment) (1,2) Seek advanced training opportunities (degree and <b>non-degree</b> ) (1). Seek funding for essential research activities (1) and harvesting machines (5). Institutes and universities form better relationships with farmers and food companies to understand and solve PH problems (3)
Policy makers (MARD,...) ministries, local authorities	Formulate/change policies for development of agricultural development and the PH sector (1, 2, 3) - policy on land - organizing production - developing science and technology - infrastructure investment - extension - distribution and trading (5) Implement policies effectively (1, 2)	Realize that reducing PH loss can improve income for farmers and contribute to food security (1,5) Realize the need for favorable policy (1) Better understanding of farming practice (3) Recognize key problems to solve in agriculture (3) Connecting policy makers closely to farmers benefits (5)	Scale-up PHTs by extension network, research institutions and universities (1) Support policy makers to design appropriate policies favorable and legal framework for rice sector development (1) Provide policy makers with sufficient information to make appropriate policy (3) Develop Network between policy makers and researchers (2) Develop network between policy makers and manufacturers (5) Play active role to support science and technology

Actors	Change in practice	Change in KAS to support changes	Strategies to bring about these changes in KAS & practice
			transfer process (5) Supervise project implementation, report to higher level, smoothly implement project (5)
Agricultural Extension Centers	Use improved extension methods (like farmer field school) (1, 2). Provide extension according to farmers need (1)	Technical & training knowledge and skills improved (1, 2) Strengthened capacity in extension activities (1, 2)	<b>Knowledge update, training and TOT (1, 2)</b> Lobby for more funds for extension (facilities, equipments, activities) (1, 2)
Funding donors	Provide funding directly to each stakeholders (1)	More understanding of each stakeholders (1)	Facilitate participatory approach to connect all stakeholders close together (1)
Transportation services	Reducing transportation cost in postharvest (5)	Improved interior field transportation system (field roads?) (5)	Policy on improving interior field transportation system (5) Capital support for infrastructure (5)
Banks	Provide appropriate loans & credit schemes are available in time and volume (1) Provide simple application procedure with few documents required (1) Banks provide low interest / no interest loans (5)	Banks understand their customers and the agricultural sector (1, 5)	Training for project development to meeting Bank requirements (1) MARD to get agricultural banks involved in funding agricultural programs and provide funding for postharvest (1) Lend money to manufacturers at favorable interest rates and easy procedures (5)

## Additional impact pathways presented on day 3:

Actors	Change in practice	Change in KAS to support changes	Strategies to bring about these changes in KAS & practice
New agri. Community consisting of: - Agri. Stock Co. - Bank of Farmers - Farmer Supermarket - Agricultural Consultant & Investment Co.	- Full participation of Farmers in local AgriBusiness - Full responsibility for its products to the end users - Farmers receive input and living materials directly - Combination of Industry and agriculture in their rural areas - Practical school to train farmers to involve in production-market connection	- Farmers gain full understanding on their role and their responsibility - Willingness to join together for large scale & quality production - Market-oriented production and Opportunity to make links to research sector, investors, policy makers, service providers and process/export companies	- Facilitating the establishment of pilot model for New Agri. Community - <b>Training &amp; Consulting to make their business plans, management, marketing skill on the basis of "NEED &amp; BENEFIT SHARING"</b> - Facilitating the change from traditional to modern agriculture, from sole agriculture to agriculture-industry-services/business combination, new cultural behavior

## 4. Summary and next steps

Martin then presented a few slides with a summary of key issues identified during the workshop and outlining the new postharvest project; a summary of key information about the project with some explanations is included in Appendix 2.

### Common themes from the discussions and presentations

The following themes re-occurred during the presentations of the first day and in the discussions of the groups and in the presentations of the group work:

- **Technology (lack, inappropriateness)**
  - Harvesting
  - Drying
  - Storage, silos, both on commercial and farm level
- **Integration, management**
  - No demo sites of integrated models for linking farmers to markets
  - Influences of high moisture processing and production factors on quality and losses
- **Lack of support services or linkages to support services**
  - Capital
  - Business planning
  - Marketing assistance, market information
  - Training and capacity building
  - Linking all the players in the postharvest chain
- **Policy**
  - Tax
  - R&D
  - Marketing
  - Financing support

### Next Steps

The detailed national work plans need to be further developed by the project team in consultation with the key national Learning Alliance members. IRRI has asked NLU to serve as a coordinator for the national component of the project. The group identified the following follow-up measures and activities that can be taken as next steps:

#### *With regards to PIPA follow-up:*

- Finalization of the workshop report
  - Translation, VTN -> ENG, NLU team
  - Tonya will send a final English report to IRRI by May 10
  - Translation, ENG -> VTN, by the NLU team – targeted deadline: End of May
- Links to World Bank project with postharvest infrastructure component?  
If there is any benefit from an IRRI person participating in the workshop scheduled

- for May 16, IRRI can consider sending a representative.
- Setting up a local team in Vietnam coordinated by NLU with operating funds from the project.
    - Action: Develop Viet Nam proposals, with input from IRRI, when needed
      - Concept, formats
      - Business plans, e.g. for integrated plant linking farmers to markets?
      - Link to additional funding, e.g. loan for investment?
    - Output: Contribution to Proposal to ADB for years 2-5
    - Timeframe: Draft proposal ready by August 09
  - Further quantify Interest of provinces in participating?
    - There seems to be a very strong interest from An Giang province and IRRI is already collaborating with the province through the IRRC, which includes a postharvest workgroup
    - Other provinces...
    - Further identify ongoing activities that we can link into

#### ***With regards to the Learning Alliance***

- Initially facilitated by Tonya
- First topics: 2-3 initial topics need to be identified
- Next meeting June 2009 (see also next point)
- IRRI will establish a Learning Alliance e-mail list which will include all the participants of the workshop
- IRRI plans to set-up an Internet based postharvest forum for discussions

#### ***With respect to formulating the national action plan***

After the formal closing of the workshop, e.g. during the following lunch and during the bust trip back to Ho Chi Minh City, many informal discussions between workshop participants resulted in suggestions for additional immediate follow-up measures. Given the very different farming systems in Northern, Central and Southern Viet Nam participants proposed that different stakeholders of “sub-networks” of the learning alliance would take the lead in the five regions:

Region	Location	Provinces included	Distance km, #	Paddy production (million ton)	Lead institutions
I	Red River Delta + Thanh Hoa Province	10	200	8	VIAEP, HAU
II	From Nghe An to Binh Dinh Province	8	700	4	HUAF
III	From Phu Yen to Southeastern Provinces + Gia Lai & DakLak	11	650	4	NLU
IV	Provinces of the Mekong Delta upper of Hau-Giang River	6	200	8	SVIAEP
V	Provinces of the Mekong Delta lower of Hau-Giang River	7	200	12	CTU
HCMC	Overall coordination				NLU

Nong Lam University (NLU) will have the overall role as coordinator and as provider of technology and services such as training and demonstrations. With respect to the regional focus in Southern Viet Nam three provinces seem to have the biggest potential in terms of rice production, problems and interest to contribute:

- An Giang (already involved in the IRRC ICOP).
- Kien Giang

- Dong Thap

Other provinces interested are Can Tho, Soc Tranh, Thien Ga, Long An.

As an immediate follow-up and for extracting the region specific components of the impact pathways the lead institutions agreed on having “mini-workshops” using the “spirit” of the PIPA workshop. This will provide the input for the development of the region specific sub-projects for Vietnam. The mini workshops will be conducted in June 2009 for one to two days each.

Based on the priority areas that were mentioned by most participants (storage systems, high moisture processing, and improving quality of manufacturing) group members already proposed the following activities for 2009:

1. Four mini workshops in the four regions.
2. Development of the Vietnamese plan (proposal to ADB) for the years 2010-2013 based on the PIPA results and the four mini workshops.
3. Hands on training on storage technologies, especially in warehouse and silo storage. IRRI should help sourcing an international storage expert with relevant practical expertise with major focus on storage technology and management. We can approach Grainpro whether there is any interest in also providing training on commercial hermetic storage systems.
4. Hands on training for manufacturers of postharvest machines, especially combine harvesters, on manufacturing techniques, especially the use of gigs and fixtures, standardization and other topics that increase quality though moving from made to order towards improving serial production. Dr. Hien suggested that through its private sector linkages IRRI should help sourcing a suitable industrial production expert.
5. Comparative research trial on high moisture processing and the negative effects of the two stage processing (husking – storage of brown rice – polishing as secondary processing before export or marketing) practiced by the industry in Vietnam. There is no research data available on the qualitative losses in the system compared to combined milling from paddy to white rice as practiced in other countries.

### **Learning-oriented build-in monitoring**

In the course of the workshop several mechanisms towards a learning-oriented monitoring and evaluation were build-into the program. Some of the methods and instruments used are described in the following while the detailed comments are documented in the Annexes.

Monitoring Committee from the participants to be Eye, Ear and Mouth for the group was installed for Day 1 and 2, especially since the facilitation team did not speak Vietnamese. The IRRI team met with the selected members briefly after the end of each day and collected their feedback, which was feedback to the group the next day and served also as a summary of the previous day (see annex).

End of Workshop Evaluation The workshop finished with a simplified after action review which involved participants writing on cards what they liked about the workshop and suggestions/ recommendations what could be improved next time, and with an evaluation dart board covering the Objectives of the Workshop, Facilitation/Organization and Field Trip.

