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Final Evaluation of two IRRI projects (2012 to 2015):

A) "Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwady Delta"

B) "Reducing risks and improving livelihoods in the rice environments of Myanmar through better targeting of management options"

Final Draft

12 September 2015

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DOCUMENT PREPARATION AND VERSIONS HISTORY

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No:	Details:	Dates:
1	Field work.	29 June to 17 July 2015
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ABBREVIATIONS AND ACRONYMS

AWD	• Alternate Wetting and Drying (type of trial).
BGL	• Bogale (Township).
BMP	• Better / Best Management Practices.
CBO	• Community-Based Organisation.
CDZ	• Central Dry Zone.
DAR	• Department of Agricultural Research.
DDSR	• Dry Direct Seeded Rice (type of trial).
DOA	• Department of Agriculture.
DP	• Development Partner.
EOP	• End of Project.
EQ	• Evaluation Question.
ET	• Evaluation Team.
FFS	• Farmer Field School.
FGD	• Focus Group Discussion.
GRET	• GRET (NGO and LIFT IP).
HH	• Household.
HYV	• High Yielding Variety.
IBMP	• Integrated Best Management Practices ((type of trial: varieties + BMP).
IEC	• Information Education and Communication.
Ind	• Indicator.
IP	• Implementing Partner (of LIFT).
IRRI	• International Rice Research Institute.
KII	• Key Informant Interview.
LIFT	• Livelihood and Food Security Trust Fund.
M&E	• Monitoring and Evaluation.
M4P	• Making Markets work for the Poor.
MADB	• Myanmar Agricultural Development Bank.
MIMU	• Myanmar Information Management Unit.
MLGN	• Mawlamyinegyun (Township).
MoAI	• Ministry of Agriculture and Irrigation.
NRM	• Natural Resources Management (= BMP).
PA	• Preferential Analysis.
PH	• Post-Harvest.
PIPA	• Participatory Impact Pathway Analysis.
Ppt.	• Participant.
PVS	• Participatory Varietal Selection.
QDS	• Quality Declared Seed.
SE	• Sensory Evaluation
TOC	• Theory of Change
VDC	• Village Development Committee.
VFM	• Value for Money
WHH	• Welthungerhillfe (NGO and LIFT IP).
YAU	• Yezin Agricultural University

PROJECT DATA SHEETS

Project Title: IRRI A:	**"Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwady delta"**	
Lead Implementing Partner: **Core supporting Partners** (LIFT NGO IPs) that support / collaborate on implementation:	International Rice Research Institute Contact: Dr. Grant Singleton: Email: g.singleton@irri.org • Welthungerhillfe (WHH). • GRET. • Mercy Corps. • Proximity Designs.	
Memorandum of Agreement: MOA Amendment 1:	Number: R1.3 / 0010 / 2012 17 February 2012 10 February 2015	
Key Dates: Project start date: Project end date: No-cost extension end date:	Planned 1 January 2012 31 December 2014 30 September 2015	Actual: 17 February 2012 16 February 2014
Project Financing: (LIFT) **Approved total budget**:	Amount **US $2,100,000**	Date 17 February 2012
Utilisation:	**US $ 1,613,023 (77%)**	at 31 December 2014
Project Purpose:	"To improve food security and livelihoods of 1,500 rice-producing households in the lower delta through the promotion of new practices and varieties of rice.".	
Intended Beneficiaries:	• The farmers collaborating directly with the project. • IP staff working or collaborating with the project.	
Geographical Coverage:	• Bogale and Mawlamyinegyun townships, Ayeyarwady Delta,	

Project Title: IRRI B:	**"Reducing risks and improving livelihoods in the rice environments of Myanmar through better targeting of management options"**	
Lead Implementing Partner: **Core supporting Partners** (Government and LIFT IPs) that support / collaborate on implementation:	International Rice Research Institute Contact: Dr. David Johnson. Email: d.johnson@irri.org • Department of Agricultural Research. • Department of Agriculture.	
Memorandum of Agreement:	Number: R1.4 / 007 / 2012 28 August 2012	
Key Dates: Project start date: Project end date: No-cost extension end date:	Planned 1 July 2012 30 June 2015 30 November 2015	Actual: 28 August 2012 28 August 2015
Project Financing: (LIFT) **Approved total budget**:	Amount **US $2,013,942**	Date 28 August 2012
Utilisation:	**US $923,233 (46%)**	at 31 December 2014
Project Purpose:	"Increased capacity of selected LIFT partners and DOA in rice extension in Ayeyarwady, Magway, Sagaing, and Mandalay regions".	
Intended Beneficiaries:	• The farmers collaborating directly with the project. • IP staff working or collaborating with the project.	
Geographical Coverage:	**Central Dry Zone**: • Mandalay region: Pyawbwe, Thazi, Nyaung U, Yamethin and Wundwin Townships. • Magway region: Pakokku Seikphyu and Myaing Townships. • Sagaing region: Ye-U, Monywa and Sagaing Townships. **Ayeyarwady Delta**: • Bogale, Mawlamyinegyun and Labutta townships in the lower Delta near the coast (not included in IRRI A). • Maubin District in the upper Delta (in collaboration with the ACIAR project). **Additional secondary areas**: • The Bago and Yangon Regions were added during the project for distribution for farmer testing of Swarna Sub 1.	

Collaborating partners IRRI B:

2013:

- Core Partners- Government bodies DoA and DAR
- Supporting NGO partners (LIFT IPs):
  - AVSI – worked together at Pyin Sa Lu , Labutta.
  - Oxfam- worked together at Thazi, Dry Zone.

2014:

- Core partners- Government bodies DoA and DAR.
- Supporting NGO partners (LIFT IPs):
  - Oxfam- worked together at Thazi, Dry Zone
  - CESVI, project (USAID): working together at Seikphyu, Dry Zone

2015:

- Core partners: Government bodies DoA and DAR.
- Supporting NGO partners (LIFT IPs):
  - Mercy Corps working together at Labutta (seed study and baby trials).
  - GRET and WHH at Bogale (Baby trials).
  - Karuna Myanmar Social Service at Shwe Kyin (Swarna Sub 1)
  - LIFT-Tat Lan project – Safe the Children at Pauk Taw, Rakhine (varietal demo trials).
  - CESVI project (USAID): working together at Seikphyu, Dry Zone (baby trials).

EXECUTIVE SUMMARY

This report presents the final evaluations of the two IRR projects supported by LIFT from 2012 to 2015. These were:

A) "Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwady Delta": this is referred to as the IRRI A project in this report.
B) "Reducing risks and improving livelihoods in the rice environments of Myanmar through better targeting of management options": referred to as the IRRI B project in this report.

Both projects were implemented by the International Rice Research Institute (IRRI) with a number of different supporting Partners. The core IRRI A supporting partners were the LIFT IPs WHH, GRET, Mercy Corps and Proximity Designs, while for IRRI B they were the Department of Agriculture (DOA) and Department of Agricultural Research (DAR). The total budgets were US $2,100,000 for IRRI A, and US $$2,093,942 for IRRI B. IRRI B started six months after IRRI A in August 2012. IRRI A and B will end in September and November 2015 respectively, after no-cost extensions.

Although separate projects with quite differently worded purposes ("food security and livelihoods" for IRRI A and "capacity of LIFT IPs and DOA in rice extension" for IRRI B), they both followed the same basic two-pronged approach. These involved (1) adaptive participatory research and demonstration following IRRI's Participatory Varietal Selection (PVS) methodology to identify improved rice varieties and management practices that would improve farmers' rice productivity and income, and (2) building capacity of LIFT IPs and the DOA / DAR to improve extension / dissemination and seed flow. IRRI B in addition used remote sensing and GIS technology to develop recommendation domain maps to improve targeting and fast track key research and extension functions. The two projects were therefore considered to follow the same underlying "theory of change", and this was used as the conceptual framework for the evaluations.

Project design and relevance: Both IRRI A and IRRI B were considered as highly relevant in terms of their objectives, and the collaborative multi-stakeholder design and implementation. The project design documents were short and clear in terms of their rationales, methodologies and activities. Some key parts of the designs however were not well captured in the logframes, particularly the formulation of the two purposes and selection of some indicators.

Implementation experiences: The implementation of both IRRI A and IRRI B was relatively smooth, with only a few issues that were quickly and adequately resolved through sensible adaptive management. Both projects followed their logframes and workplans fairly closely, and were able to remain more or less on track throughout the whole project period. This was in spite of the challenges of implementing demanding projects that required strong planning and coordination to implement a large number of different types of fairly rigorous trials, across quite large and difficult to access areas, and involving multiple partners from the NGO and government sectors.

Achievement of planned results: Both projects achieved almost all of their planned output targets and milestones. Both projects demonstrated high technical quality in several demanding and challenging tasks (PVS mother and baby trials, BMP / NRM trials, data collection and analysis, GIS mapping). A number of improved varieties and management practices have been identified and demonstrated. The LIFT IPs, DOA / DAR and farmers have all benefited from a considerable amount of training, as well as very valuable learning by doing. IRRI B has in addition prepared fairly detailed GIS maps of rice cropping systems, stress zones (salinity, flood and drought) and recommendation domains, and comprehensive "Fact Sheets" presenting the variety and management recommendations for the main (7) recommendation domains. IRRI A

fell short mainly on the targets for post-harvest supply chains and adoption (that were probably over optimistic). IRRI B has not yet prepared user-friendly guidelines and tools for extension targeting, but plans to do these by the end of the project.

Achievement of purpose: Both projects appear likely to achieve most of their specified purposes although IRRI B will fall short on GIS tools in use (probably over optimistic). The purpose indicators and targets however do not adequately reflect the crucial developmental changes, relating to improved extension and seed services, and adoption by collaborating farmers that the two projects should work towards in order to achieve the underlying theory of change. Both projects are therefore judged as effective in terms of achieving their respective purposes, but there are issues with sustainability and further uptake by other farmers.

Achievement of the desired developmental changes: The desired developmental changes are improved functioning of NGO IP extension services and the DOA / DAR extension and seed flow services, and adoption of improved varieties and management practices by a core of collaborating farmers.

The projects have worked closely with NGO IPs (mostly IRRI A) and the DOA and DAR (mostly IRRI B but also IRRI A to some extent) and provided a considerable amount of different types of training. This has generated considerable learning and capacity improvement for those closely involved. The project did not provide support for any institution-level or system improvements (this was not required) which were left to the IPs and DOA / DAR to do themselves. The ET felt that IPs had generally missed an opportunity for deeper collaborative learning with IRRI. It was noted also that the extension approach and services they provide are built around a series of projects and there is no long lasting extension system. The DOA and DAR greatly appreciated the approach and methodologies for PVS, BMP demo trials and GIS mapping to support research and extension, and the individual involved appears likely to incorporate selected approaches into their work. This lacks an institution-level focus however and the departments have serious constraints with operational funding. The departments however are well endowed with staff and the DOA has a strong long-term presence in rural areas. This represents a good opportunity.

The training and particularly the learning by doing experienced by collaborating farmers has also generated considerable deep learning and good uptake of improved management practices by most collaborating farmers. There appears to have been significant although patchy adoption of a selection of the new varieties identified by a relatively small proportion (estimated at around half) of the early adopter collaborating farmers.

Sustainability and spread: The main concern is for sustainability of the improved capacity of the IPs and DOA / DAR. This capacity includes access to improved varieties, extension guidelines, research results and rice cropping system, stress and recommendation domain maps, but is concentrated mainly in the individuals who were involved with the projects. This will dissipate for the institutions unless it can be institutionalised. One of IRRI's strengths however is the continuity that it will provide through its long term collaboration with DOA / DAR, and the likelihood that LIFT and other IPs will also continue their collaboration IRRI.

Project duration was not really long enough to ensure (1) development and strong adoption of farmer accepted verities, best management packages, and post-harvest technologies with established supply chains, and (2) improved IP and DOA / DAR extension and seed systems and services operating and spreading these benefits to other farmers. This was particularly the case for IRRI B which had only two monsoon and two summer seasons in an area with highly variable rainfall and risk of crop (and research plot) failure. In considering the duration of support from LIFT however, it should be remembered that rice breeding and variety selection to dissemination is a much longer process within which the project had specific objectives of directly relevance for LIFT (i.e. to systematically improve the availability of appropriate rice

varieties and management practices for poor farmers, and improve the functioning of extension and seed flow systems).

Need for follow up actions: The above indicates that there is a strong need and very good opportunities for specific follow up actions to build on and consolidate the work of the two projects. These are taken up in the recommendations below.

Recommendations for project completion: for IRRI A and IRRI B to carry out before the end of the projects as part of project completion.

1. Develop a more user-friendly format for presentation of the recommendations for varieties and crop management practices contained in the current "Fact Sheets".
2. Test and adjust the training material for "technology targeting in the rice environments of Ayeyarwady delta and CDZ" training course that has been prepared.
3. Provide the digital map data and guidance on its use to those trained in GIS.
4. Liaise with DOA / DAR on the likely demand for new seed varieties and initiate production.

Recommendations to support an IRRI follow-up project: A number of recommendations are made to generate useful and much needed outputs from the work of the two current projects. IRRI is extremely well placed to implement this work which can be put together as the components of a follow on project that LIFT should support, with IRRI as the lead partner.

1. Develop and establish a rationalised and unified quality seed production system that links with and strengthens the DOA system with approved "contact farmers" for quality declared or certified seed.
2. Develop and establish a rationalised and unified system for the promotion and spread of new varieties of seed, that all IPs and the DOA / DAR can feed into.
3. Develop and introduce extension and training material based on explaining and incorporating into extension, the Fact Sheet recommendations and recommendation domains:
4. GIS mapping: Develop and operationalise a system within DOA / DAR for GIS functionality and use of the GIS mapping tools to support planning, targeting and other key functions of the DOA / DAR.
5. Post-harvest and value chain development support to facilitate the private sector to break the "chicken and egg" circle of marketed demand for quality, post-harvest technology supply chains, and adoption and quality improvement by farmers.
6. Collaborate with DAR to develop a recognised fast track system for processing new rice varieties.
7. Support MoAI / DOA / DAR with development of rice-related policy and strategy such as the Myanmar rice sector development strategy, and seed sector development, etc.