100 days after the workshop – the participants were given a “action point” with the areas of

action they envision themselves becoming active in the next 100 days after the workshop as a follow-up and result of the workshop (see annex). The areas covered contributions towards the Vietnamese component of the proposal to ADB to be submitted in August, which strategy of the impact pathways they think they can contribute most and an action with regards to the formation of the Postharvest Learning Alliance in Vietnam. After 100 days participants should send a copy of this to the local coordinator with brief status report.



## **Appendices**

**Appendix 1: List of Participants****List and Directory of Participants**

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## Appendix 2: Key information about the new ADB funded project and its 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 2: Reducing postharvest losses and increasing income by producing better- quality rice.</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 in Cambodia and Viet Nam. Based on these studies and the regular project monitoring activities the following key issues and gaps were identified:

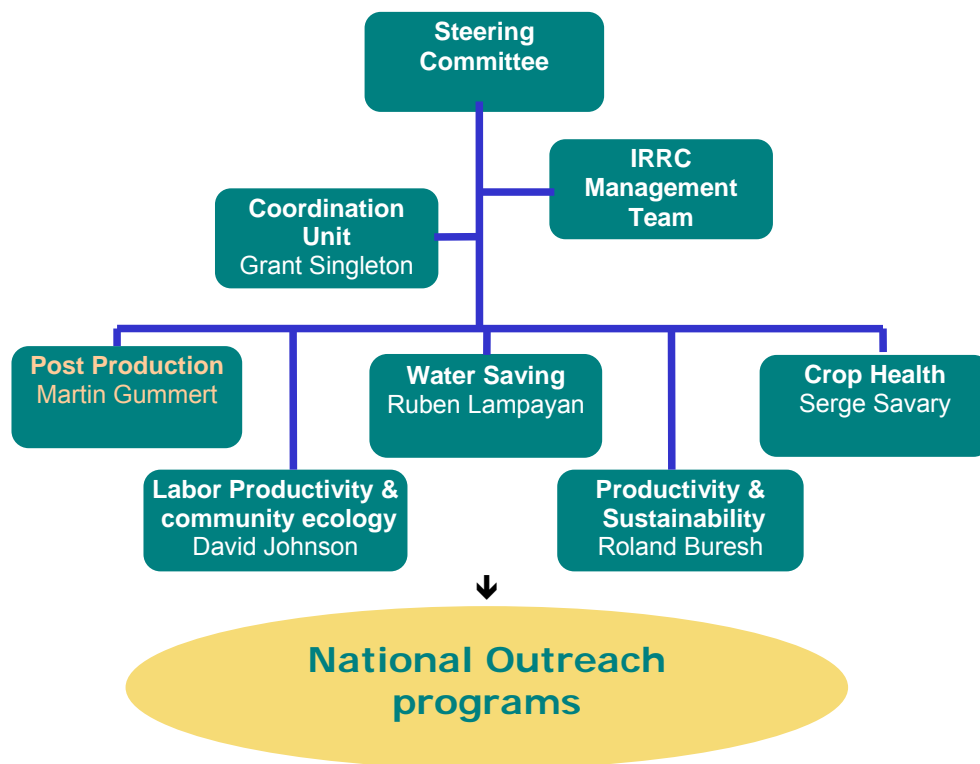
- ***A sufficient time frame is needed to generate awareness and impact for***
  - Initiate local production of equipment, pilot, adapt and disseminate
  - Generate ownership for project at farmers' intermediaries level
  - Let users experience of benefits themselves in the villages (impact)
- ***Only 4 villages were reached in Viet Nam and 8 in Cambodia and the link to the national extension system was weak – how to reach more farmers and processors?***
- ***How to provide support services in the areas of financing, market linkages and business development?***
- ***Additional partners needed to provide support services requires 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

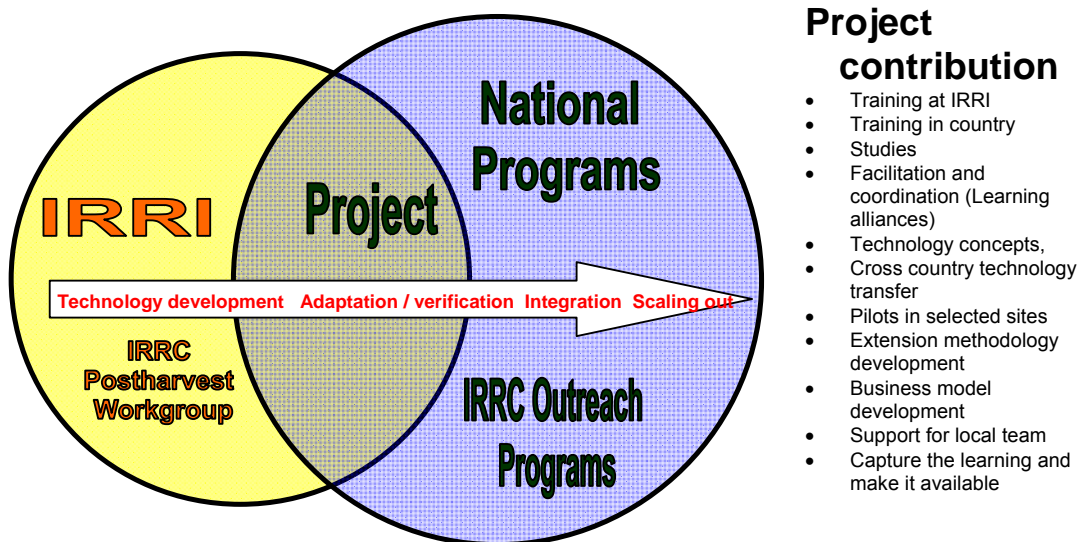
**IRRC Country Outreach Programs (ICOPs)**

At IRRI we consider the new ADB Reta No. 6489 postharvest component as complementary to 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 Viet Nam, 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.



### 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 Viet Nam, 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”.



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 IRRP 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.

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

## Guiding principles

Some of the guiding principles for the project are:

- **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.

- **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.

- **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

- **Impact culture** established with impact pathway analysis and fostered through learning alliance meetings

- **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.

- **Subsidiarity**

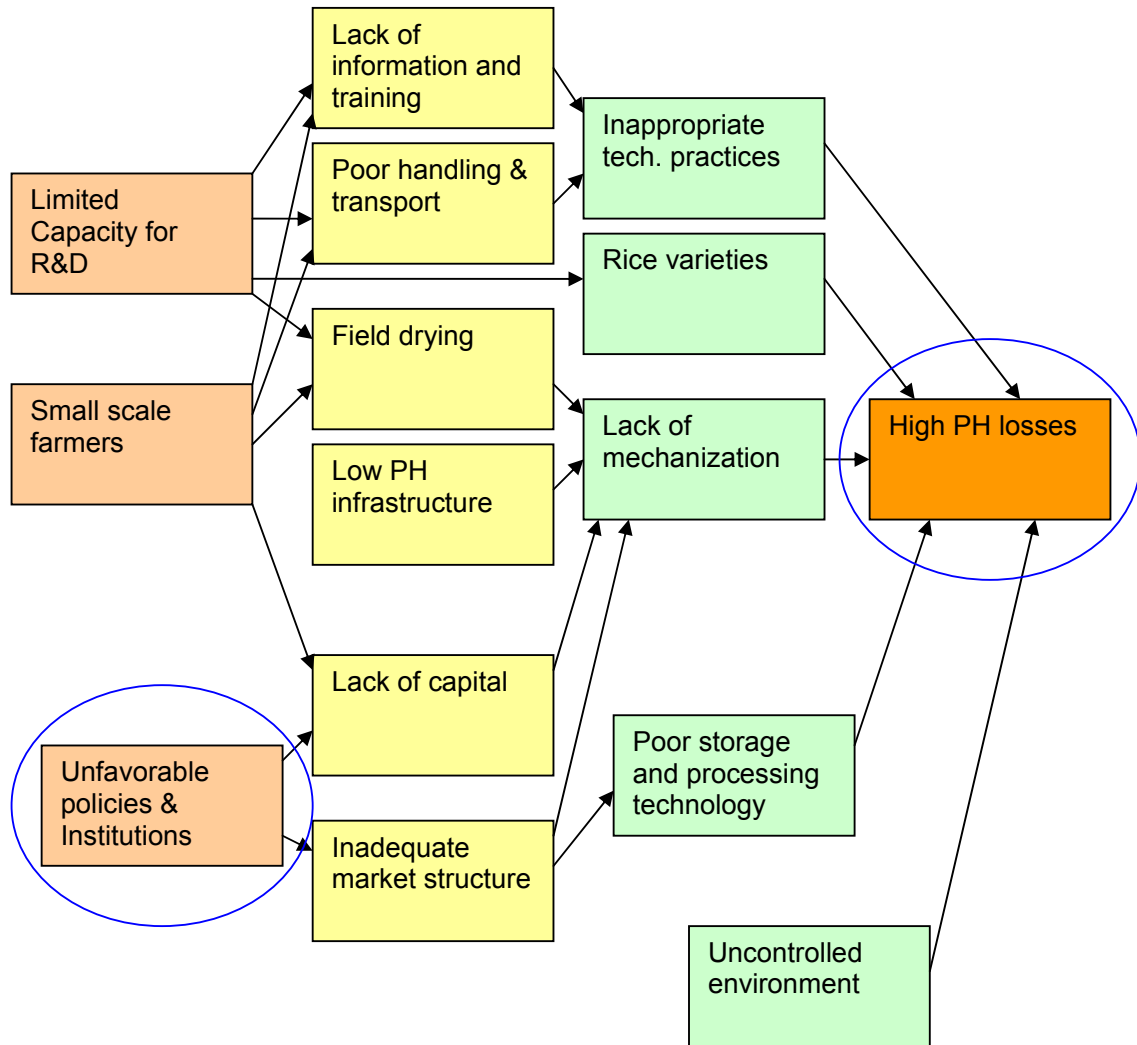
- Work done and decisions made where they are done best
- IRRI building on and adding value to national initiatives