Recommendations for LIFT: A number of recommendations are relevant for LIFT.

1. LIFT should support IRRI directly as the lead implementer of a follow-on project that includes the components as outlined above.
2. LIFT should continue to explore other ways to work more explicitly with DOA / DAR / MoAI to develop its capacity and systems through learning by doing.
3. LIFT should oblige all supported IPs to follow the quality seed production system and system for the promotion and spread of new varieties of seed (as above).
4. The Programme Office should keep a more complete archive of project documents, reports, and relevant documentation and tools produced by the projects.
5. All projects over 2 years duration should have had some kind of mid-term review, with the intensity of the review adjusted according to the need.

1 INTRODUCTION

1.1 Introduction

This is the report of the final evaluation of two IRRI project supported by LIFT from 2012 to 2015.

A) "Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwady Delta": This was sometimes referred to as the IRRI "Delta" project but is referred to in this report as the "IRRI A (Delta)" or just "IRRI A" for short.

B) "Reducing risks and improving livelihoods in the rice environments of Myanmar through better targeting of management options": This focused mostly on several townships in the Central Dry Zone (CDZ) and the coastal delta area (not covered by IRRI A) and is referred to in this report as the "IRRI B (CDZ & Delta)" or just "IRRI B" for short.

Both projects were supported through LIFT with funding of US $2,100,000 for IRRI A, and US $$2,093,942 for IRRI B, and implemented by the International Rice Research Institute (IRRI) with a number of different supporting Implementing Partners (IPs).

The two projects were very closely related and were implemented mostly concurrently and in close association. IRRI A started in February 2012 while IRRI B started in August 2012. IRRI A and B will end in September and November 2015 respectively.

The two projects were therefore evaluated together with due consideration for the separate parts of each project. The evaluation was carried out during June and July 2015 by an Evaluation Team (ET) comprising a lead external evaluator (on LIFT "retainer" contract) with support from a LIFT M&E Officer and a LIFT Programme Officer not previously connected with the IRRI projects.

A single evaluation report (this report) has been prepared and provides project specific information and conclusions, as well as the combined results of both projects together.

1.2 Purpose of the evaluation

The purpose of the evaluation as specified in the Terms of Reference (Annex 1a) is to "assess achievement of the outputs and outcomes of the programme on the basis of the project logframe, and LIFT logframe, and attention to livelihood issues". The specific objectives of the evaluation are to:

a) "Independently assess the results of project activities against planned outputs, targets and milestones;
b) Independently assess the implementation and the management of implementation constraints and challenges;
c) Identify and explain what developmental changes have occurred (beneficial or detrimental), to what extent they can be attributed to the project, and to what extent they will be sustainable;
d) Assess the value for money achieved, or to be realised later, from the investments and associated activities, including the distribution of costs and benefits."

A number of more specific "evaluation questions" were provided in addition by LIFT to guide the evaluation. These are provided in Annex 1b and cover the following issues.

(1) Selection and dissemination of new varieties.
(2) Maps, Natural Resource Management (NRM) trials and recommendations to apply to specific rice environments.
(3) Post-Harvest Alliance.
(4) Household and post-household surveys to understand the household-level benefits associated with different technologies adopted.
(5) Overall assessment of the linkages between research and extension services, technical supports to IPs, DoA and DAR.

In line with the TORs, the evaluation has assessed the performance of the two projects in terms of standard evaluation criteria relating to relevance, effectiveness, developmental change / impact, sustainability and efficiency / value for money. Considering the level of detail of the specific evaluation questions and that this was the first time for LIFT to support research-related work, the evaluation also gave a very strong focus to learning.

The report is structured around the standard evaluation criteria with separate sections for project design and implementation experiences, the achievement of results and effectiveness, the developmental changes achieved and their sustainability, and efficiency and value for money. A further section reviews the projects' contribution to the overall LIFT programme. A final section presents overall conclusions, lessons learned and recommendations.

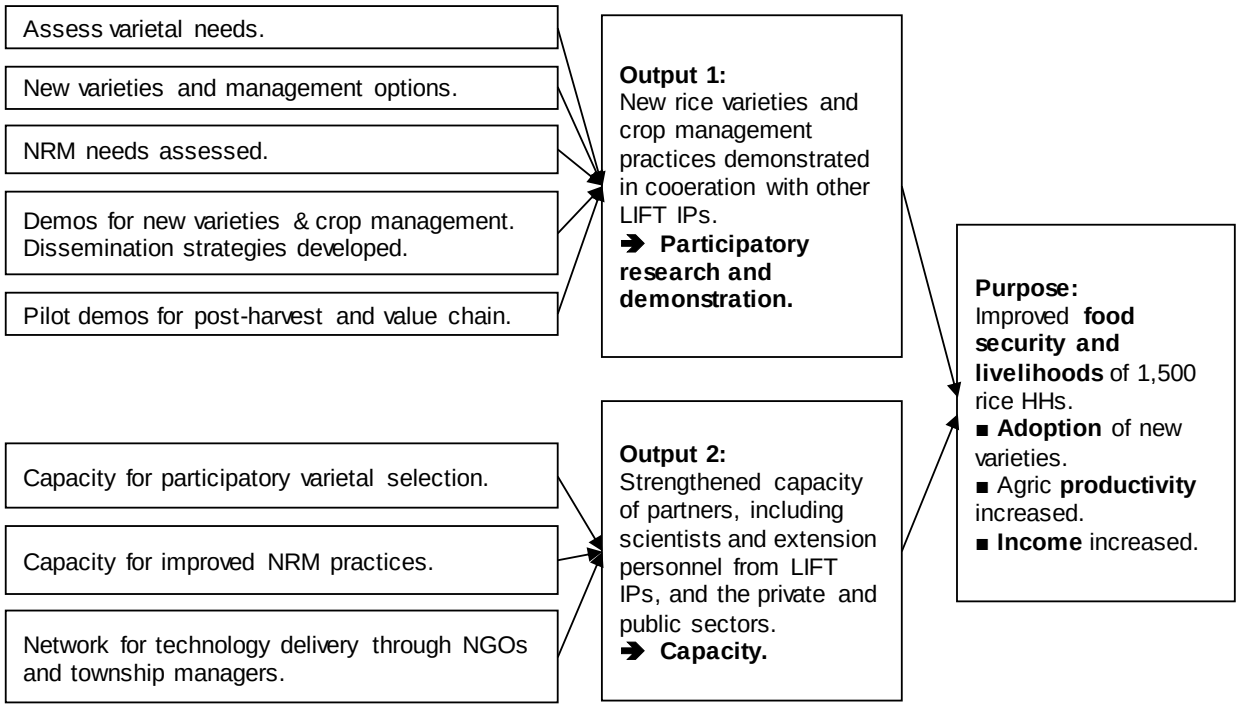
1.3 Outline of the IRRI A (Delta) project

A simplified causal chain diagram has been prepared from the IRRI A logframe and is presented in Figure 1. This shows that the project had two main components focusing on (Output 1) participatory research and demonstration of new rice varieties and best management practices (BMP), and (Output 2) strengthening capacity of research and extension personnel from LIFT IPs, government and the private sector. IRRI's "Participatory Varietal Selection" (PVS) methodology was central in guiding the participatory research and demonstration programme of Output 1. The two outputs together should lead to adoption, higher productivity and eventually the project purpose of improved food security and income.

The project worked in the generally unfavourable rice areas of Bogale, Mawlamyinegyun and Labutta townships in the lower Ayeyarwady Delta. Implementation was led by IRRI with support from NGO IPs and to some extent the DOA.

The complete causal chain diagram is provided in Annex 2a and the main parts of the logframe (with achievement against the indicators) is provided in Annex 4a. Further details on activities and results can be found in Section 3.1.

Figure 1: Simplified causal chain diagram for IRRI A (Delta)



***Source**: Based on the project logical framework.*

1.4 Outline of the IRRI B (CDZ & Delta) project

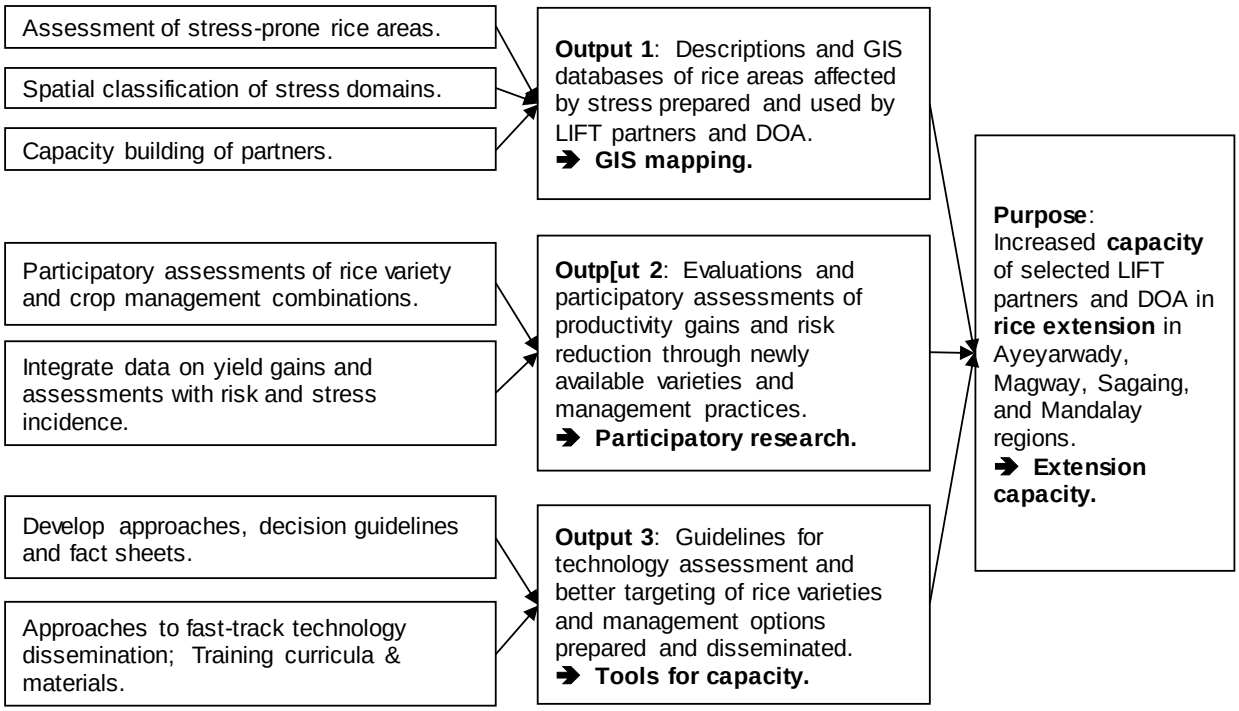
A simplified causal chain diagram has been prepared from the IRRI B logframe and is presented in Figure 2. This shows that the project has three main components or Outputs focusing on (Output 1) GIS mapping, (Output 2) participatory research, and (Output 3) tools for capacity.

- Output 1 aimed to (1) understand, define and map IRRI A and IRRI B supported townships of the Delta and CDZ that are prone to drought, flooding and salinity stresses, (2) understand, characterise and map different cropping systems, and (3) develop "recommendation domains" so that recommendations on varieties and BMPs can be better targeted (and "fast-tracked") towards different farmers in different areas.
- Output 2: Participatory research and demonstration of new rice varieties and BMPs carried out based largely on IRRI's PVS methodology. This focused on the 11 townships of the CDZ as well as the coastal delta area not covered by IRRI A. This followed a similar PVS-based approach to that used for IRRI A Output 1.
- Output 3 focused on developing the recommendations on varieties and BMPs for the main recommendation domains, guidelines, extension and training curricula and material, and approaches to fast track technology dissemination. These are the tools needed for stronger extension systems.

These three outputs together should lead to improved extension capacity of LIFT IPs and the DOA. Although not stated, the implication is that this should in turn lead to improved extension services that leads to increased adoption, productivity, and food security and income.

IRRI was supported in the implementation of IRRI B through the DOA and DAR, with some limited support from NGO IPs (there are few NGOs in the CDZ compared to the Delta). IRRI B also supported the DOA and DAR with e.g. seed distribution other areas as well as improving seed quality for some varieties.

Figure 2: Simplified causal chain diagram for IRRI B (CDZ & Delta)



***Source**: Based on the project logical framework.*

The complete causal chain diagram is provided in Annex 2b and the main parts of the logframe (with achievement against the indicators) is provided in Annex 4b. Further details on activities and results can be found in Section 3.2.

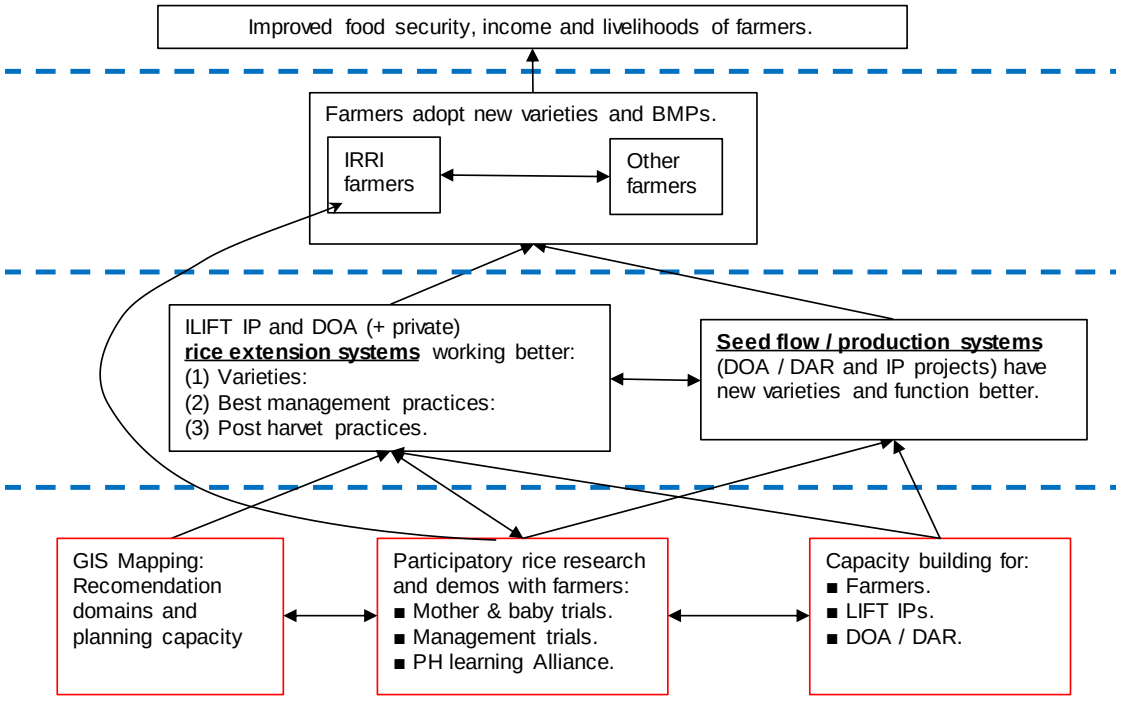
1.5 A combined "Theory of Change" for both IRRI projects

Although the wording in the project documents (final signed project "proposals") and logframes is a bit cumbersome in places, it is clear that the two projects are essentially very similar and more or less conform to a single "Theory of Change" (TOC). A simplified TOC diagram is presented in Figure 3.

In essence, IRRI B adds the GIS mapping output, and considers the purpose to be improved extension capacity which is at the output level in IRRI A.

There are therefore three intervention components for (1) GIS mapping, (2) participatory rice research and demonstrations, and (3) capacity building for farmers, LIFT IPs and DOA / DAR. There are two long term self-sustaining "system changes" that are desired: (1) rice extension systems of IPs, DOA (and private sector) are working better, and (2) the seed flow / production systems of the DOA / DAR and IPs have new varieties and are working better. These capacity improvements should lead, in the long term, to improved farmer adoption, productivity, food security and income. In the meantime, the farmers collaborating in the participatory research and demonstrations should be able to short cut this process and by directly learning and adopting the new varieties and improved BMPs, and increasing their productivity, food security and income (the purpose of IRRI A).

Figure 3: Simplified "Theory of Change" for combined IRRI A and B projects



***Source**: Prepared by the Evaluator.*

This unified TOC shows the basic way in which both projects should work. This therefore provides the conceptual framework for considering both projects together, as well as for better understanding how each project should work, and assessing how well they actually worked.

The TOC also highlights two overarching evaluating questions that are central to the whole evaluation.

- How have the projects enabled the LIFT IPs and DOA / DAR to improve their extension and research work?
- How have the projects enabled the collaborating farmers directly involved in the projects to improve their rice farming etc?

1.6 Evaluation approach and methodology

The evaluation approach and methodology followed a number of linked steps:

- Collection and review of project documentation and data. This included the project proposal and amendments, annual reports, field visit reports, survey reports, M&E data, etc.

- Briefing meetings with LIFT and IRRI staff. IRRI arranged a two day intensive briefing sessions from the main national and international staff involved. Additional documentation and M&E data was provided during and after this briefing.

- Three weeks of field work in the Bogale / Mawlamyinegyun, Labutta and CDZ areas. Field work comprised:
  - Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) with LIFT IP and DOA and DAR staff.
  - FGDs / semi-structured interviews with groups of farmers who had been collaborating with the projects. In order to properly understand adoption of varieties and BMPs, it was found necessary to record some responses individually using a pre-prepared data sheet attached to the Interview Guide (Annex 11). This data was subsequently analysed and compiled.

- Field visits and observation, with much triangulation.

- A debriefing meeting was held with key IRRI and LIFT staff a few days after the field work to present and discuss preliminary findings.

- Analysis and synthesis of findings: Review, extraction and analysis of project M&E, financial and other data, together with information from the field work to cross-validate and elaborate the findings.

- Ideas on possible lessons learned were elicited from the various FGDs and KIIs and other meetings with IRRI and LIFT staff, and a small number of important and broadly useful lessons learned developed.

The list of people met is provided in Annex 10 and interview guides in Annex 11.

1.7 Limitations of the evaluation

There were significant limitations in the data available to the ET. The team only had access to a brief summary of selected key preliminary findings from the endline HH survey since this had not been completed as planned. A baseline survey report had not been prepared. The M&E data was not organised in a completely systematic way and a significant amount of the important data needed had to be requested in the format needed for analysis and reporting. Not all data requests were fulfilled.

The lack of HH survey findings meant that the ET had to spend longer than anticipated to probe and understand adoption, and this was mainly in a qualitative way through the focus group discussions.

High variation was found between villages, and between individual farmers with the FGDs. This made it difficult to understand adoption and identify underlying trends and causality. Although the ET spent 3 weeks in the field, only 12 villages FGDs were held. It is not clear if the most representative cross section of different types of villages were selected so it is difficult to extrapolate.

Some inconsistencies were found in the different reports and not all could be clarified. The two projects undertook a large number of different activities, some of which were not clearly covered by the project document or reported on in the project progress reports (e.g. the Swarna Sub 1 seed distribution programme).

In the face of these challenges, the ET used persistent questioning and triangulation of data and information from multiple sources to build up a reliable picture. The ET is satisfied that the report presents a reliable reflection of the two projects, within the above limitations.

2 PROJECT DESIGN AND IMPLEMENTATION EXPERIENCES

2.1 Assessment of the project designs

The designs of both IRRI A and B[1] were relevant and satisfactory although they both include some ambiguity, and some key points from the deign are not well captured in the logframe objectives and / or indicators.

The **IRRI A** rationale is clear although it emphasises provision and demonstration of new rice varieties and management practices rather than testing or evaluation. The description of activities however mentions "evaluation" of new varieties using the PVS approach, and adaptive trialling of improved management practices. These are closer to participatory or adaptive research but also have a learning and demonstration effect. The description of activities also mentions separate demonstration / trial ("lighthouse") sites for the new technologies.

The objectives, participatory (PVS) and adaptive approach to research and demonstration, and the partnership with LIFT IPs and the DOA and DAR were all appropriate and relevant for farmers, IPs and the DOA / DAR.

The main problem with the IRRI A design however is the lack of clarity in the purpose (the outcome that should be achieved by the end of the project). The purpose as written in the logframe focuses on the adoption, and improved productivity and income for the farmers that collaborate in the participatory demo-trials. The other crucial end-of-project outcome that is needed for generation of long-term benefits is the improved functioning of extension and seed supply systems needed for spread. These are buried in the "strengthened capacity" of Output 2. Figure 1 and Figure 3 show this diagrammatically.

The **IRRI B** rationale is clear. This emphasises the importance of developing "recommendation domains" to enable more rapid development, validation and delivery of "best bet" varieties and management options. This includes the identification of different stress environments (drought, submergence and salinity) and rice varieties and management options that work best (improve productivity or reduce risk) in different environments. Recommendation domains should help to target and speed up adaptive research, as well as dissemination and extension.

The purpose is sound and clearly stated as improving the capacity of extension systems. The indicators however do not well reflect this purpose.

Output 1 focuses on the GIS mapping of stress zones, etc that is the foundation for development of the recommendation domains. Recommendation domains are however not mentioned in the output or the indicators and the clear emphasis from the rationale is largely lost. In addition, the indicators do not capture all the key stages in the process.

Output 2 focuses on participatory evaluating or adaptive research of rice varieties and management practices. The idea must have been to use the same PVS approach as used by IRRI A but this is not mentioned anywhere in the project document or logframe.

Output 3 focuses on the guidelines, dissemination approaches and training curricula and materials that should support capacity for improved extension. The documents required however are not clearly specified.

[1] As in the IRRI A and B "Proposal" documents and logical frameworks (logframes) that are signed and form part of the Memorandum of Agreement made between LIFT and IRRI.

A further indication of the ambiguity of the design is that the IRRI A project was referred to by some as the : IRRI Delta" project while the IRRI B project was referred to as the "IRRI Research" project. This reflects the focus on demonstrations in IRRI A rationale, with a more clear presentation of the adaptive research focus of IRRI B with the development of recommendation domains and adaptive research trials for varieties and BMPs. In implementation, these distinctions were blurred (except for the GIS mapping).

Considering how closely related IRRI B was to IRRI A, it is surprising that this was not made more explicit in the IRRI B project document.

The main consequence of this lack of clarity for the projects was that IRRI A did not fully appreciate the importance of building capacity to improve the extension systems of IPS and government / DOA. The main consequence for this final evaluation is that the meaning of several of the different output and purpose objectives in the logframes needs to be interpreted in order to properly assess achievement.

2.2 Implementation experiences: management of constraints and challenges

The implementation of both IRRI A and IRRI B was relatively smooth, with only a few issues that were quickly and adequately resolved through sensible adaptive management. Both projects followed their logframes and workplans fairly closely, and were able to remain more or less on track throughout the whole project period. This was in spite of the challenges of implementing demanding projects that required strong planning and coordination to implement a large number of different types of fairly rigorous trials, across quite large and difficult to access areas, and involving multiple partners from the NGO and government sectors. This level of success in implementation can be attributed to a number of factors including (1) the breadth and depth of human resources that the projects were able to access through IRRI, (2) the good relations and contacts between IRRI and the DAR and DOA, (3) the good relations and contacts with IPs through LIFT and previous collaboration with some IPs, (4) the collaborative and collegiate style of the projects (a reflection of IRRI), and (5) the knowledge, experience and dedication of the individual members of the two teams.

IRRI A was able to start in February 2012 after only a slight delay from the planned start of 1 January. IRRI B was delayed by 2 months and did not start until the end of August 2012. Both projects were able to mobilise quickly through the IRRI country office and short term use of international IRRI staff. Recruitment of the full time national and international was subject to the usual delays, although IRRI B faced more constraints in this respect. IRRI A was able to recruit its national (by May 2012) and international (by July 2012) agronomists and initiate PVS mother trials (20 sites) during the 2012 monsoon. IRRI B faced difficulties in recruitment of staff and did not initiate on farm trials until the 2013 monsoon (missing the 2013 summer period). Both projects faced some delays in seconding the full time staff from DOA / DAR although IRRI B was able to secure secondment of some additional seconded staff (e.g. seed breeding / plant breeding). The first IRRI A full time post-doc agronomist had to leave following a flare up in ethnic violence and failure to secure a multiple entry visa (since the Ministry could not guarantee safety). The project compensated in the short term by increasing the time allocation of the short-term IRRI Agronomist.

The projects comprised a core team of graduate and post-graduate full time Myanmar staff based in Yangon and target area offices, with part time support from international IRRI staff. The project established functional and pleasant offices in Yangon (the previous IRRI office was extended through renovation of old buildings), Bogale, Labutta and Meiktila. These provided conducive working environments and bases from which to implement the projects. Some work was also carried out in the Philippines (e.g. data integration and analysis, some management, etc) and even India (some GIS analysis).

The project leaders were from the part-time international IRRI staff[2]. The projects held regular management meetings, developed detailed workplans and had strong communication to resolve coordination issues. The local teams held regular coordination meetings with IPs and the DOA. No significant management issues or constraints were reported. Both projects followed their logframes and workplans, making appropriate adjustments to the methodology (e.g. for GIS mapping, design of trials, etc) when needed. Both projects were able to keep more or less on track with their logframe targets and milestones throughout the project.

The only administrative / management issue mentioned was from an IP concerning the delay in finalising the agreement to continue staffing following the no-cost extension of the projects. It may be that the use of a part-time staff as project leaders led to some delays at times. It did not seem that this was a major issue for these IRRI projects. The use of a full-time in-country manager may however be considered useful.

IRRI B faced some constraints in fully engaging the DOA and DAR since it had not been able to pay the DOA or DAR directly for chunks of work and for engagement of staff as had been envisaged when the projects plans were being developed. Payments had to be made arrears for expenses as they were incurred. This contrasted with the arrangements allowed for working with LIFT IPs which could be paid on an imprest basis for chunks of work against a workplan / agreement. LIFT should review their rules relating payments for engagement with government since this proved a significant constraint for IRRI B. IRRI B felt that this had constrained the amount of work that could be completed and partly explained the lower than anticipated rate of expenditure. This also impacted on the transfer of skills/ capacity to DoA/ DAR as it had been anticipated that staff would have been dedicated to work with the project .

Both projects faced initial constraints for seed quality due to staff capacity issues on e.g. the government seed farms outside of Yezin. The project resolved this issue through targeted training of DOA and DAR staff in 2013 and 2014

Although both projects were following the same basic approach for adaptive research and evaluation of varieties and management practices, there were significant differences between the projects, and the process in IRRI B seemed a little rushed and less systematic (e.g. mother and baby trials together in the first year in one village[3], a different format for the IBMP trial that included multiple varieties to mix the four-factor and baby trials). The reasons for this are likely to include (1) the reduced duration for implementation, (2) greater variation in ecozones and uncertainty in rainfall in the CDZ, (3) working through the DOA and DAR as the main collaborating partners, (4) inability to fund the DOA and DAR partners for chunks of work on an imprest basis (as above), (5) being spread over a wider area and therefore more thinly, and (6) a strong focus from early on in the project on the GIS mapping work. These factors indicate that the project duration was too short, particularly for the PVS approach, and took steps to try and shorten the process.