(e.g. through IRRC outreach programs)

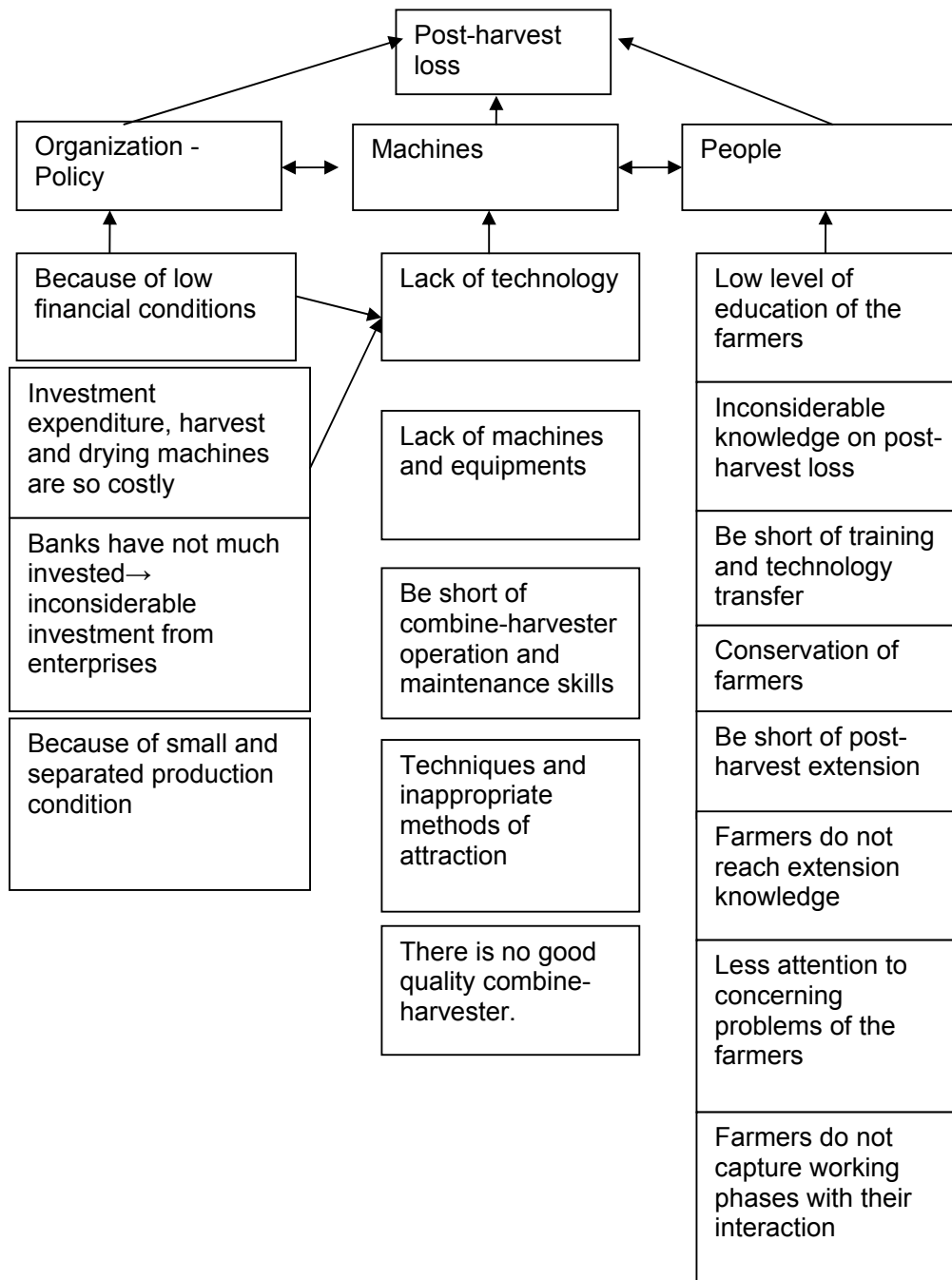


**Appendix 3: Problem trees of all Groups**

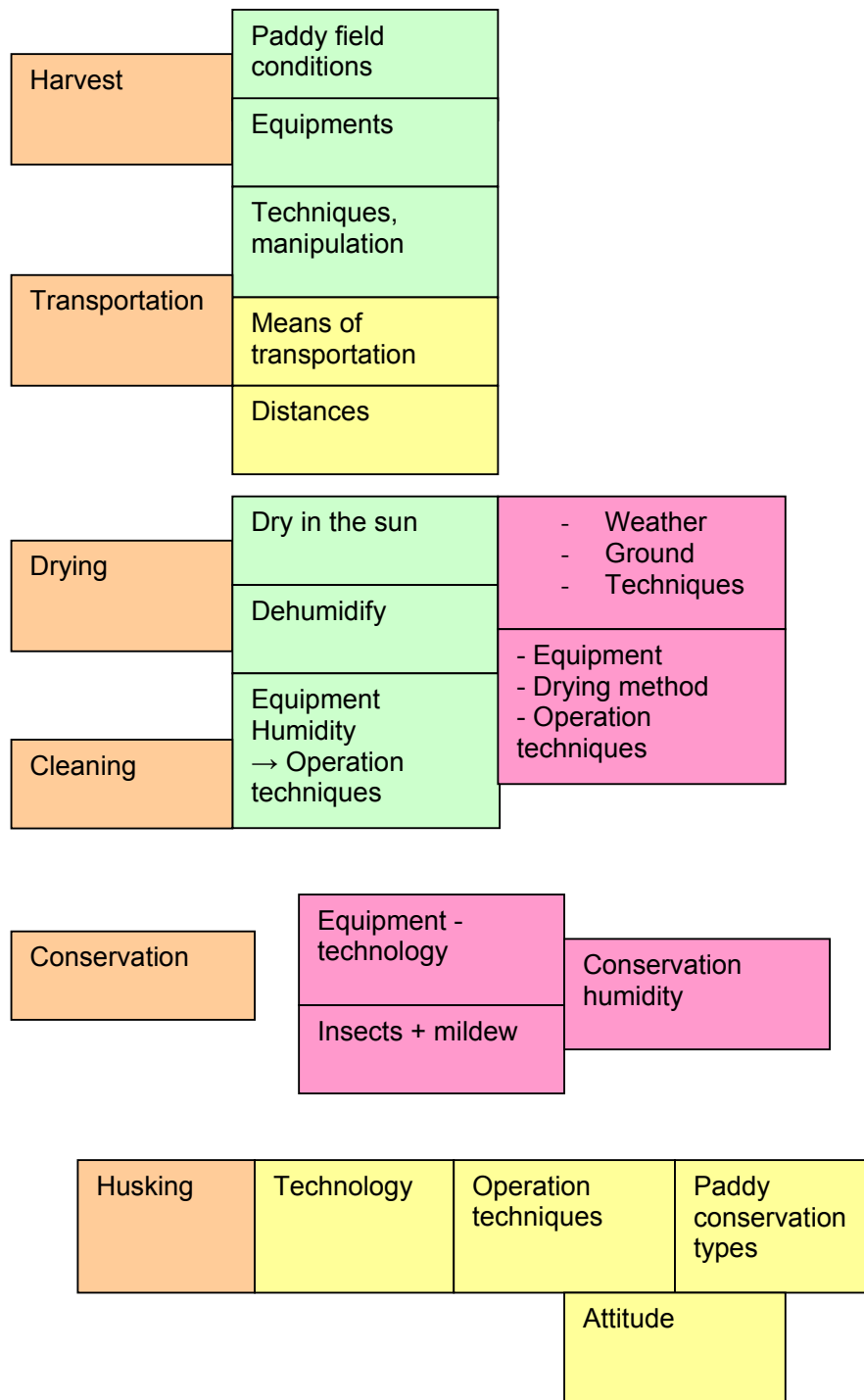
**Problem tree of Group 1:**



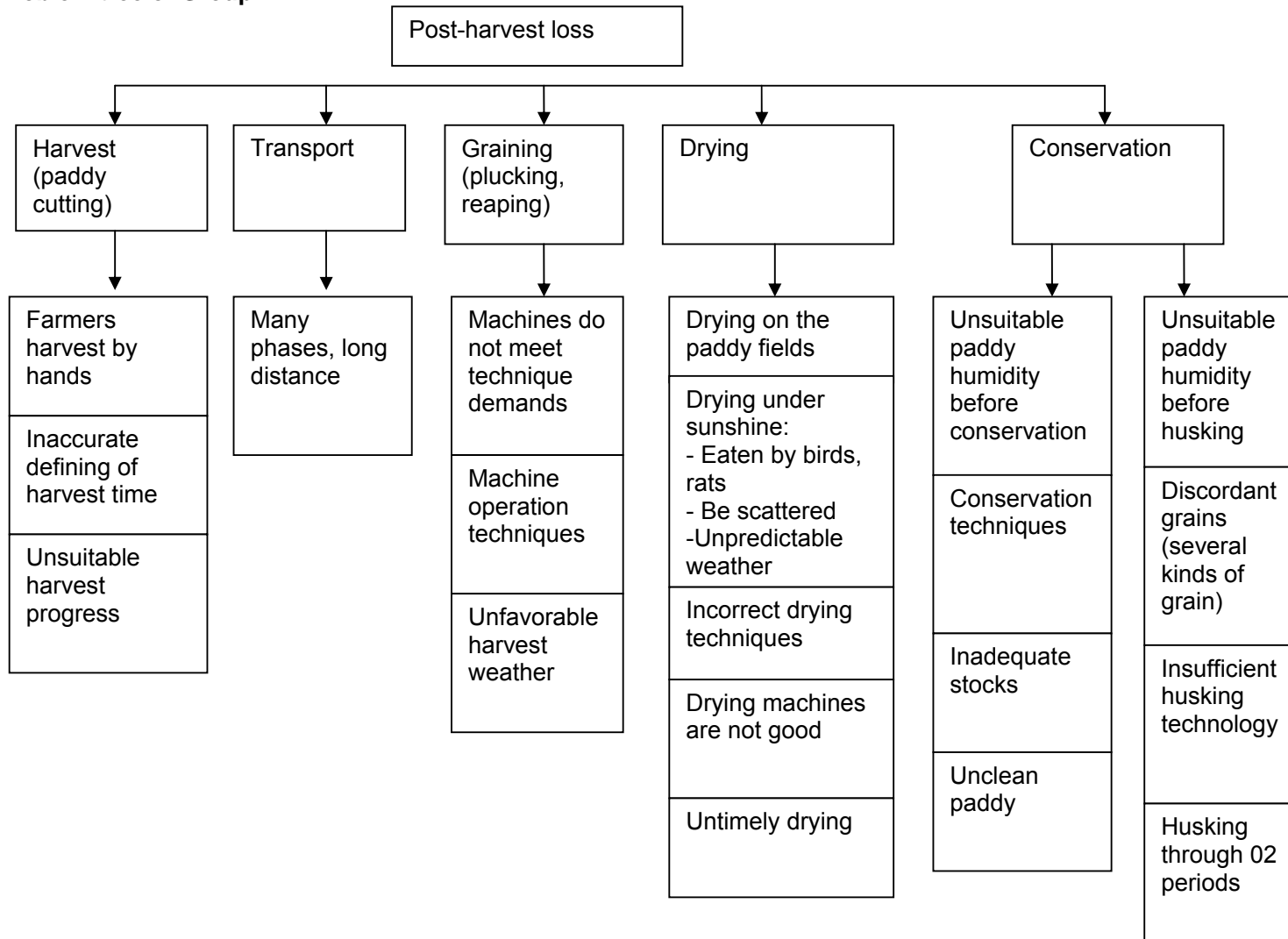
**Problem tree of Group 2:**



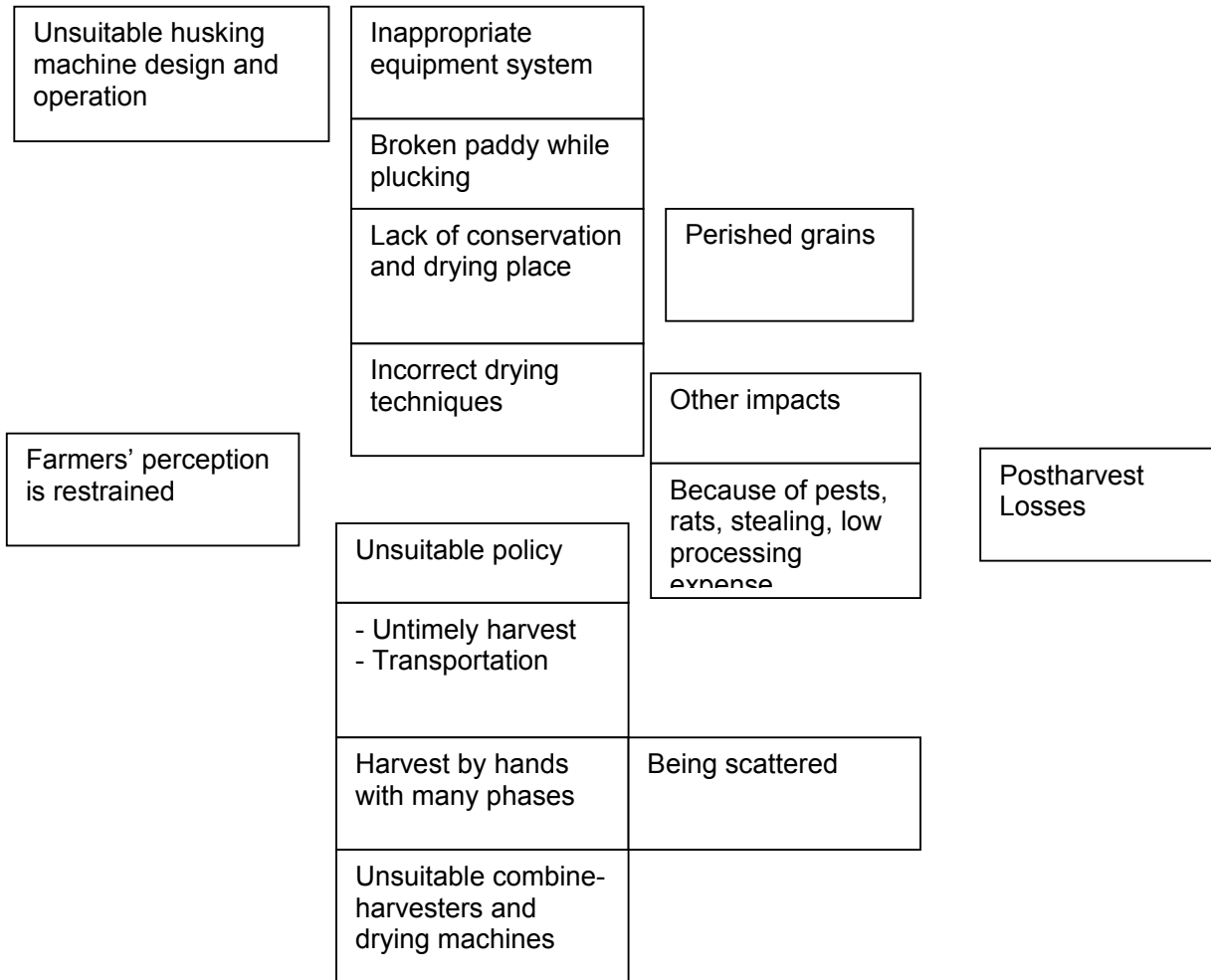
**Problem tree of Group 3:**



**Problem tree of Group 4:**



**Problem tree of Group 5:**



## Appendix 4: Visions of all Workgroups

### Group 1

<p>What are the next users doing differently? How are men benefiting? How are women benefiting?</p>	<ul style="list-style-type: none"> <li>- <i>Agri. machinery manufacturers improve their technologies, lower the cost, improve marketing strategies, increase their production scale and income</i></li> <li>- <i>Agri. service providers (harvesting, drying, processing,...) operate agri. machines properly</i></li> <li>- <i>Agri. extension systems improve their knowledge/skill and performance in PH tech. dissemination</i></li> <li>- <i>Banks provide loans/credits to farmers and business sectors favorably</i></li> <li>- <i>Research Institutions/universities improve their capacity and methods in research and technology transfer strategies/activities in PH</i></li> </ul>
<p>How are project outputs disseminating (scaling out)?</p>	<ul style="list-style-type: none"> <li>- <i>Establishing local trainer groups for PH technology development</i></li> <li>- <i>Establishing learning alliances among farmers, farmers groups (farmers to farmers), interest groups</i></li> <li>- <i>Updating knowledge and experience exchange among learning alliances</i></li> <li>- <i>Training &amp; demonstrating PH tech. for farmers and service providers</i></li> <li>- <i>Documenting PH tech. and disseminating to farmers in various effective ways</i></li> <li>- <i>NGO help farmers access to different sources of capital and PH knowledge</i></li> </ul>