Apart from the appropriate adaptive management described above, there were no major changes made to either project. The only additional Memorandum of Agreement made was for an adjustment to the budget for the no-cost extension of IRRI A to 30 September 2015 (dated 12 February 2015) and for LIFT B to 30 November 2015 (dated 16 April 2015). This allowed for continuation of activities within the original funding allocation, and a joint project workshop to be held in September for the completion of both projects at about the same time.

[2] Although these were assigned on a part-time basis to the two projects, they were full time IRRI staff and therefore potentially available to assign their time as needed to resolve issues at any time.

[3] The baby trial was drawing on results from a mother trial in another village but the farmers had not been involved in this mother trial.

2.3 Project monitoring and evaluation (M&E)

Although the corrective management and reporting functions of the project were satisfactory the M&E system that provide the information and understanding for these functions could have been better organised and an alternative reporting format would have been preferred.

The projects generated data for two related but different purposes: (1) the implementation of the adaptive research and GIS mapping parts of each project, and (2) the monitoring and evaluation (M&E) of each project. The M&E data related mostly to that needed to assess each of the indicators in the logframe, including the baseline and endline assessments made using a household survey.

Several of the logframe indicator targets and milestones were derivable from records that needed to be kept for implementation of the adaptive research (e.g. varieties tested, demo / trials established, etc), while some were more or less self-evident stages in specific project processes (e.g. salinity data mapped, etc). These indicators did not require separate M&E data. The main datafiles kept specifically for M&E and provided to the ET were:

- Beneficiary data Excel files for each year with a listing of all beneficiary farmers by township and selected details on participation in specific trials.
- Training data Excel files for each year with all training courses and a listing of all participants with basic details.
- LIFT "M&E Monitoring Sheets" Excel file with worksheets for beneficiaries, inputs distributed, etc. This is the standard M&E report file needed six monthly by LIFT. Data comes from other project datafiles.

The data for the adaptive research trials etc was compiled, organised, managed, cleaned and analysed (preliminary) separately for each project (IRRI A and B) by the full time national agronomists. This data was then sent to IRRI headquarters for integration, further analysis and archiving.

Although the ET did not have time to review the M&E system in detail and saw only the specific M&E datafiles (and not the adaptive research datafiles), it would appear that data was not kept in the most systematic or efficient way. Given the need to record names of beneficiaries for different data, some kind of relational database (e.g. ACCESS) would have been much better. This would keep the data more efficiently and avoid double counting of beneficiaries. It would have been relatively easy to add the related trial data into this database as well as the M&E participation and training data.

The IRRI A project ("proposal") document proposed focus group discussions with farmer groups every year to monitor changes in knowledge, attitude and practices. This was carried out to some extent as part of the demo-trial process. Meetings and focus group discussions were held with collaborating farmers in selected villages (with key demo-trial sites) before and after each cropping season and to plan the trials, and then gather feedback and evaluate the varieties and management practices tested in the field. This undoubtedly contributed to farmers' learning and appreciation of collaboration with the IRRI projects (as expressed frequently to the ET by the farmers met), and their voluntary participation in the IBMP demonstrations and adoption of management practices. This was also an important input to the research, learning and development of recommendations carried out by the projects. As such, the findings were reflected in the research and project progress reports. Further work to compile information and look more specifically at adoption (an important M&E function) could have been useful.

As with all M&E systems however, the main functions were to (1) assess and understand project progress against the plan in order to guide corrective management decisions, and (2) to provide the key information for reporting to stakeholders. As mentioned in section 2.2, both IRRI A and IRRI B carried out effective adaptive management (at least for the adaptive research and GIS mapping parts of the project but less so for the capacity building part). This indicates that the data provided and understanding developed about project procuress was sufficient to allow effective management decision making. The same data and understanding also enable the project to prepare all the required progress reports (annual and mid-year) to a satisfactory standard.

Reporting:

The **project progress reports**, while satisfactory and even comprehensive and well written, could have been made more user-friendly. Firstly, they would benefit greatly from a table of contents and list of acronyms. Secondly, the contents of sections were not always completely consistent with the section heading. This is probably due at least in part, to the requirement to use the LIFT reporting format / structure and that this was not the best for this project. The desirability of using the standard LIFT report format for all projects could be reconsidered for projects that are different from the usual LIFT projects (for which this format was designed).

The project also included the **reporting of its research results** in the project progress reports and annexes. This made the reports more difficult to read, while at the same time, making it difficult to get a clear detailed understanding of the research. The ET was informed that while some research papers on specific aspects of the research may be prepared for journal publication, the main and only other place where the research would be documented was the progress reports. . It is suggested that it would have been better to have more concise and readable project-focused progress reports, and document the research in other documents with appropriate formats. These would be stand-alone documents but could be attached to or submitted with the annual reports. There could be several documents, each with appropriate formats to document the different research programmes (e.g. variety selection, post-harvest, etc). It is **recommended** that this approach be seriously considered for the Project Completion Reports.

Baseline and endline household surveys:

Baseline and endline household surveys were carried out in July / August 2013 and May / June 2015 respectively. The baseline survey was reported through a 2 page preliminary findings annex in the 2013 Annual Report; the endline report is still under preparation. A presentation on "Household Surveys, Farmer Diaries and Focus Group Discussions" with preliminary findings of the endline survey was received.

The baseline survey sampled a total of 240 farming HHs with 120 from 12 villages in the Delta and 120 from 12 villages in the CDZ (10 HHs per village). The villages in the Delta were split equally between the freshwater, brackish and saline zones of the Bogale and Mawlamyinegyun townships; with 2 villages in each zone, in each township. Each pair of villages had one PVS village and one non-PVS village (the "control"). In the CDZ, the 12 villages were split equally between saline and non-saline areas (in Thazi township),and rainfed and irrigated areas (in Ye U township). There were nine PVS villages and three non-PVS villages (in the rainfed and irrigated areas only). The endline survey returned to the same villages and the same HHs as far as possible but with some replacement.

The HH questionnaire questions focused on input - output data, knowledge, attitudes and practices and gender. Sampling within the villages was random and not targeted at collaborating farmers (in PVS villages). This means that the survey will mostly pick up the non-collaborating farmers, as well as a few who have collaborated to varying degrees (since there were less than three baby trial farmers per village). This should be useful to document and understand overall

changes in practices in PVS versus non-PVS villages. Given the variability of rice farming and seasonality, it seem unlikely that the sample will be sufficient to detect statistically significant change for the different environments and counterfactuals.

It will be important therefore to understand in some detail what and how collaborating farmers in the different areas are adopting, and how this is spreading to other farmers within the PVS villages and beyond. The projects informed the ET that they intend to combine data and information from the Household Surveys, Farmer Diaries and Focus Group Discussions to better understand change, and this is strongly supported by the ET. The Farmer Diaries, FGDs and "registry" of farmer beneficiaries provide a wealth of data on the collaborating farmers that will complement that from the household data. It seems likely however that additional, strongly purposive FGDs will be needed to fill in the gaps to understand the whole story of adoption and change. This does not appear to have been fully thought through by the M&E team, and due consideration of these issues is recommended.

2.4 Assessment of Relevance

Both projects were assessed as being highly relevant for the farmers, NGOs and government agricultural agencies (DOA and DAR) and LIFT Development Partners.
"Relevance" here means extent to which the project objectives, design and way they were implemented were consistent with the priorities, strategies and policies of the target groups and other stakeholders.

As mentioned in the discussion on the project designs, the outputs and objectives of both projects were highly relevant for stakeholders. Various design features such as the participatory adaptive research, collaborative arrangements with IPs, the DOA and DAR and capacity building were also found to be highly relevant to stakeholders. The projects closely followed these approaches during implementation and the projects remained relevant during implementation.

Farmers in the focus group discussions / interviews (FGDs) frequently expressed their need for new varieties and appreciation for the real knowledge and skills gained on improved management practices. Farmers made the point in one meeting that they valued the knowledge gained on BMPs more highly than the new varieties since this was hard to get. When asked about any negative aspects of the projects, farmers frequently mentioned the time they had spent on the work, but all felt it was time well spent.

The ET judge that the new varieties, BMPs, extension guides, participatory research approaches, etc of the projects will be useful to improve the extension systems of LIFT IPs but this has not yet taken root and was not fully appreciated by all IPs interviewed. This is discussed further in section 4.3.

The new varieties, knowledge and extension guides on management practices, GIS mapping tools and participatory adaptive research methodologies are all highly relevant for the DOA and DAR. Several DOA and DAR staff directly involved in the project expressed strong appreciation for systematic and rigorous approach and learning. They said it was now easier to mobilise farmers who had get more confidence in the DOA; and they themselves had gained in confidence as well as knowledge and skills. The potential for adoption however is limited by the generally inadequate resources of the DOA and DAR (section 4.4).

The normal priority for LIFT is in investments that directly benefit the food security and livelihoods of poor rural households and there were questions about the value in funding these more research-oriented projects. The ET feel that the new varieties, thorough review and improvement of management practices for different areas, extension guides and the participatory research processes themselves represent a sound investment for LIFT since they should improve the more mainstream work of the LIFT IPs and DOA / DAR. The projects have

also provided a useful way for LIFT to strengthen the government's DOA and DAR institutions and strengthen the foundations for influencing government policies, strategies and programmes. This is discussed further in section 4.4

3 ACHIEVEMENT OF OUTPUT RESULTS

This chapter assesses the achievement of the main results for each of the outputs of IRRI A and B. These are assessed mainly against the logframe output targets and milestones. The main achievements against each of the logframe indicators are summarised in table form at the start of each Output section below. The achievement level is rated using the criteria in Table 1. The complete tables for IRRI A and B are provided in Annex 4. Supporting implementation data is presented in Annex 7.

Table 1: Rating system and criteria for overall assessment of Outcomes and Outputs

No	Likely level of achievement by the end of the project		Rating
1	Fully achieved: more or less completely (e.g. > 90% if quantitative).		**1**
2	Mostly achieved (e.g. more than half: 50% to 90%).		**2**
3	Partly achieved (e.g. less than half: 10 to 50%).		**3**
4	Not achieved to any significant or satisfactory degree (e.g. < 10%).		**4**
5	Unable to assess: no information, OR the Outcome / Output was cancelled.		N/A

3.1 IRRI A: Improved livelihoods . . . (in the Delta)

3.1.1 Output 1a: Adaptive research and demonstration for improved varieties

Output 1: *"Improved rice crop management practices demonstrated and new varieties tested in three townships in the lower delta: undertaken in cooperation with other LIFT IPs."*

Ind 1.1	• **Indicator / Target**: Number of rice varieties tested (no target set) and 18 demonstration pilots managed.	**Target fully achieved and exceeded**: • 57 rice varieties tested at 32 Mother trial demo sites and 17 demo sites established by July 2015. • A total of 893 Baby Trial / demo plots were carried out. • A total of 17 4-factor demo-trials of improved management practices.	**1**
Ind 1.2	• **Indicator / Target**: At least 2 varieties selected: • 10 tons of seed produced	**Target fully achieved and exceeded**: • 12 monsoon varieties and 10 dry season varieties were selected by farmers from Mother Trials (Annex 8). • 0 monsoon and 3 dry season varieties sent to National Seed Committee for registration during project (Annex 8). • 2 monsoon and 2 dry season varieties released by National Seed Committee during project. • 30.7 tons of "preferred" varieties of seed distributed to 2,230 farmers from 2012 to 2015. • 5.6 tons of seed (preferred varieties) given to IPs for their distribution programs: e.g. to around 370 farmers at 15 kg each.	**1**

The project has fully achieved the two output indicator targets specified in the logframe in relation to rice varieties. This however does not explain the whole story which is elaborated below.

The adaptive research and demonstration approach and methodology followed by the project was based on IRRI's Participatory Varietal Selection (PVS) methodology. This has five "stages" as set out in IRRI's "Guide to Participatory Varietal Selection for submergence-tolerant rice".

- Stage 1: Setting breeding goals: assessment of target communities and their varietal needs and opportunities, etc.
- Stage 2: Evaluation of new rice lines in researcher managed trials: "mother trials".
- Stage 3: Evaluation of new rice lines in farmer managed trials: "baby trials".
- Stage 4: Wide scale dissemination of lines and varieties selected through PVS.
- Stage 5: Technology tracking and assessment of the immediate effects of the PVS process and technologies.

The project focused on the first three “stages” of the PVS process to select farmer preferred varieties that are tolerant of salinity, flood and drought stresses that are a feature of the delta. The project also supported a number of on-farm trials / demos (or demo / trials) to test and demonstrate improved management practices. The project regarded on-farm trials as partly for demonstration and learning, and did not have a specific demonstration programme. The project supported some multiplication and distribution of promising new varieties through what was generally regarded as an extended programme of baby trials. Further dissemination was supported through training of farmers and extension staff (of IPs, DOA and DAR).

Mother Trials:

Farming communities and cropping systems were assessed and their need for improved varieties evaluated. A large list of around 160 potential new varieties was screened to select a short list for testing in mother trials. Suitable villages and farmers were selected using IP and DOA staff, and researcher-managed on-farm trials established in sites accessible to surrounding villages. Each site tested around 12 to 15 new varieties plus a farmer-selected “control” with a randomised complete block design. A total of 42 sites tested 52 varieties.

Field days were held for farmers from surrounding villages for “Preferential Analysis”(PA) to votes for preferred varieties just before harvest, and for “Sensory Evaluation” (SE) to assess cooking and eating qualities after harvest. Data was collected on growth performance as well as yield and milling recovery (not all sites) and put together with the PA and SE data to make a final selection of verities to be offered to farmers for baby trials. The PVS Guide specifies a robust methodology for data analysis.