<p>What political support is nurturing this spread (scaling up)</p>	<ul style="list-style-type: none"> <li>- <i>Strengthening the agri. &amp; industrial extension activities</i></li> <li>- <i>Implementing several support programs/policies (Credits, taxes, land,...) to agri. Machinery manufacturers and improves rural infrastructure</i></li> <li>- <i>Establishing the price stabilization funds</i></li> <li>- <i>Creating favorable competition environment among State and private businesses</i></li> <li>- <i>Supporting research and training systems</i></li> <li>- <i>Facilitating feedback mechanisms for policy making process</i></li> </ul>
<p>What are the end users doing differently? How are they benefiting?</p>	<p><i>Farmers:</i></p> <ul style="list-style-type: none"> <li>- <i>Active practices of appropriate PH tech. due to better KAS in PH</i></li> <li>- <i>Reduction in PH losses, Improvement of grain quality, Increase in farm income/profit, improvement of rural livelihood</i></li> <li>- <i>Liberation of women field hard works, more opportunity for children to school</i></li> <li>- <i>Improvement of physical &amp; mental life</i></li> <li>- <i>Having suitable rice varieties for mechanization</i></li> <li>- <i>Better access to market information</i></li> <li>- <i>Large scale production</i></li> <li>- <i>Stable market for farm produce</i></li> </ul> <p><i>Consumers:</i></p> <ul style="list-style-type: none"> <li>- <i>Enjoy of high quality product</i></li> </ul>