Data from the mother trials was analysed by national project scientists and sent to IRRI for compilation, further analysis with baby trial and IRRI B data, and storage. A total of 21 varieties were selected for the Delta (Annex 8).

Baby Trials:

A number of suitable farmers (interest, sufficient resources, accessible fields) were selected (using IP and DOA staff) from surrounding villages for farmer-led (baby) trials to test and validate the varieties under farmer management. Each farmer (one per baby trial) selected and tested two or three new varieties plus one of their own varieties for comparison. Farmers received training but used their own preferred management practices (generally but not always the same for the farmer and IRRI varieties). Farmers received free seed and other inputs (fertiliser, herbicide, labour, etc). Data was collected during the trials by the farmer using a “Farmer Diary” and also by IP, DOA or IRRI staff using a 7 page data sheet. Yields were assessed using crop-cuts.

Data from the baby trials was analysed by national project scientists to validate and refine the recommendations for new varieties. Field days were generally not organised for baby trials, although the project supported some feedback and discussion sessions with farmers. Farmers drew their own conclusions and in some cases adopted one or more of the new varieties.

Data compilation, further analysis and storage:

The data from the mother and baby trials was sent to IRRI headquarters for compilation, further analysis together with IRRI B data, and storage. The main analysis carried out was to test yield stability over different environments.

Assessment of the methodology:

The PVS methodology as documented in the IRRI Guide is thorough, well tested and generally accepted as appropriate. The project focused on the first three stages (setting goals, mother trials and baby trials) and generally followed the IRRI methodology in a systematic way. The FGDs revealed a degree of continuity with baby trial farmers often having been involved in the field days to evaluate the mother trials.

Information from the FGDs indicated that the management methods for farmer and IRRI varieties were generally the same although sometimes different.

One criticism has been that the farmers' low quality seed was compared with high quality seed for the IRRI varieties. Although it may be argued that this makes a comparison against "current practice", it would be useful in some cases to include high quality seed of the farmer variety to test this option. In some cases, farmers had already started to use IRRI varieties obtained from IRRI or the DAR and the relative yield advantage was lower. Some farmers had recognised that their local variety had degraded, and project multiplied and distributed high quality seed for some local varieties. This ET would recommend that this approach is extended as appropriate.

A further criticism has been that the project tested a limited set of the same varieties across a wide range of environments: e.g. salt tolerant verities in fresh, brackish and saline areas. The argument is that this would limit the possibilities for testing a wide range of varieties for specific stress environments. IRRI have argued that the reasons for their approach were (1) tolerance to stress is additional and the variety is still HYV, (2) data is needed across different environments to assess genetic - environment stability, (3) stress zonation is not so precise and changes over time and within villages, and (4) practical reasons of seed supply.

3.1.2 Output 1b: Adaptive research and demonstration for improved management

A number of different on-farm, adaptive research trials and demo-trials were established to develop "best-bet´ improved management practices (referred to by the project as Natural Resources Management: NRM) to address a range of constraints. Trials during the first three cropping seasons to summer 2013 /14 focused on testing specific practices such as seedbed management, fertiliser management, weed management, etc. These trials aimed to develop specific agronomic recommendations.

From the 2014 monsoon season to 2015 summer season, focus shifted to "integrated best-management practices" (IBMP) demo / trials comparing farmer practice to combined variety plus BMP treatments, and "four-factor" trials with all combinations of farmer and IRRI varieties, and farmer and improved management.

The project also ran on-farm demo / trials for improved water management through alternate wetting and drying (AWD), use of the drum seeder, and various post-harvest practices (see below).

All these trials and demos were on-farm and managed by the project according to specific "protocols" prepared by the project. The project provided all inputs and organised the collection of data and some field days.

Much of the data collected was used to support the development of recommendations for best-bet improved management practices that were captured in guides (see below). Some demo / trials such as the IBMP, four-factor trials AWD and drum seeder were particularly useful for demonstration and learning. Farmers in the FGDs frequently emphasised the value of learning through their involvement in the implementation of trials, informal farmer discussions and the field days.

3.1.3 Output 1c: Seed production and dissemination

Stage 4 of the PVS methodology relates to wide scale dissemination of the varieties selected through PVS. The aim is to scale up and scale out the impact of this participatory research. This was not specifically provided for in the project design. The main mechanism for this in the project design was to build the capacity of IP and DOA extension services so that they could take on this role.

A total of 30.7 tons of adapted seed of 8 most promising varieties was produced and distributed to around 2,227 farmers (IRRI briefing document). This was for use in the various demo trials including the PVS mother and baby trials and various improved management (NRM) trials. A relatively small number of farmers were involved in mother and NRM trials, and around 893 farmers were regarded by the project as having completed baby trials that provided data for analysis. While a pool of baby trial farmers is needed to allow for lost sites, the seed provided to the majority of the 2,227 farmers must be regarded as some kind of promotional distribution.

The ET feel that wider dissemination of seed did not have a proper implementation and support strategy and was not properly documented. The project did not always make a clear distinction between the adaptive research and seed dissemination / extension, and data on this was difficult to obtain. It would seem also that such distribution could be premature given that trials continue and some varieties were not yet registered / approved. The impact of this work is therefore not known. It is **recommended** that all seed dissemination programmes should have a sound and properly documented strategy with clear objectives, systems, monitoring and evaluation that are distinct from associated seed multiplication or adaptive research programmes.

The project also provided 5.57 tons of adapted seed to IPs for promotional distribution to their farmers through their project mechanisms. This would cover and estimated 280 farmers at 20 kg each.

3.1.4 Output 1d: Postharvest technology development and the "Learning Alliance"

Ind 1.3	• **Indicator / Target**: Value chain and NRM analysis completed in 3 townships).	**Target fully achieved**: • • Postharvest and value chain analysis carried out in 3 townships through household survey, value chain assessment, and Learning Alliance.	1
Ind 1.4	• **Indicator / Target**: 1,500 farmers adopting improved pre and post-harvest practices.	**Likely to be only partly achieved.** • Only a small proportion of the 302 farmers involved in pre- and post-harvest demonstrations and trainings are likely to have adopted any PH.	3
Ind 1.5	• **Indicator / Target 1**: 4 PH demo units established	**Demo target mostly achieved:** • 2 villages with PH demo units (flat-bed drier, etc) in 2 townships. • 2 villages with Solar Bubble drier and other PH demos. • 6 villages with other PH demo. • "Learning Alliance " groups in 2 of these MGN villages	2
	• **Target 2**: 2 townships with supply chains for PH technologies established.	**Supply chains target not likely to be achieved:** • One local manufacturer supported to make lightweight thresher but first model not good enough and the work continues. • Local importers of other PH technologies (e.g. hermetic bags, solar bubble dryers, grain quality kits) identified and able to supply on demand, but demand is very weak and local supply chains are not yet established. • IRRI fostered the supply chain for flat bed dryers. Pioneer installs dryers on demand. It is the demand that is lacking right now.	4

The post-harvest part of Output 1 aimed to develop technologies and value chain opportunities to reduce losses and /or improve rice quality, and thereby increase income. The project had

three main strategies for doing this, (1) assessment of post-harvest and value chain problems and opportunities, (2) establishment of a "Learning Alliance" focused on post-harvest and value chain development, and (3) introduction, development and demonstration of new post-harvest technologies. Much of the technology development was done through the Learning Alliance.

Assessment of post-harvest and value chain problems and opportunities:

Understanding of the main problems and opportunities for post-harvest and value chain development was obtained from (1) household information from the detailed household surveys carried out in 2013, (2) assessment of the rice value chain and mapping and rapid assessment of the key postharvest stakeholders including rice millers, traders and equipment suppliers, and (3) collaboration with the Learning Alliance (through problem analysis using Participatory Impact Pathway Analysis (PIPA), etc).

The value chain "Learning Alliance":

The Learning Alliance (LA) is a multi-stakeholder platform that brings together different rice value-chain stakeholders to share ideas, field-test, refine, and adapt innovative technologies and other solutions to post-harvest and value chain issues. The approach emphasises an interactive, iterative, and participatory process among stakeholders. Stakeholders include village-level farmers, millers, traders, input suppliers and other service providers and research and extension workers.

The project established the Learning Alliance in July 2013 in Mawlemyaingjyun township with participation of LA groups from two villages (Kyee Chaung and Pa Dae Gaw), local traders and millers. The project provided all resources needed to run the LA and facilitated all LA activities and operation through project staff with support from a consultant who is also the Vice-President of the Myanmar Rice Federation (and Myanmar Rice Traders Association). The various activities undertaken by the LA are listed in Table 2.

Table 2: "Learning Alliance" activities

Date	Activity	Male	Female
Jul 2013	Participatory Impact Pathway Analysis (PIPA) workshop	20	
Dec 2013	Arrangements on coordinated use of dryer	28	10
Mar 2014	Miller used the dryer	23	9
May 2014	Market Visit	17	
Nov 2014	Thresher Demonstration	21	6
Feb 2015	Market visit	17	2
Feb 2015	Message Design Workshop	17	3
Apr 2015	Flat-bed demonstration. Grain Quality assessment training.	16	2
Jun 2015	Capture learning and post-project planning for Learning Alliance	?	?

An important focus of the Learning Alliance has been to work with farmers and millers to develop new marketing opportunities for good quality paddy at a higher price. Farmer visits were made to whole sale markets and joint discussions held between farmers and millers. Millers were involved in the flatbed drier demos and tested milling recovery. The project has also collaborated with IPs (GRET and WHH) on inventory storage, collective marketing and even rice auctions. So far however, no specific market linkages or arrangements have been developed.

Technology development and demonstration:

Potentially useful technologies were identified according to the understanding gained from the post-harvest and value chain assessments, the work of the LA (starting with the particularly the Participatory Impact Pathway Analysis workshop), and the knowledge and experience of IRRI scientists. These were introduced, demonstrated, tested and adapted as needed through a series of village demonstrations and collaboration with the LA.

The idea of the project design was to establish 4 PH "demo units" with a flat-bed drier, 5 ton storage cocoon, 50 kg hermetic super bag, grain quality kit, etc. In practice, the project found that the technologies needed to be evaluated and adapted, and some other technologies and value chain initiatives were also needed. The project therefore took a broader view of "post-harvest", and focused on more widespread demonstration of a wider range of technologies (Annex 7c). These included:

- **Hermetic storage**: Air-tight storage maintains seed viability (above 90% germination) and reduces deterioration of the quality of grain. The technologies used were large silos / GrainSafes, IRRI super bags and locally made Pioneer bags. These technologies were demonstrated and tested with farmers and proved successful, although the Pioneer bags were not air-tight and not so effective. Farmers have shown interest, particularly in the super bags for seed storage,. Pioneer is importing hermetic storage products from the Philippines and was the official importer of GrainPro until 2015. However, demand was too low to stock large quantities, red tape delays imports (the project's latest shipment of threshers, GrainSafes and Super bags has been waiting for import clearance for two months), and import cost are high for small volumes.

- **Flatbed drier**: Flatbed driers (3 ton capacity) were installed in two villages in Mawlemyaingjyun and Labutta in collaboration with GRET and Mercy Corps. These are permanent structures and machines fuelled by rice husks. These worked well and were found to improve grain quality and milling recovery. The market does not yet pay for higher quality however and so the flatbed driers are not yet financially viable.

- **Solar Bubble driers**: "Solar Bubble" drier technology was introduced by IRRI to provide a mobile drying service (in contrast to the fixed flatbed driers). Solar Bubble driers were imported and demonstrated with training in use in two villages. The driers were left with the villages for community use. The driers were found to work effectively and a cost-benefit analysis found that benefits exceeded costs. Challenges for adoption include initial cost, availability, market recognition of quality and the need for a large area for operation. The ET visited one of the demo villages with a Solar Bubble drier and found that it had hardly been used since the weather had been dry. Only one farmer had used it.

- **TC 800 lightweight thresher (TC 800)**: The conventional threshers are too heavy to be easily carried to fields, and cannot thresh a wet crop. This leads to delays and losses along the post-harvest chain. IRRI introduced the TC800 lightweight petrol driven thresher that can be easily transported to the field and can thresh a wet crop. This worked well and was liked by farmers but had to be imported (taking one year).

- **Reaping machine**: A reaping machine introduced by WHH was found not to be viable since the belts wore out within 1 ha. IRRI is helping to upgrade the drive design.

- **Solar Tunnel Dryer**: IRRI also provided WHH with information to help them build a test solar tunnel drier in Bogale.

Development of local supply chains for PH technologies:

One local manufacturer was supported to manufacture lightweight TC-800 threshers, with a view to developing a local supply chain. Support included provision of the design, a demo unit and technical advice to ensure proper fabrication. The local manufacturer cut corners and modified the design however and the first model had 20 faults and could not be used. The work continues.

The project has identified local importers of other PH technologies that are currently produced outside Myanmar such as hermetic bags, solar bubble dryers and grain quality kits. There are problems with the viability of the business model however and supply chains have not been established. The flat bed dryers are locally produced (based on a technology transfer from the projects) and can be installed on demand within a month.

Much more work is needed to develop viable supply chains and / or more local manufactures.

Conclusions on postharvest technology development and the "Learning Alliance":

The multi-stakeholder, participatory, value chain approach of the Learning Alliance appeared to the ET to be a sensible approach for developing ideas and initiatives to address broader value chain issues such as obtaining a higher market price for quality, identifying supply lines for e.g. hermetic bags, etc.

The testing, assessment and refinement of technologies through adaptive on-site demonstration including cost- benefit analysis also appeared to be sound.

The ET was impressed by the knowledge, experience and access to international and regional experience in postharvest value chain technologies of the IRRI team. The team have shown a strong understanding of the issues and challenges and have worked systematically on identifying solutions.

The project has not yet been able to facilitate the establishment of viable market linkages that reward high quality produce, or the manufacture / supply chains for improved post-harvest technologies e.g. hermetic bags, lightweight threshers, etc. The project has worked hard and facilitated the sale on one batch of quality rice to wholesale market in Yangon and supported the development of improved PH technologies (as above). Systems however are still overly dependent on the project and "adoption" by farmers, service providers and traders remains very limited.

This is not a simple situation to resolve however, and is probably beyond the scope of the present project. It is in essence a "chicken and egg" situation that needs to be unlocked through facilitation of the private sector and some investment. The underlying constraint appears to be the lack of a market incentive for quality. This reduces the demand from farmers for the PH technologies and this in turn discourages service providers. The market incentive for quality needs to be built on a reliable supply of high quality produce: but how can this be generated before there is a market that rewards quality? Resolving such issues and scaling up will need some investment and strong private sector involvement. Such private sector involvement could be proactively facilitated by this or a similar project, engaging with specific interested private sector actors. This would be complemented by, but go beyond, the work of the Learning Alliance.

The Learning Alliance has been useful for the project but is very much a project tool that will not continue beyond the end of the project. This emphasises the need for truly self-sustaining private sector engagement. The Learning Alliance met relatively infrequently (every 2 ½ months on average) and so lacked continuity.

In short, the project has followed sensible approaches and implemented what it was supposed to implement, but adoption has been very limited. The project has developed a good foundation but much more needs to be done, particularly to engage with the private sector for private sector led, self-sustaining solutions.

3.1.5 Output 2: Capacity building

Output 2: *"Strengthened capacity of partners, including scientists and extension personnel from LIFT IPs, and the private and public sectors."*[4]

Ind 2.1	• **Indicator / Target**: 100 people trained (>30% F and >25% DOA or DAR). • At least 15 demo plots of high quality.	**Target fully achieved and exceeded.** • A total of 1,685 (27% F) farmers, and 208 (62% F) personnel from IPs, DOA, DAR, YAU and the private sector received different types of training. • Over 50 high quality demo plots were established being 42 Mother trials, 18 four-factor or IBMP demo-trials.	**1**
Ind 2.2	• **Indicator / Target**: 90% of people trained report training as useful and increased their skills or knowledge.	**Indicator data not provided: .** • The project reported that evaluations were carried out immediately after (some ?) trainings to receive feedback on the effectiveness of the training but this was not translated into reported indicator data • It is likely however, that the target would be mostly achieved, since most farmers and IP / government staff interviewed were positive about the training. Some were expressed strong positive feelings.	**n/a**
Ind 2.3	• **Indicator / Target**: 75 LIFT IP / DOA / DAR staff have or plan to improve their extension or adaptive research work.	**Likely to be mostly or fully achieved.** • This was not specifically assessed. Given the positive responses of most staff met by the ET however, it seems likely that a good proportion of the 190 or so staff (97 government; 93 IPs) trained, have or will improve the way they do extension, etc through inclusion of new verities or management practices or providing higher quality extension and training.	**1**
Ind 2.4	• **Indicator / Target**: 4 LIFT IPs or DOA / DAR reported changing their rice research and extension programmes.	**Likely to be only partly achieved.** • Although several IPs (Mercy Corps, GRET, AVSI, and Radanar Ayar (from 2014 Annual Report p.34)). were reported to have improved their extension and training through inclusion of e.g. new varieties, improved management practices and postharvest technologies, a new radio programme, etc, this was not considered by the ET as constituting a change in their strategies or programmes (as this indicator was interpreted to make it different from 2.3).	**3**

This Output aimed to strengthen the capacity of farmers and research and extension staff and organisations through (1) training and (2) strengthening the systems for technology delivery through NGOs and DOA. The main strategies followed were (1) formal and informal training and on-the-job experience and skills development, and (2) organisation of temporary project systems for implementation. Little or no structured effort was made to develop future routine extension systems.

A total of 1,685 (27% F) farmers, and 208 (62% F) personnel from IPs, DOA, DAR, YAU and the private sector received different types of training (data from project M&E records). Table 3 provides a summary of the numbers of different categories of people who participated in significant training events (27), workshops (4), or field days (34). This includes some people who participated in more than one training.

Table 3: Summary of people trained by main type of trainee and training

Type of training (and number)	DOA, DAR, YAU		Farmers		INGO, NGO, Private Sector		IRRI		Total		
	M	F	M	F	M	F	M	F	M	F	Total
Trainings (x 27)	51	85	270	41	99	50	26	36	446	212	658
Workshops (x 4)	2	1	68	18	17	4	8	9	95	32	127
Field Days (x 34)	6	9	896	392	71	18	10	5	983	424	1,407

[4] This Output is ambiguous since it appears to focus on IPs and government (and not farmers), but includes the number of demonstrations in its targets. the project and this evaluation have included the capacity building of collaborating farmers (adaptive research partners) as well as these other partners.

The quality of most of the training appears to have been high, and in some cases, very high. Several farmers emphasised the usefulness of the one week formal trainings on (1) Quality Rice Seed Production (at DAR Nay Pyi Taw and Myaung Mya seed farm) and (2) integrated crop management and postharvest (at Labutta and Bogale). IRRI had established side-by-side plots of seed production at different growth stages for give hands-on learning at the quality seed production trainings.

The on-the-job learning by doing that the project generated was remarkable. Almost all farmers in the FGDs remarked on the value of working with project staff, and the systematic and detailed observation and assessment of different practices. Several mentioned that they had now adopted things that had only been talked about before (e.g. raised seed beds). When asked about possible negative effects of the project, several farmer FGDs said that the project had taken a lot of their time, but that this had been time well spent. Several extension staff in the DOA also mentioned and emphasised the learning value of "doing things properly", and that they had gained in confidence. Some IP staff said that they appreciated the value of this learning but this was not at the same level as for DOA staff.

Given the positive responses of the majority of staff met by the ET, it seems likely that a good proportion of the 190 or so staff (97 government; 93 IPs) trained, have or will improve the way they do extension, etc in some way. This wold be reflected in the quality of the training provided on an individual basis, as well as some adjustment in the content of some trainings. This does not however constitute more significant changes in the way the IPs, DOA or DAR carry out their extension or adaptive research at the strategic or programme level. This is discussed further in Section 4.

3.2 IRRI B: Reducing risks and Improving livelihoods . . . (CDZ and Delta)

The basic idea or rationale of IRRI B was to improve the **targeting** of appropriate technologies and management recommendations to farmers in different areas so that the development and extension of these technologies and management recommendations can be "**fast-tracked**". The logical sequence for doing this is as below.

1. Identify **recommendation domains** for different rice growing areas / farming systems. This is the focus of Output 1. This should also support the work of IRRI A.

2. Develop appropriate **best-bet technologies and recommendations** (varieties, management practices, etc) for each recommendation domain. This was the focus of Output 2, but drew much on the work of IRRI A.

3. Develop appropriate extension approaches and targeted **extension and training material**. This was the focus of Output 3, but was done together with IRRI A.

4. Build the **capacity** of different extension services to support farmers. Capacity for extension was a cross-cutting issue for IRRI B and the focus of Output 2 of IRRI A.

3.2.1 Output 1: Mapping, GIS, recommendation domains and capacity

Output 1: *"Descriptions and GIS databases of rice areas affected by stress in Ayeyarwady, Magway, Sagaing, and Mandalay regions prepared and used by LIFT partners and DOA.*"

Ind 1.1	• **Indicator / Target**: Spatial data and reports on stress domains for Delta and CDZ prepared and agreed with stakeholders.	**Target fully achieved:** • Flood, drought and salinity stress zones for the Delta and CDZ have been characterised, mapped (digital and hardcopy), documented and agreed with stakeholders. • Durable hardcopy maps printed and distributed main stakeholders.	**1**
Ind 1.2	• **Indicator / Target**: High resolution classification for the major rice areas of 7 townships (as map overlays in hard and digital format). • Spatial data on stress integrated with trial data as map and report on recommendation domains in delta and CDZ.	**Target fully achieved:** • High resolution (50 m.) GIS maps of rice cropping systems for each of 7 townships prepared, validated with stakeholders, and distributed. • Map of major soil types digitised from available hard-copy maps. • Recommendation domain maps prepared from map overlays using stress zones, soils, cropping systems and other data. Digital and hardcopy maps prepared.	**1**
Ind 1.3	• **Indicator / Target**: 30 staff of DoA and LIFT partners attend training sessions; 6 staff attend GIS specialist training. • Key partner agencies (LIFT NGOs and DoA) have staff cadre familiar with use of GIS tools for targeting options.	**Target mostly achieved**: • A total of 22 government, NGO and IRRI staff were trained in GIS at basic (22), intermediate (18) and advanced (11) levels, and 2 IRRI staff received TOT training. 105 trained in GPS utilization. • The training was sufficient to give staff a degree of familiarity with GIS, but not with GIS tools for targeting options since the methodologies and tools have not yet been developed. • The level of knowledge achieved was insufficient for most staff (unless previously trained in GIS) to be competent in independent use of GIS.	**2**

Output 1 aimed or should have aimed to

- Understand characterise and map the salinity, submergence and drought stress zones using ground data (salinity), remote sensing, GIS and ground truthing.
- Understand, characterise and map rice cropping systems using remote sensing, GIS and ground truthing.
- Compile and map other available spatial data (e.g. soils, etc) and develop recommendation domains using map overlay and GIS.
- Build systems and capacity for use of GIS tools to target options at farmers in the different areas.

In assessing progress through this process, it should be noted that the indicators do not adequately track this whole process. It should be noted also that some targets do not properly reflect the indicator.

Characterisation and mapping of abiotic stress zones:

The three stress zones (salinity, submergence and drought) were mapped using ground measurements of salinity, remote sensing, Geographical Information Systems (GIS) technology and ground truthing. This was a highly technical, sophisticated and demanding process that involved mobilisation and coordination of different resources at international, national, regional and local levels. The main remote sensing and GIS work was done by IRRI staff in the Philippines and India. National project staff coordinated the work within Myanmar and linked to the Regions and Townships for ground data collection (salinity) and verification with local stakeholders. The following maps were produced in digital(raster) and hardcopy formats.

- Drought frequency for the Dry Zone (250 metres resolution).
- Salinity maps of electrical conductivity (ms/cm) for the Delta for each (250 metres resolution).
- Flood affected areas for the Delta during the monsoon period (250 metres resolution).

Hardcopy maps were printed and distributed to townships. The digital data had not been distributed however by the time of the evaluation.

Characterisation and mapping of rice cropping systems:

Identification and understanding of the different rice cropping systems was obtained from a combination of review of available documentation and data, interviews with key resources persons in the different zones and field visits. The rice cropping systems identified were mapped using MODIS high temporal resolution satellite data, development of algorithms and extensive ground truthing. The ground truthing was an iterative and demanding process involving many staff at township level, particularly in the dry zone. This was a "non-trivial" and demanding piece of work involving international experts, national project staff and regional and township staff (for ground truthing). The main cropping systems identified included, double crop with monsoon and summer rice, monsoon rice with dry season pulses, monsoon rice with fallow, rice with upland crops and upland crops.

High resolution (50 m.) maps were prepared for each of 7 townships. Hardcopy maps were printed and distributed to townships distributed. The project has planned to make the digital maps (as images rather than spatial data) available for download from the web including the MIMU website.

Development of recommendation domains:

Available data on infrastructure (towns, roads, etc), socio-economic situation, soils, rice (varieties, yield, production, etc) was collected and compiled. Existing soil maps were digitised.

Recommendation domains were developed from GIS overlay of the cropping systems and stress zone, and soils maps. This apparently relied mostly on the cropping system maps. Specific recommendation-domain maps and descriptions have so far only been developed for the Delta. The main domains were identified according to degree of salt stress, being saline, intermediate and freshwater domains. Sub-domains were identified and mapped within these according to infrastructure, geographic and socioeconomic features for both monsoon and summer cropping in each township.

Validation of the maps and recommendation domains was undertaken in the Delta townships of Bogale, Mawlamyinegyun, and Labutta after conducting a workshop at the DoA regional office.

Recommendation domain maps were produced as an overlay of the cropping system / land cover maps. A "Domain Identification and Map Validation" report was also produced with details of each recommendation domain and sub-domain.

Build systems and capacity for use of GIS tools to target options at farmers in the different areas:

A primary aim of the remote sensing and GIS analysis work was to develop recommendation domains to support targeting and "fast-tracking" of appropriate technologies and management recommendations to farmers in different areas. The project aimed also to build the systems and capacity to continue to use GIS tools to do this. GIS capacity in this case requires hardware, software, data, tasks and tools, and people with the necessary knowledge and skills and job functions within their respective organisations.

The project focused most effort on training. TOT, basic, intermediate and advanced training courses were provided for potential GIS users in government, NGOs, and IRRI. Details are provided in Table 4.

Table 4: GIS training courses held

No.	Training	Location	Date	Duration	# ppts	% F
1	GIS and Remote Sensing training (TOT) for senior national project staff.	IRRI Philippines	Jun 2013	5 days	2	100%
2	Basic GIS training	IRRI, Yangon	Sep 2013	5 days	10	40%
3	Basic GIS "crash course" for new comers to prepare for intermediate.	IRRI, Yangon	Apr 2014	2 days	12	??
4	Intermediate Training on geospatial techniques using Quantum GIS: databases, labelling, raster processing.	IRRI, Yangon	Apr 2014	4 days	18	50%
5	Advanced GIS training on spatial analysis of drought using QGIS software and MODIS data.	IRRI-DAR	Jun 2015	4 days	11	45%

The project provided the QGIS freeware and basic datasets. Trainees were shown how to download free data on Myanmar from the Myanmar Information Management Unit (MIMU) website and satellite data (e.g. MODIS) from NASA, etc. Trainees and their organisations had to provide their own computers.