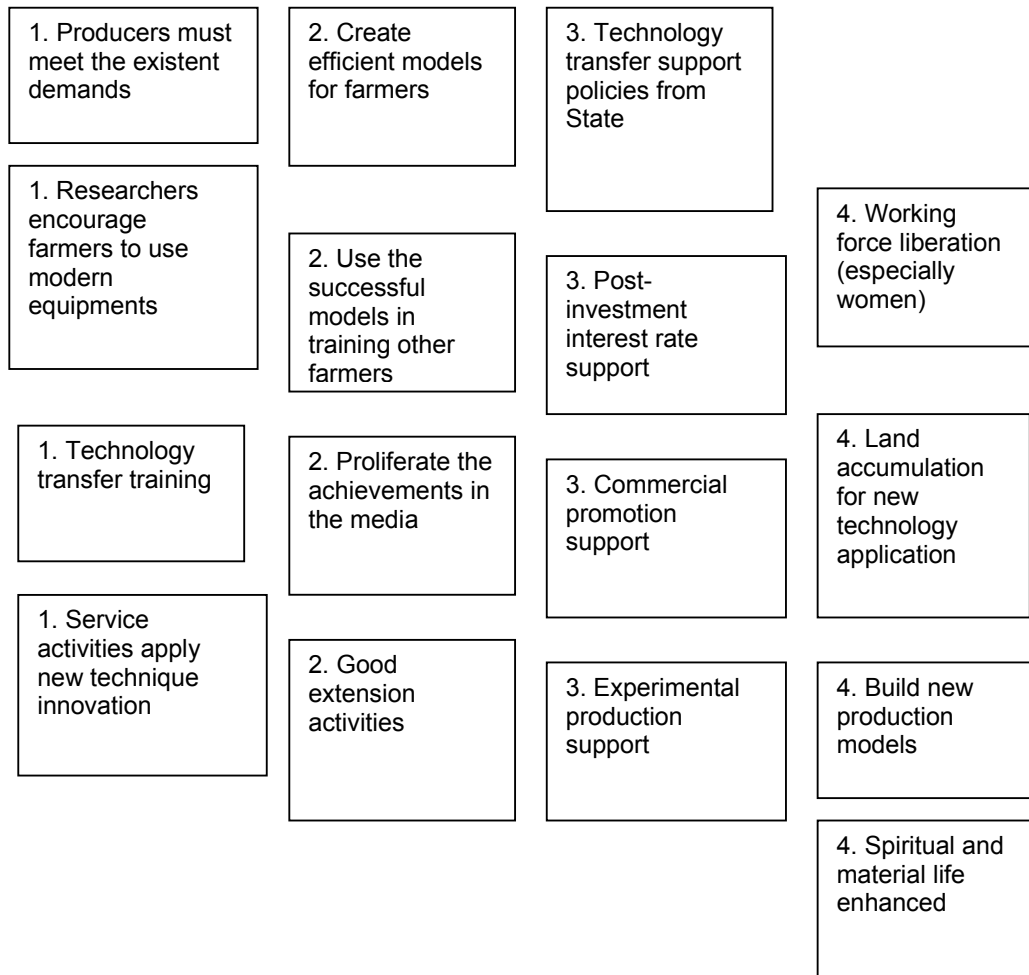
**Group 2:**

What are the next users doing differently? How are men benefiting? How are women benefiting?	<ul style="list-style-type: none"> <li>• Producers: focus on expanding their suitable machine and equipment manufacture.</li> <li>• Husking factories: technology innovation investment.</li> <li>• Researchers: apply production activities into reality.</li> </ul>
How are project outputs disseminating (scaling out)?	<ul style="list-style-type: none"> <li>• Develop extension activities resulted from successful models.</li> <li>• Reinforce information propagation on the media.</li> <li>• Organize study tours to learn more experience.</li> </ul>

**Group 3:**

What are the next users doing differently? How are men benefiting? How are women benefiting?	<p>Milling enterprise (Husking executive)</p> <ul style="list-style-type: none"> <li>• Perceive the necessity in obtaining correct humidity before husking</li> <li>• Material purchase habitude change</li> <li>• Equipment improvement</li> <li>• Technology innovation</li> </ul> <p>Machine manufacturer:</p> <ul style="list-style-type: none"> <li>• Cutting: combine-harvest: suitable combine-harvesters corresponding with field conditions</li> <li>• Plucking off: restrain grain breaking and grain loss; use small-size machine consuming less fuel ...</li> <li>• Drying: Create suitable humidity, restrain grain breaking, and use high -technology machines to replace current machines and to lessen worker number</li> <li>• Cleaning: should be done</li> <li>• Yards: advanced silos to preserve the formulation process.</li> <li>• Husking machines: Reach high rate of unbroken grains &gt; 65%, enhance competitive ability with foreign equipments.</li> </ul>
How are project outputs disseminating (scaling out)?	<ul style="list-style-type: none"> <li>• On the media</li> <li>• Effect from agricultural and industrial extension activities.</li> <li>• Regard and direction of the authorities (policy)</li> <li>• Technique consultation role</li> <li>• - Enthusiast participation of the enterprises</li> </ul>
What political support is nurturing this spread (scaling up)	<ul style="list-style-type: none"> <li>• Finance – credit: favorable interest rate</li> <li>• Training – performance – workshop</li> <li>• Study tours</li> </ul>
What are the end users doing differently? How are they benefiting?	<ul style="list-style-type: none"> <li>• Reduce post-harvest loss</li> <li>• Reduce production cost – working force liberation (on women)</li> <li>• Augment income</li> <li>• Improve material and spiritual life</li> </ul>

**Group 4**



**Group 5**

I-

- + Explain the project profits to farmers
- + Propose concrete solutions to develop project results (training, built typical model, organize study tours ...)
- + Develop the models, basing on project results
- + Diffuse model through:
  - local offices (co-operatives, communes, districts ...)
  - Media ( newspapers, radios, televisions ...)
  - Workshop, training, study tour, experience exchange

II-

- + Concrete policy on capital support, techniques, training
- + Social policy like job creation
- + Build rice quality criteria



III-

1. + extend project effect  
+ propagate in order to proliferate model results
  2. Farmers profit directly from;
    - machine investment
    - techniques, knowledge
    - working force liberation for farmers (especially women)
- Increase productivity

## **Appendix 5: Abstracts of papers prepared by participants in preparation of the workshop on the issue of PH present and future and needs how to get there.**

### **1. POST HARVEST TECHNOLOGY IN AN GIANG PROVINCE**

#### **Abstract**

An Giang is one of national pilot provinces in producing rice. Rice yield annually is about 3,480,000 tons (in 2008). Postharvest technologies have developed since 2006. Rice production dried by machine account for 50% of total rice production in summer-Fall season. Applying post harvest technology reduced loss to 12.2% of total production. Reducing loss in post harvest brought much profit to the rice farmers. Problems of postharvest now are inadequate preservation and storage system. An Giang province only has storage area of 237,048 m<sup>2</sup> with capacity of 419,990 tons, including storing 65,290 tons of paddy and 363,700 tons of rice.

### **2. RICE HARVEST MECHANIZATION IN AN GIANG PROVINCE**

Đoan Ngọc Pha

Vice Director of An Giang Department of Agriculture and Rural Development

#### **Abstract**

Since 2002, the number of reaping machines in An Giang Province increases rapidly, from 20 reaping machines to currently 1000 machines including 600 combine harvesters. Those meet the rice harvesting requirement of 36%.

However, domestic-made combine harvesters have unequal quality. Machines are not standardized, and difficult to find spare parts in Mekong Delta situation.

It is needed to train farmers (machine owners and drivers) on the principles, operation, and maintenance of combine harvesters; to organize study tours to machine-producing companies in Thailand or China to learn experience for more effective manufacturing (participants will contribute travel expenses)

### **3. RICE PRODUCTION AND PROCESSING**

Phạm Văn Dư<sup>2</sup>, Lê Thanh Tùng<sup>3</sup>, Đào Quang Hưng<sup>4</sup>

#### **Abstract**

Mekong Delta has total annual rice cultivation area of 3.859 millions ha, rice production of 20.67 millions tons. Rice export production of country is 4.742 millions tons, turnover is 2.894 billions USD. One of orient for Mekong Delta is establishing 1 millions ha of high-quality producing rice area for domestic consumption and exporting.

Exporting rice quality is not only based on seed quality but also on post harvest technology.

Farmers use bad quality drying ground to dry rice. It is lack of standard drying ground.

Drying rice is separated from rice processing especially in Summer-Fall and Fall-Winter crop. Today, technology of husking rice can produce high quality rice; however, husking effectiveness depends on seed quality, preservation at post harvest, rice quality. The worst in rice processing is harvest, transportation, drying and storing.

Vision is having high quality rice seed that meet the requirement of buyers and investing new technology to reduce processing cost, creating and enlarging market.

<sup>2</sup> PGS-TS –Phó Cục trưởng Cục Trồng trọt

<sup>3</sup> Thạc sĩ – Chuyên viên Cục Trồng Trọt

<sup>4</sup> Kỹ sư –Phó phòng – Bộ phận thường trực Cục Trồng trọt tại TP. HCM

#### **4. RICE POST-HARVEST SITUATION IN CAN TO CITY AND DEVELOPMENT SOLUTIONS UPTO THE YEAR 2015**

Agricultural Extension Center, Can Tho City

##### **Abstract**

Total rice area in 2008 is 218,589 ha for whole year with production of 1,198,441 tons. City has 407 drying machines with capacity of 2,878 tons/batch, meeting the requirement of 43.26% in Summer-Fall crop. There are 290 reaping machines, serving for 30% of total harvesting area. Total of 2,030 threshing machine solved the 100% requirement Summer-Fall and Winter-Spring crop annually. There are 362 husking machine with capacity of 5,260 tons/day

Losses from drying are highest especially in Summer-Fall crop. Losses during storage and preservation come to the second. The main reasons are huge rice volume for storing but there have not had any appropriately technical method and storage means. Farmers used to sell wet rice. Today, most of paddy and rice are stored and preserved in non-industrial and traditional method, concentrated at the mills and exporting company.