The series of training courses covered a great deal in a few days. This included basic GIS knowledge and skills, and the basic methodologies for developing the cropping pattern and stress zone maps (Advanced course). While this could be useful to understand how the GIS maps being developed by the programme were developed, it was insufficient for the users to become competent in such skills. It might have been more useful for the training to concentrate on tasks the trainees might actually do went back in their home organisations. This would include using the datasets generated by the project to target options to farmers in the different areas.

The project however, did not identify the tasks or develop the methodologies or tools for using the GIS and data for targeting farmers, planning, etc. Trainees did not therefore receive training in such tasks or tools. The project has not yet provided the cropping system and stress map raster datasets. The training was sufficient to give staff a degree of familiarity with GIS, but not with GIS tools for targeting options (one of the milestone targets) since the methodologies and tools have not yet been developed.

Conclusions on mapping, GIS, recommendation domains and capacity:

The project successfully developed GIS maps of cropping systems, salinity, flood and drought stress zones and major soils. The project used these to develop GIS maps and specification for recommendation domains for the Delta townships. The ET found that the methodologies were sound and the quality of the outputs produced was satisfactory. This was a major piece of work that was carried out well.

This work greatly improved understanding of the rice cropping systems and stress zones. The recommendation domain concept was difficult to apply with such complex spatial and temporal variability (across the seasons and years, across the region and within villages), and the mapping work improved the systematic identification and definition of the recommendation domains. Although useful however, the spatial location of the recommendation domains provided by the maps was not essential to develop the main set of recommendations of the project that are encapsulated as a series of 7 "Fact Sheets" (see below). These could have been developed from a good understanding of the different cropping systems, stresses, socio economic situation etc in the area without mapping them. Recommendation domain maps have not yet been developed for the dry zone. The full value of the maps (in providing spatial location in digital format) includes their use to develop, plan and implement targeting strategies, as well as strategies for further adaptive research. The project did not have the time to do this work and

a recommendation for further work along these lines in included in section 5.3.2. in addition, the same methodology can be used to extend these tools relatively easily to other areas. This would further capitalise on the investments made by IRRI B.

The derived cropping system, stress zone and recommendation domain maps and the associated knowledge, data that has been generated and documented are all potentially very useful. The project however did not have sufficient time to identify these possible functions and develop the methodologies and tools to carry them out. These are the types of task that the GIS-trained government and NGO staff should be able to carry out as part of their work.

It must be said however that although the logical conclusion of this set of activities of the project, the project design did not go so far. In reality, building such capacity in institutions that have very little or no previous experience of GIS and RS technologies, is a major task that is probably beyond the scope of this project. This means however that the development of such methodologies, tools and capacity to make full use of the GIS work done so far, remains as an important piece of work. This is taken up in the recommendations (section 5.3).

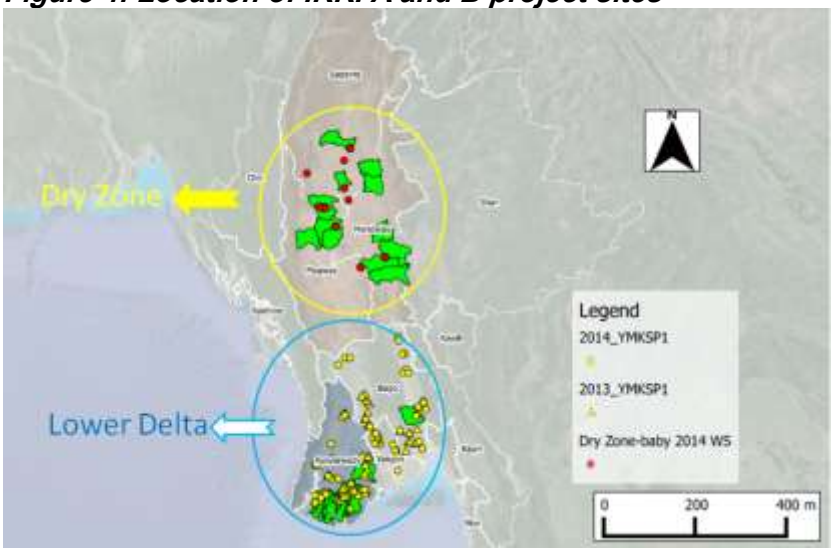
3.2.2 Output 2: Adaptive research and demonstration

Output 2: *"Evaluations and participatory assessments of productivity gains and risk reduction through newly available varieties and management practices in different rice environments.*"

Ind 2.1	• **Indicator / Target**: Evaluations of rice options in different rice environments: target 20 pilot areas.	**Target fully achieved**: • A total of 34 researcher-managed pilot trial demo sites with 16 PVS mother trials (6 monsoon, 6 summer) and 18 BMP / NRM trial demos were established in 12 townships in Ayeyarwady, Mandalay, Magway and Sagaing regions. • A total of 400 farmer-managed Baby trials were established and used to provide data for assessment of yield, etc. • Swarna sub 1 (Ye Myoke Kan Sapa 1) seed totalling 39.5 tons was distributed to 1,360 farmers in flood-prone areas for testing on 1,920 acres: mainly in Ayeyarwady, Bago and Yangon regions. . • Results have been analysed and discussed at workshops with DOA / DAR and NGO IP staff. • 5 monsoon varieties and 6 dry season varieties selected by farmers from Mother Trials (Annex 8). • 2 monsoon and 2 dry season varieties sent to National Seed Committee for registration during project (Annex 8). • 1 monsoon and 2 dry season varieties released by National Seed Committee during project. • DOA, DAR and IPs aware of adaptive PVS processes and methods.	**1**
Ind 2.2	• **Indicator / Target**: Number of benchmark farm data sets collected: Target 150 in 2013 and 100 in 2014.	**Target fully achieved**: • 400 benchmark farm datasets; 128 standard crop information interviews, township interviews, and NRM surveys undertaken in areas across eight townships: also 98 field data sheets (collected for Swarna-Sub 1	**1**
Ind 2.3	• **Indicator / Target**: 20 pilot areas across 7 townships.	**Target fully achieved and exceeded**: • This is covered by Ind -2.1 above.	**1**
Ind 2.4	• **Indicator / Target**: 250 household studies:	**Target mostly achieved**: • This is strongly related to Ind 2.2 above. • In addition, the baseline and follow up household survey covered 120 HHs for the Delta and a further 120 for the CDZ.	**2**
Ind 2.5	• **Indicator / Target**: Domain, crop and HH data integrated.	**Target fully achieved**: • Covered by Output 1.	**1**

***Note**: More complete details in Annex 4.*

Figure 4: Location of IRRI A and B project sites



This Output was very similar to Output 1 for IRRI A as described in Section 3.1.1 and 3.1.2 and generally followed the same adaptive participatory research approaches and methodologies. The aim was to test, validate and demonstrate new rice varieties and improved management practices, in order to identify appropriate varieties and management practices under farmer conditions in the Dry Zone, and support extension. The information generated would also be used to improve the definition of the recommendation domains and develop improved recommendations for extension.

The Output was more or less fully achieved in terms of the indicators and targets. The Output, indicators and targets were not clearly expressed however in the logframe and project document and some targets were too low. A more detailed explanation of achievement is presented below.

Adaptive research and demonstration for improved varieties through PVS:

Variety selection and demonstration more or less followed the IRRI "Participatory Varietal Selection" (PVS) approach and methodology as outlined in Section 3.1.1. A total of 16 researcher-managed Mother trials were established with 8 for monsoon rice and 8 for summer rice. A total of 400 baby trials were carried out with 342 for monsoon rice and 58 for summer rice.

Five monsoon varieties and six dry season varieties were selected by farmers from mother trials. The data generated from the mother and baby trials was fed into the national varietal selection process and the development of improved recommendations. During the project, two monsoon and two dry season varieties sent to National Seed Committee for registration, and one monsoon and two dry season varieties were released by National Seed Committee (see Annex 8). Adoption is discussed in Section 4.1.

Although the PVS approach was followed in principle, it was not followed as systematically as specified in the IRRI guideline (Paris et al, 2011) or as implemented in IRRI A. Farmers in some villages had been involved in baby trials when no-one from the village had been involved in a mother trial. There had been some villages when the project had stated with baby trials at the same time as a mother trial. The baby trial varieties were of course based on selections made elsewhere, but the farmers had not had the opportunity to see and evaluate these (e.g. in the farmer Preference Assessment of Sensory Evaluation field days). In some cases, there had been no mother trials within easy access. This had some effect on their level of understanding. The main reasons provided by the project were (1) delays from waiting to use the basic mapping of stress zones to select contrasting sites for trials (this work took longer than expected) and (2) delays in recruitment of the full time field supervisor.

Adaptive research and demonstration for improved management

The project established a total of 18 BMP / NRM trial demos in 12 townships in Ayeyarwady, Mandalay, Magway and Sagaing regions. These were the same types of trial as implemented in IRRI A, but with a reduced number of types . There were 2 fertiliser trials, 3 “dry direct seeded rice” (DDSR) trials, 6 “alternate wetting and drying” (AWD) trials and 7 “ integrated best management practices” (IBMP) trials. Trials were generally used as demos, with most having field days.

The IBMP trials in IRRI B was different from that implemented in IRRI A. This had all combinations of farmer management and improved IRRI BMPs for a farmer variety and around 3 new IRRI varieties. This was in essence a cross between the four-factor trial and baby trial under researcher management. Although taking more effort and resources to establish the field days for trials were an effective way to show the benefits of different varieties and management. This was undoubtedly useful to compensate for the sparsity of mother trials in some areas.

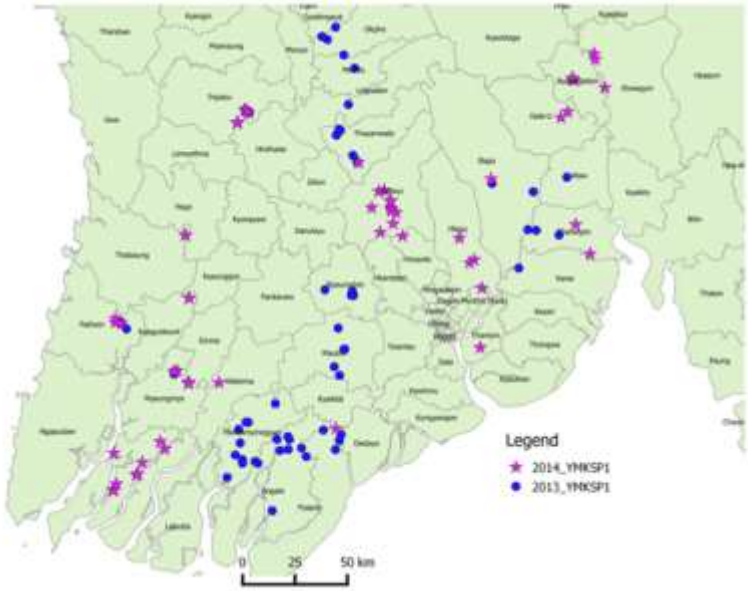
Swarna Sub 1 seed distribution and farmer testing:

Although not part of the original design and workplans, the project worked with the DOA and DAR on a major distribution and testing program for the submergence tolerant rice variety Swarna Sub 1 (Ye Myoke Kan Sapa 1). This seed had apparently been ordered by a previous IRRI-related project and had the strong interest of the DAR and DOA.

A total of 39 tons was distributed to around 1,360 farmers in flood-prone areas for testing on around 1,920 acres. This program was spread widely (beyond the IRRI B project area) and reached 537 villages in 64 townships in the regions of Ayeyarwady, Bago and Yangon.

This was a high-profile program with official launch through the DOA. Most distribution was carried out through the DOA. Data was collected from some farmers by DOA staff, and compiled and analysed by IRRI B. This part of the intervention can be regarded as a trial, while the rest is a straightforward widespread seed distribution program. The effectiveness of the wide distribution (in terms of productivity and adoption) was not monitored and therefore not known. This was an opportunistic intervention on the part of the project.

Figure 5: Distribution of Swarna- sub 1 during 2013 and 2014



Seed production and other free distribution:

A total of 67 tons of seed was produced by IRRI B during the project with most produced in 2014 (16.6) and 2015 (29.4). Around 39 tons of this was for the Swarna sub 1 distribution program (as above), leaving 28 tons for the PVS mother and baby trials and BMP / NRM demo trials.

As well as the 400 or so farmers who had baby trials that generated data and would therefore be considered as proper (baby) trials, an additional 800 or so received free seed to test on their own. This would be in a similar format to the proper baby trial but was not monitored and generated no data for the project. The effectiveness of this is not clear.

Conclusions on adaptive research and demonstrating for IRRI B

The less systematic approach to the mother and baby trial programme for IRRI B could be expected to reduce its effectiveness. The ET had a sense of this during the FGDs but could not find any definite connection. There appear to be a number of possible reasons for following this approach:

- The project had only two monsoon and two summer seasons compared to three of each for IRRI A. IRRI B did not start until late in 2012 and was not able to mobilise its field research until the 2013 monsoon. Two seasons is the absolute minimum for a single mother to baby trial sequence, and wide coverage of mother trials was not possible in the first year. The overall varietal selection process is of course much longer and both project could only covered a part of this.

- IRRI B was much more widely spread than IRRI A as clearly seen in Figure 4. This makes it more difficult for the mother trial to provide sufficient coverage. At the same time, it could be argued that the baby trials were too widely spread.