It is needed support from government so that farmers can purchase machine. It should have planning on constructing infrastructure to serve agriculture and rural area. It should have policy to encourage machine-producing company/agency.

#### **5. REPORT: CURRENT SITUATION, PROSPECTS, AND NEEDED DOINGS IN THE FIELD OF RICE POST-HARVEST**

Nguyễn Hồng Thiện.

Tu Sang mechanic factory (Cái Bè district, Tiền Giang province)

#### **STATUS, PROSPECTS AND NEEDED WORKS IN RICE HARVESTING**

##### **Abstract:**

Mekong Delta is the main rice production area of Viet Nam with rice cultivation area of more than 3.8 millions ha.

Harvesting and treating at postharvest still remain many ineffective harvesting types and cause high loss.

Rate of mechanizing in rice harvesting is not high, there are 2,000 combine harvesters to service only 10% of rice harvesting demand.

It is needed to using machines in harvesting and post harvest. The desire for 2014 is that rate of mechanizing in harvest and post harvest is of 50%.

#### **6. RICE POST-HARVEST LOSSES IN VIET NAM: STATUS AND SOLUTIONS FOR RICE STORAGE AND MILLING**

Bùi Phong Lưu, Nguyễn Thế Hà, Công Ty Cơ Khí Công Nông Nghiệp Bùi Văn Ngộ

##### **Abstract**

The production of high quality rice should start from milling dried paddy (below 15% MC), resulting in saving 3000 billion VND or 175 million USD every year. The saving in one first year is used for starting the gradual modernization of the rice milling sector, with includes the electricity generation from rice husk, and processing of rice by-products such as bran.. An investment of 10 000 billion VND can get the pay-back in 7 years. The total investment of 20 000 billion VND can come from major rice-producing provinces such as An Giang, Kiên Giang, Đồng Tháp, Long An, Cần Thơ, Sóc Trăng in the period 2010 - 2015

## **7. SEED (MAINLY RICE SEED) PROCESSING: PROBLEMS AND SOLUTIONS**

NGÔ VĂN GIÁO CÔNG TY CỔ PHẦN GIỒNG CÂY TRỒNG MIỀN NAM

### **Abstract**

Using certified seed is basic solution to improve plant productivity. To meet the requirement of supply certified seeds, seed processing should be mechanized. Currently, seed quantities produced in industry technology only supply one-third of the market demand. The need is to equip Seed Companies with 260 dryers (8 tons/batch), 240 air-screen separators (1 tons/hour) and other equipment. Government should support farmers/organization to do seed multiplication and support seed companies in equipping seed processing equipment to meet farmer requirements and establish the seed industry in Viet Nam.

## **8. SOME DISCUSSION ON RICE POSTHARVEST ISSUES IN THE MEKONG DELTA OF VIETNAM**

Nguyen Ngoc De, PhD., Mekong Delta Development Research Institute, Can Tho University, Vietnam

### **Abstract**

Mekong Delta is considered as the major rice production area of Vietnam with annual sown area of about 3.8 million ha and total rice production of about 19 million tons. Postharvest losses from harvest, drying, cleaning, storing and processing accounted for about 13.7% of the total paddy output (MARD-DANIDA, 2006) equivalent to almost 2.6 million tons of paddy. If these losses could be reduced by half, there would be 1.3 million tons of paddy saved. Postharvest loss caused by several reasons is not only in quantity but also in quality of final rice products in the market, affecting to income of million farmers.

In order to reduce the post harvest losses, a series of measures should be put into action including market forecast and market information provision; production planning and zoning; re-organization of production; application of GAP in rice production; mechanization of rice harvest, drying, storing and processing; producers-processing business cooperation based on NEED AND PROFIT SHARING, under active supports from government in infrastructure improvement, favorable policies and decentralization of rice processing and export business. Experience from CHANH (rice storage, processing and distribution) system before 1975 would be good to learn and discuss for future rice postharvest strategies.

## **9. MECHANIZATION IN RICE PRODUCTION AND POSTHARVESTING IN CENTRAL OF VIET NAM- REALITY AND SOLUTIONS**

Nguyen Quang Lich, Do Thi Bich Thuy, Dinh Vuong Hung  
Faculty of Engineering and Postharvest Technology, Hue University of Agriculture and Forestry, [ngqlich@gmail.com](mailto:ngqlich@gmail.com)

### **Abstract**

In the last few years, the mechanizations in rice production and post harvesting in central of Viet Nam has more advance, the number of machinery per ha is increasing day by day. But it is limited at some works such as plough, irrigation, pluck and rice husking. All most work in rice post harvest is implemented by handicraft. Rice drying is very important on guarantee of rice quality, but the ratio of rice drying in Central of Viet Nam is estimated about 0,02% equivalent two dryer per 10000ha. Therefore, the post harvest losses is still very high, the ratio of rice post harvest losses is more than 8% yearly, the broken rice after husker is from 10% to 15%. So improve rice qualities by applying the advances technology in rice production and post harvesting is necessary and urgently especially using suitable techniques in drying and preserving to reduce the preventable and postharvest losses of rice.

**10. RICE POST-HARVEST TECHNOLOGY IN MEKONG DELTA 2008 \***

Phan Hiếu Hiền, Nguyễn Văn Xuân\*\*

**Abstract**

The post-harvest status in the Mekong Delta of Viet Nam is described from drying, storage, and milling, focused in the last 10 years. Other factors such as rice varieties, supply areas, trade channels, rice export... are considered in relation to post-harvest activities. Impeding factors for developing the post-harvest is summarized in a clause "Lack of systematic integration in the rice sector". In detail, two major constraints are lack of mechanical dryers at rice mills in order to sustain rice quality, and lack of storage facilities for stabilizing the rice market. Hence, two corresponding proposals are made, concerning dryers and warehouses. These, together with high-quality rice seeds will create the Vietnamese rice trademarks in the world market.

**11. POSTHARVEST TECHNOLOGY ADOPTION IN THE RED RIVER & MEKONG RIVER DELTAS, VIETNAM**

Nguyễn Thị Dương Nga, Hanoi University of agriculture

**Abstract**

The paper highlights key results from a farm household survey conducted by IRRI and HUA (Hanoi University of Agriculture) in 2008 in Nam Dinh and Long An, with total sample size of 407. Majority of farmers adopted traditional postharvest practices. Thanks to the project conducted by IRRI and VIAEP, farmers are getting used with supper bag (Red River Delta RRD and Mekong River Delta) and drying machine (RRD). Adoption of Super Bags and drying machine are shown to bring more income for farmers, save paddy and improve paddy quality. Rice farmers, consumers and rice sector in Vietnam are likely to benefit from the technology. However, to the extent the benefits are recognized, there must have actions from various institutions and farmers.

**12. MECHANIZATION USE AND POST-HARVEST AT TAN CUONG CO-OPERATIVE CURRENT SITUATION**

(Phu Cuong commune - Tam Nong district – Đông Thap province)

Nguyễn Văn Trãi

Tan Cuong co-operative head

**Abstract:**

The Agricultural Cooperative Tan Cuong (Dong-Thap Province) provides services to its members in irrigation, paddy harvesting and rice marketing, paddy seed production, and internal credit. With 580 ha for 314 farm households, since 2002 the Coop started pilot sites for high-quality rice, reducing production costs by "Three Reductions, Three Gains". From 2009, modernized field production has been established on 200 ha, and planned to expand to 580 ha in 2011.

The Coop is concerned with development in post-harvest with installation of 8 dryers of 4- 8 ton capacity, but activities has been constrained by high investment. High quality rice production requires investment in more dryers and storage facilities, as a central point for rice trading.

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\* Bài tham luận tại Hội thảo "*Phân tích các tuyến tác động hiệu quả với sự tham gia của các đối tác (PIPA)*" do IRRI và ĐHNH TpHCM tổ chức ở Vũng Tàu, 21-24 th.4 /2009.

Đã trình bày nội dung này tại TechMart 2008 Cần Thơ, tháng 11 /2008.

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**13. RICE POST-HARVEST SITUATION IN DONG THAP PROVINCE**

Agricultural extension center - Dong Thap province. Cao Lanh, March 25<sup>th</sup>, 2009

**Abstract**

Rice production in Dong Thap province is very important. It is needed to concentrate on technology in rice production, especially post harvest technology in order to reducing losses and improving rice quality. However, investment for agricultural and postharvest mechanization is still low.

There are few places buying wet rice for mechanical drying.

Price of machine-dried rice is higher than that of sun-dried rice, there is a need to connecting mechanical drying with rice storage and rice trade

Agricultural mechanization in general, and in specifically in drying, need more consideration and speeding up to meet farmer requirements.

**14. RICE HARVEST AND POST-HARVEST SITUATION IN KIEN GIANG PROVINCE**

LAM THANH HUNG

Industrial development extension center

**Abstract**

Agricultural area in Kiên Giang Province in 2007 is 582 889 ha. Paddy production in 2008 is 3 387 148 ton, average yield is 9.2 ton/ha. Harvesting equipment have increased in numbers, in 2008, there are 979 machines, including 740 combine-harvesters; total harvesting area by machines account for 17.4%.

Manual cutting and collecting caused losses of 2.5% in Winter-Spring crop and 2.4% in Summer-Autumn crop, loss from threshing was 1.5%. Combine harvester caused loss of about 1.3%. The disadvantages of combine harvesters in Kien Giang Provinces are many mechanical failures that whether they are made in China or Viet Nam.

Mechanical dryers in Kien Giang also have increased rapidly in number, in 2008, there are 1 535 dryers, average capacity of 5.43 ton/batch. The Province has 730 rice mills with total annual capacity of 2.26 millions tons and 40 rice polishing lines with capacity of 900 000 tons/year, meeting the milling quantity for 48% of annual rice production. Rice storage facilities hold about 140 000 ton per year.

**15. RICE HARVEST SITUATION IN PHU YEN PROVINCE**

Phu Yen Agricultural and Rural Development Department

**Abstract**

Rice production situation:

Rice area is about 25 000 ha with average productivity 5,18 tons/ha

Average area is 500 m<sup>2</sup>/person, all farmers have their own agriculture land

Profit from rice account of 70% of total income

Postharvest status of rice

Province has about 30 reaping machines and 10 combine harvesters in medium and small size, serving for 1000 ha/ 25 000 ha = 4% of total harvest area.

+ Drying: There are 4 medium drying machines, mainly for seed drying

+ Storing: mainly at household.

+ Average loss after harvest (estimated): 12 – 15%.

Demand for postharvest investment

- Postharvest service: Service in contract harvesting is available, the tendency is towards combine contract harvesting.

- Total support for purchasing reaping machine (partial loan and interest-free) is 107.2 million VND

Need in postharvest

Financial support from Government is needed to purchase reaping machine. Because when farmers recognize advantages in using reaping machines, they will sow rice thinly and in-line to prevent lodged crop..

#### **16. RICE POST-HARVEST AND STOCK PROBLEMS**

Soc Trang Agricultural and Rural Development Department compiled by Lam Quang Hien, MSc., Soc Trang, Agricultural and Rural Development Department

##### **Abstract**

Paddy quality is ensured due to the effectively applied technology, and rice quality is improved in conditions of good material input including appropriate harvesting, drying, preservation and storing....

Soc Trang has rice area of 155 139 ha and total annual cultivating area of 325 250 ha. Rice harvesting is mainly by manual work, and rice threshing by machine, with total harvesting losses of 4%. Most farmers are used to selling wet rice after harvest to middlemen. Urgent demand for post harvest is how to improve rice quality for storing because rice and paddy storage is a need for food security and for business effectiveness.

#### **17. RICE POST-HARVEST CURRENT SITUATION IN THAI BINH PROVINCE – SOLUTIONS AND SUGGESTIONS**

Thai Binh Agricultural and Rural Development Department

##### **Abstract**

Rice productivity of Thai Binh province is 12-13 tons/ha. Rice was cut manually and sun dried to get moisture of 12%. Mechanical dryers are not popular, only equipped at the Seed Plant Company. The Province has 11 combine harvesters, and 3 rice reapers. Farmers stored rice in boxes or jute sacks. Losses from harvest and preservation are about 5- 7%. There are 17 rice mills and food trading agencies which are scattered throughout the area.. Rice productions in Thai Binh Province are mainly for local consumption. In the future with enlarging production, it is needed to invest for combine harvesters and dryers.

#### **18. POSTHARVEST SITUATION IN TIEN GIANG PROVINCE 2008**

##### **Abstract**

Mechanizing in producing, harvesting and storing rice is applied by farmers and Tien Giang Agriculture have been implementing and disseminating since early of 2000s. In tillage, 93.32% is by machine; but in harvesting the rate is low, 8% area harvested by machine in Winter–Spring crop, and 2-3.5% area in other crop seasons; There are only 301 dryers (mainly at rice mills), and 69 storehouses with capacity of 700 000 tons but only 11 storehouses for 100,000 tons meet the technical requirements. Annually, losses in harvesting, drying and inappropriate preservation of Tien Giang farmers is about 140 000 tons of paddy or about 420 billions VND.

#### **19. RICE SUPPLY AND VIETNAMESE RICE DEVELOPMENT POLICY ORIENTATION**

Phạm Hoàng Ngan, Nguyễn Trang Nhung, Nguyễn Lương Hien

Rural agriculture development information center

Institute of Rural agriculture development policy and strategy – Ministry of Agriculture and rural development

Website: [www.agro.gov.vn](http://www.agro.gov.vn) ' Email: [info@agro.gov.vn](mailto:info@agro.gov.vn)

**Abstract**

The year of 2008 obtained highest rice production with 38.6 millions tons of paddy. Rice for domestic consumption is accounting for 75- 80% of total rice production. In 2008, Viet Nam export 4.8 million tons of rice, valued about 3 billion USD.

It is predicted that rice production will be 37.5\ 38 millions ton in 2009, and export rice quantity will be 4.8 millions ton.

Policy orientation for Vietnamese rice are: policy on management and protection of agricultural land, especially rice cultivated land; policy for rice producers; policy in development of infrastructure, technology and postharvest industry; policy on food safety...

**20. DRYING SITUATION, PRESERVATION AND RICE PROCESSING IN MEKONG DELTA , SYNCHRONOUS SOLUTIONS TO RESTRAINT POST-HARVEST LOSS AND ENHANCE RICE QUALITY**

Dr. Phạm Văn Tấn

Sub-institute of agricultural mechanical electronics and post-harvest technology

54 Trần Khánh Dư, Q. I, TP. Hồ Chí Minh. Tel: 0126.5748.560

**Abstract**

Status and causes of technological conditions and post-harvest losses of rice in the Mekong River delta are analyzed. An integrated solution to the problems is proposed. It is a reasonable rearrangement of technological stages after harvest including drying paddy to reduce its moisture content to 13-14%wb immediately after harvest, preserving the paddy in modern silos and processing the rice. Besides, it also suggests the central government for policies on providing the private and state-owned rice companies with financial supports for the investments in new technology and equipment, and bank loans with free/low interest rate for running their business. The solution is believed to help in increasing income of the rice farmers and profit of the rice companies, to balance the benefits between partners in the rice supply chain and to stabilize the national food security.

**21 PADDY AND MILLED RICE STORAGE AND PRESERVATION SILO SYSTEM BUILD IN VIETNAM**

Institute of Agricultural Engineering and Post-harvest Technology

**Abstract**

Farmers only have capacity of storing rice seed in small quantity. They are used to selling surplus paddy with moisture of 18-25% to the middleman.

Currently, most of silos for paddy storing of state food companies are rarely used or not used because: these silos are equipped with out-of-date machines and technology, did not meet farmers requirements, and caused high losses (2-3%), .etc...

The private sector did not offer the preservation service at all. Their silos function mainly are temporary storage. They only preserve milled rice in 2– 3 months, with high losses of 2- 4%. With current paddy production of 38- 9 millions ton/year and exported rice of 4.5- 5 million ton /year, it is needed to upgrade the current storehouses with 2 millions ton capacity, and built new storehouse systems with capacity of 2- 2.5 millions tons.



**Appendix 6: Abbreviations and terms used in network maps**

<b>Vietnamese Name</b>	<b>Acronym</b>	<b>Full Name</b>
	ADB	Asian Development Bank
	WB	World Bank
	IRRI	International Rice Research Institute
	UNIDO	United Nations International Development Organization
	FAO	Food and Agriculture Organization
Bo Nong Nghiep	MARD	Ministry of Agriculture and Rural Development
So Khoa hoc Cong nghe & Moi truong	DSTE	Department of Technology Science and Environment
Cuc che bien nong san va nghe muoi	DFFP	Department of Food Processing
Trung tam khuyen nong Vietnam	VNAEC	Vietnam Agricultural Extension Center
So nong nghiep va phat trien nong thon	DARD/SONN	Department of Agriculture and Rural Development
Trung tam khuyen nong (tinh)/TTKN	AEC	Agricultural Extension Center (Provincial)
Trung tam khuyen cong	IEC	Industrial Extension Center
Dai hoc Nong Lam TP. HCM	NLU	Nong lam University
Vien Chinh Sach Chen Luoc	IPSARD	Institute for Policy and Strategy for Agriculture and Rural Development
Dai hoc Can Tho	CTU	Can Tho University
Vien lua dong bang song Cuu Long	CLRRI	Cuu Long Rice Research Institute
Vien co dien nong nghiep va cong nghe sau thu hoach	VIAEP	Vietnam Institute of Agriculture, energy and Postharvest Technology
Dai hoc Nong nghiep Ha Noi	HUA	Hanoi University of Agriculture
Dai hoc Nong nghiep Hue	HAU	Hue Agriculture University
Cong ty Thuc pham Vietnam I, II	VINAFOOD I,II	Food Company
To chuc phi chinh phu		NGO
Uy Ban Nhan Dan tinh	UBND tinh	people's committee (provincial)
Nha Tai Tro	Sponsor	
Truong Dai hoc	University	Univesity (general)
Vien Nong Nhuong		Agronomy Institute
Vien Qui Hoach		Planning Institute
Vien lua		Rice Institute (general)
Doanh Nghiep		company (general)
Hiep hoi		Farmer group/organization/cooperative (small)
ngan hang		bank
nha may xay xat che bien		miller/manufacturer
dichvu sua chua may moc		equipment repair service
dichvu kinh doanh		business service (general)
nong dan		farmer (general)
UBND Huyen		people's committee (village level)
Vien – Truong		University + Institute (general)
Chinh phu + Coquan TW		Government & Central government entities
Khuyen nong/Khuyen cong		Agricultural Extension/ Industrial Extension
Chinh phu		Government
Tram khuyen nong		Agricultural Extension station (commune or district level)
Thuong lai		Middlemen/intermediacies
Van chuyen		Transportation services
Co quan truyen thong/Thong Tin Dai Chung		Mass media Organization
To chuc doan the		Organization
TT K. Nong QG	NAEC/TTKNQG	National Agricultural Extension Centre
Phong Nong Nghiep		Commune/District level DARD
HTX		Cooperatiion of farmers who sell large-scale farmers
Chi Trang Hai		
BKHCN	BKHCN	
BCT	BCT	Still needs to be verified with Mr. Tanh
SCT	SCT	
LAMICO		private group
Nha may san xuất chiet	Machine_producer	Agricultural machinery producer
Chu May NN	Machine_owner	Agricultural machinery owner (service provider)
Hoi Doan The	Mass_org	Mass organization (includes women, farmers etc)

## Appendix 7: Learning Alliance in Vietnam components

### 1. Stakeholders and their roles

Actor	Role
<b>INDIVIDUAL</b>	
Farmer	End user, benefited from the project
Services providers	Adopt Technologies technically and economically efficient
Researchers	Produce research outputs which can be practically applied in local conditions
Extension workers	Disseminate technologies, link farmers with other actors
Exporter	Market stability
Government officers	
Prime minister	Design and approve policy
Rural development staff	
Project staff	
Ag. Machine manufacturer	
<b>COLLECTIVE</b>	
Coops, farmer associations	
Ag. Machinery equipment producers	
Vietnam/foreign institutes/Universities	
Agricultural/ Industrial Extension Centers	
Food Companies	
Local and central line agencies (MARD, DARD...)	
Banks	
NGOs	
Technology transfer agencies	
Information agencies	
IRRI, FAO...	
Rice consumers	
Seed companies	

**2. What to be shared?**

<b>Topic</b>	<b>Description</b>
Technology	<ul style="list-style-type: none"> <li>- Harvesting</li> <li>- Drying</li> <li>- Storage</li> <li>- Cleaning</li> <li>- Milling</li> </ul>
Equipments/ machines	<ul style="list-style-type: none"> <li>- Combine harvester</li> <li>- Dryers, cleaners</li> <li>- Storage system</li> <li>- Milling equipments</li> </ul>
Model development on:	<ul style="list-style-type: none"> <li>- Complete package of technology</li> <li>- Production and management</li> <li>- Management skills of coops and farms</li> <li>- Cooperate/ integrate farmers with firms/companies</li> <li>- Production-marketing</li> <li>- Mobilize capital to invest on technologies</li> <li>- Profit/benefit sharing</li> <li>- Develop the organization</li> <li>- Government management on PH at local places</li> </ul>
Production marketing	<ul style="list-style-type: none"> <li>- Organize/cooperate among rice trading agencies</li> <li>- Rice with high quality and trade mark</li> <li>- Market information: price, quality...</li> </ul>
Experiences	<ul style="list-style-type: none"> <li>- From foreign countries: silo technology</li> <li>- Data on economic benefit brought about PHTs</li> <li>- How to achieve high profit/benefit?</li> <li>- Influence/persuade leaders at higher level</li> </ul>

**3. How to document?**

Organize workshops
Do survey
Design and establish a website
Save data and information through various ways: photos, video, recorders, ...
Report
The secretariat summaries all the outputs and send to participants (e-mail...) to get feed back
Establish a unit/group which collects, summarizes and analyzes data/information and posts in internet. Get feedback from reality from local places and do revisions
Model/technology evaluation: need participation from various actors, to find whether those are economically viable and feasible
Get feedback, revise and disseminate

#### 4. How to share?

Training courses, Training of Trainers, and participatory technology development where various actors (including users) participate in
Pilot demos, visit tours
Evaluation workshops
Mass media” TV, radio, amplifiers in communes...
Meetings of mass organizations (Women, Youth, Farmer...)
Leaflets, training materials, technical manuals
Online technical support groups
Farmer Champion Contests
Cultural activities, songs, dramas, etc. incorporated with knowledge & practices of PHTs
Internet, emails, website designed for PHTs
Agricultural Newspapers, other newspapers
Mouth-to-mouth from farmer to farmers
Farmers support clubs, Extension club alliances
Transfer technologies from foreign countries, which are little known/applied in VN (make sure they could be adapted and benefit farmers)
From agricultural machinery producers to the end users
Trade exhibitions/fairs

#### 5. Next Activities

<b>INDIVIDUALS</b>
Improve foreign language
Provide information from the workshop to the agency that he/she is working for
Make a detailed action plan for the agency if the project is implemented
Get more understandings about PH situation
Inform/ raise awareness about PH loss reduction and improve rice quality when new PHTs are adopted
Establish PH clubs
<b>COLLECTIVES</b>
Capture, summarize and disseminate achievements in PHTs in Vietnam so far (NLU does)
Establish an information sharing network
Investigate real situation on PHTs at local places (DARD)
Investigate supply and demand of rice (IPSARP)
Food companies have plan to set up clusters of storage ware house and drying (Thai Binh food companies)
Do research, produce appropriate PH machines (Universities, Institutes, Ag. Machinery producers)
Capital sourcing (Food companies, ag. Machinery producers)
Long term planning to adopt PHTs
Scaling the models

## Appendix 8: Learning-oriented Build-in Workshop Monitoring and Evaluation

### Feedback from the Monitoring Committee

#### Feedback from Day1

☺ Overall

- lots of experience and knowledge
- good group work
- translation works well

#### Suggestions

- To produce an integrated problem tree from all groups
  - To provide a brief summary of the workshop in addition to the full documentation
  - To have further detailed discussions on specific topics
- 

#### Feedback from Day2

- + Participants are very active
- + People have many ideas and are energetic

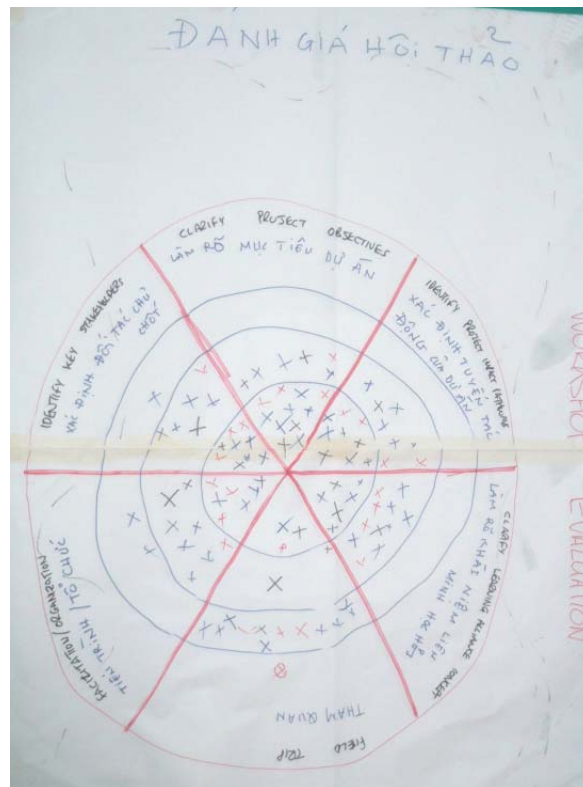
#### Suggestions

- It takes to get the group started on the exercises; How and where to start;  
→ Clear directions (Day2 better than Day1)
- Presenting work of 5 groups take too long  
→ Reduce number of groups
- Stress what the project can do for farmers  
Should be explicit (← Will be result of the workshop)
- Workshop should produce a summary of key issues and an integrated project product/plan of all group works

**Appendix 9: End of workshop Evaluation: Simplified After Action Review**

To improve:	What participants liked:
<ul style="list-style-type: none"> <li>• Some people thought 3,5 days was too long (3).</li> <li>• Some thought it could be longer (2).</li> <li>• Workshop ideas were far away from reality.</li> <li>....</li> </ul>	<ul style="list-style-type: none"> <li>• Managed to capture main PH issues</li> <li>• Good results,</li> <li>• Positive atmosphere, informal and happy</li> <li>• Good method of collecting information on PH</li> <li>• Gained a lot of knowledge</li> <li>• Efficient and logical (2)</li> <li>• Like the LA and discussion on topics</li> <li>• Will be interesting to organize a LA</li> <li>• Good method (2) for learning, discussion and sharing</li> <li>• Liked group work</li> <li>• Rich content of discussion</li> <li>• I learnt a lot.</li> <li>• Excellent organization</li> </ul>

**Dartboard Evaluation:**



**100 after the workshop evaluation template**

**YOUR contribution to the Postharvest Project Impact Pathways and the National Learning Alliance in Vietnam**

Your details: Name, \_\_\_\_\_  
 Institution, \_\_\_\_\_  
 Postal address, \_\_\_\_\_  
 E-mail address, \_\_\_\_\_  
 Telephone no., \_\_\_\_\_

The following document is designed to help you plan and capture some of YOUR next steps and activities. It will help us to leave from the workshop with concrete action points to follow-up on progress, changes in the plan and our learning. Please list below your set of activities which you think necessary to do in order to make progress with the postharvest project and the postharvest Learning Alliance over the next 100 days (end of July 2009).

What can you contribute to the development of the **Asian Development Bank proposal** (to be submitted by August) to the national component of the project from 2010-2013.


As a postharvest professional, to which **impact pathway of the PH project** will you contribute the most? See summary of the Vietnam Impact Pathways with focus on the **bold** impact pathways = the ones that the project can address. Describe how you can make your contribution.


What will be your contribution to the National Learning Alliance in Vietnam?


Revisit this document in **mid-July** and capture what happened since April (in the light grey shaded right column): what you did, or what did not happen, why and how. Tell us what you have contributed and what you would see as a result of the PIPA and LA workshop. Make a photocopy of this page and send it to **Dr. Phan Hieu Hien, NLU HCMC, Center for Agricultural Energy and Machinery, Thu-Duc District, Ho Chi Minh City, Vietnam.** (e-mail: [phhien@hcm.vnn.vn](mailto:phhien@hcm.vnn.vn) ) to be included as your contribution into the proposal. Any other comments, ideas and suggestions are welcome.