- The Dry Zone has great variety in agro-eco systems and highly variable rainfall. Rainfed farming is a gamble. If rain is to low, farmers will switch crops in mid-season e.g. from rice to pulses. Unusual years will adversely affect trials and varietal selection is more difficult and likely to take longer. The variability also makes it more difficult to make clear recommendations for “recommendation domains”. It may also take longer for farmers to adopt.

- The project worked mostly through the DOA. With its strong influence, IRRI was able to quickly mobilise staff and establish trials (especially baby trials) over a wide area. A possible downside could be a drop in the level of coordination in some areas.

The project design emphasised the importance of developing “recommendation domains” to support the targeting of appropriate technology options, and put less emphasis than IRRI A on adaptive research. The implication appears to have been that improved varieties and management practices were available. The Dry Zone however has different characteristics, and the project, quite rightly, focused on significant adaptive research to validate the available varieties and management practices. The initial focus on the spatial analysis and GIS mapping however appears to have reduced the effort that could be put initially on the adaptive research.

Participation in the Swarna Sub 1 program was undoubtedly a drain on project resources. The farmer trial part of that program that generated data and results was a useful contribution. The usefulness of the wider distribution of seed is not known

For similar reasons, the usefulness of the wide distribution of the new varieties by IRRI B (regarded by the project as baby trials) is also questionable. Such seed distribution should be

done with a clear strategy that is linked to a sound seed multiplication strategy, with both linked programs having adequate monitoring.

IRRI B easily achieved and surpassed all its important logframe targets. These however did not cover all aspects of the adaptive research work needed. There were some shortcomings in the implementation of the PVS mother and baby trial sequence, although the impact of this was not clear.

The project duration was too short.

The ultimate test of this work is the adoption of new varieties and practices by farmers, and the incorporation of improved research and extension methods as well as the new varieties and recommendation into the work of the DOA, DAR and other partners. This is discussed further in section 4.

3.2.3 Output 3: Extension and training materials and capacity

Output 3: *"Guidelines for technology assessment and better targeting of rice varieties and management options prepared and disseminated.*"

The logframe indicators for Output 3 refer to three different types of "guideline". These are not clearly distinct and have been interpreted by the ET as below.

- Indicator 3.1 is interpreted as covering guidelines for technology targeting (how to target different farmers with appropriate recommendations to "fast track" dissemination). Exactly what is needed to do this is not clear however and has not been specified by the project.
- Indicator 3.2 is clearly specified as covering only the technology profiles or "Fact Sheets" that specify and describe the technologies that can be recommended for different recommendation domains. These "technology profiles" are also guidelines.
- Indicator 3 is interpreted as covering the training course curricula, trainer guidelines and training material for the different courses needed to support technology targeting by different stakeholders.

Output 3 is strongly related to building capacity, and only capacity building for GIS is covered elsewhere (under Output 1). A new indicator has therefore been added by the ET to show the large amount of training and human resources development supported by the project.

Ind 3.1	• **Indicator / Target**: Guidelines for technology options, and targeting approaches to fast-track dissemination:	**Target partly achieved**: • Guidelines for technology targeting have not yet been prepared, • The main tools have been prepared and provide the starting point for technology targeting: (1) crop system maps, (2) stress zone maps, (3) recommendation domains maps, (4) document describing recommendation domains and (5) the full set of "Fact Sheets". • . Discussions on approaches have been held with stakeholders. • This work will continue to be a major part of the project activities to the end of project.	**3**
Ind 3.2	• **Indicator / Target**: 6 technology profiles / fact sheets available for management and variety options for CDZ and Delta.	**Target fully achieved**: • 7 "Fact Sheets" or extension guides prepared in a participatory way with stakeholders: pending approval by DAR. Very concise (one A3 sheet or poster) and not easily used. Need to make them more digestible for users.	**1**
Ind 3.3	• **Indicator / Target**: 6 (trainer) guidelines and training curriculum for technology targeting in CDZ and Delta.	**Target partly achieved**: • One training course on "technology targeting in the rice environments of Ayeyarwady delta and Central Dry Zone of Myanmar" has been prepared. • This is not the most relevant area and other training courses are needed to support practical technology targeting. • The indicator was therefore assessed as only partly achieved. This work will be continued.	**3**

New	• **NEW Indicator**: Number of trainings and people trained (M/F) to build capacity of farmers, extension and research staff of different organisations.	**No target set: Adequately covered**: • Around 1,500 (31% F) farmers, government (DOA, DAR and YAU), NGO, private sector, and IRRI people trained (some received more than one training) in 95 training events.	**1**

Technical guidelines and tools:

Guidelines for technology targeting and dissemination of "best bet" technology options (varieties and BMPs) to target farmers in different areas (using recommendation domains) were supposed to be produced under this Output, The project plans to produce these by November. The project has held discussions with key stakeholders to develop approaches for technology targeting etc, but the guidelines have not been produced. The project had produced the main tools that provide the starting point for targeting: (1) cropping systems maps, (2) stress zone maps, (3) recommendation domain maps, (4) document describing recommendation domains and (5) the full set of technology "Fact Sheets". The specific guidelines (based on these tools) have however not yet been produced. The project plans to prepare whatever is needed by the end of the project.

The project has also produced seven "fact sheets" (target six) or "technology profiles" that specify and describe the technologies that can be recommended for different recommendation domains. These are waiting DOA approval. These were prepared through participatory workshops with stakeholders. The list of fact sheets and the key characteristics of the recommendation domains to which they apply are presented in Table 5.

Table 5: List of fact sheets and key characteristics of recommendation domains

No.	Fact Sheet Name	Zone	Stress environment	Season	Planting method
1	Integrated management practices for Submergence Prone environments.	Any	Submergence prone	Monsoon	
2	Integrated management practices for Saline Prone environments of Ayeyarwady Delta and coastal regions: Monsoon rice.	Delta & Coastal	Saline Prone	Monsoon	
3	Integrated management practices for Saline Prone environments of Ayeyarwady Delta and coastal regions: Summer rice.	Delta & Coastal	Saline Prone	Summer	
4	Integrated management practices for Dry Seeded rice in Drought Prone environments, Dry Zone: Monsoon rice.	Dry Zone	Drought prone	Monsoon	Dry Seeded
5	Integrated management practices for Transplanted rice in Drought Prone environments, Dry Zone: Monsoon / Summer rice.	Dry Zone	Drought prone	Monsoon / Summer	Trans-planted
6	Integrated management practices for Transplanted rice in Favourable areas, Dry Zone: Monsoon / Summer rice.	Dry Zone	Favourable	Monsoon / Summer	Trans-planted
7	Integrated management practices for Alkaline Prone environments, Dry Zone: Summer / Monsoon rice.	Dry Zone	Alkaline prone	Monsoon / Summer	

These fact sheets are very concise and information dense sheets on one A3 sheet or poster, and they are not easily used. Once approved, there will be need to make them more digestible for users. This should probably be in the form of a small guideline which could also be used as training material. Different formats in the appropriate language should be prepared for farmers and extension workers.

Training course curricula, training material and trainer guidelines:

The project is supposed to produce training course curricula, trainer guidelines and training material for the different courses needed to support technology targeting by different stakeholders. The logframe target is “six guidelines for options x stress targeting in Delta and CDZ”. What the six should cover is not specified.

The project has produced draft trainer guidelines and curriculum (document) and training material (CD) for one training course on “technology targeting in the rice environments of Ayeyarwady delta and Central Dry Zone of Myanmar”.

This is aimed at teaching staff in extension services and local universities and covers details of how IRRI B was carried out: PVS, BMP trials, remote sensing, GIS and mapping, etc. The ET feel that this is not the most relevant subject area according to the objective of training people to improve technology targeting in a practical way on the ground, and the remote sensing, analysis and mapping work has already been done to produce recommendation domains. Other training courses will therefore be needed to support research and extension staff in a practical way to improve their development and extension of improved technologies to target farmers in different areas.

Training provided:

The IRRI B logframe only covered training for GIS and this was under Output 1. There is need to cover other capacity building and the training provided. This new indicator was therefore added. No target was set.

Around 1,500 (31% F) farmers, government (DOA, DAR and YAU), NGO, private sector, and IRRI people have received some kind of training (some received more than one training) in 68 training events. Ten of these were more significant training of more than one day.

4 DEVELOPMENTAL CHANGES, SUSTAINABILITY AND EFFECTIVENESS

4.1 Adoption of new varieties and management practices by farmers

Change in farming practices of the collaborating farmers through adoption of improved varieties and management practices is an explicit part of the purpose of IRRI A, and implied as part of the purpose of IRRI B. This is shown clearly in the combined "Theory of Change " diagram for both projects (Figure 3). Adoption by other farmers should come through extension and is largely beyond the scope of these projects. The following draws much on the findings of the FGD and key person interviews carried out for this evaluation, as well as project reports and data.

Learning by collaborating farmers:

The majority of the farmers met in most villages showed a high level of interest and a fairly sophisticated understanding of what they had been doing they had learnt a great deal and greatly appreciated the experience. Several mentioned that the work had been demanding in terms of time and effort, but had been well worth doing. They had now adopted some new practices that they had been told about before (e.g. by the DOA or IP extension staff) but never fully appreciated.

In one or two of the villages visited however, the group appeared to be much less motivated, and less willing to learn about and adopt new practices. This appeared to depend on group dynamics as well as the perceived availability of resources and opportunities to improve.

This high level of learning appears to have been generated through a combination of (1) practical learning-by-doing, (2) careful testing with measurement and records, (3) frequent access to and consultation with knowledgeable extension and researcher workers, and (4) discussion with fellow farmers engaged in similar testing. Most farmers appeared to have understood the research and applied their own critical thinking to this. This had enabled many of them to fully appreciate and "internalise" the knowledge gained. This contrasts with more common levels of learning generated through ordinary extension "teaching". The farmers referred to this as "just talking". Farmers had appreciated the high quality of the support and guidance received, and the work they had done. Several farmers who had participated in the one-week residential trainings on integrated crop management and quality seed production had spoken very highly of the usefulness of these courses.

The farmers met were sometimes but mostly not part of organised groups. The frequent follow up visits, shared interest in the work and joint participation in e.g. field days seemed however to have generated a degree of sharing of information and ideas among at least some members.

Adoption of new varieties by collaborating farmers:

Farmers had selected a total of 29 different varieties for testing in the baby trials. This comprised a total of 12 monsoon and 10 summer varieties in the Delta, and 5 monsoon and 6 summer varieties in the CDZ (Annex 8). Continuing to grow even a small area of these varieties after the baby trials is considered as initial adoption. The late start for IRRI B means that some villages have not yet had a season after the baby trial to plant on their own. The project's household endline survey has asked questions about adoption but the results are not yet out. The FGDs for this evaluation therefore looked at adoption in some detail, although with all the limitations of the methodology (non-statistical sample, wide-ranging discussions, limited time, etc).

The ET found that there had been definite and significant adoption of IRRI varieties, with around half of the collaborating farmers interviewed (77 out of 165) reporting that they had continued (or definitely planned) to grow one or more IRRI varieties on at least a small area. The level of adoption however varied markedly from village to village and from farmer to farmer. Of the 12 village FGDs met, two had had significant adoption by almost all farmers, while another two had had no or almost no adoption. Three FGDs had some farmers who had planned to plant new varieties but the season after the baby trial had not yet started. In the remaining 7 FGDs, only one or two farmers had adopted, while in others it was closer to half. Most farmers adopting had planted relatively small areas to the new varieties, but some had planted a large proportion of their land to the new variety. The groups reported very limited adoption of a small number of varieties beyond the group of collaborating farmers. There had been interest in some varieties but shortage of seed (since the varieties are new).

Table 6 shows the number of farmers who had adopted different monsoon and summer varieties from all the 12 village FGDs. This is not statistically valid but gives an indication of the different varieties being adopted and the level of adoption. The most popular varieties were Sin Thu Ka, SalTol Sin Htwe Latt and Shwe Pyi Htay for the monsoon season and IR 10T 107 and 108 for the summer / dry season. The highest number adopting any one variety was 33. The total number of farmers in the FGDs was 182.

Table 6: Number of farmers from FGDs adopting different varieties

S2	Varieties adopted	Variety status	No of villages	No. of FGD farmers	
				Adopting	in FGD
	Monsoon rice crop:				
1	SalTol Sin Htwe Latt	Released 2013	8	33	70
2	Sin Thu Ka	Released 2007	7	28	59
3	Shwe Pyi Htay	Released 2007	5	19	52
4	IR 87705-44-4-B	Sent for Registration	1	4	15
5	IR 87707-446-B-B-B	Released 2015	2	3	19
6	IR 10T 107	Released 2015	2	3	19
	Summer rice crop:				
1	IR 10T 107	Released 2015	7	31	74
2	IR 10T 108	Sent for Registration	5	19	60
3	Salinas 12	New for testing	2	7	15
4	IR 10T 111	Sent for Registration	3	6	34
5	IR 10T 109	Sent for Registration	3	6	34
6	CSR 36	Released 2015	2	5	24
7	Shwe Pyi Htay	Released 2007	2	4	17
8	Sin Thu Ka	Released 2007	1	3	5
9	BR28-Saltol	New for testing	1	1	6

***Source**: Field work for this evaluation.*
***Notes**: Total no. of village FGDs: 12. Total no. of farmers met: 182.*

This data indicates also that only 12 of the 29 varieties selected by farmers from the mother trials were actually adopted. The reasons given for or against adoption beyond the baby trials were varied, well founded and often complex. Some farmers said they liked the IRRI high yielding short duration varieties but still wanted long duration varieties for the monsoon. Some reported that the yield of some new varieties may be reduced due to germination in the field if too wet (e.g. SalTol Sin Htwe Latt). Most farmers expressed a high level of interest in new varieties. They need a mix of varieties to spread the labour demand. They also need some shorter duration monsoon varieties to allow time for land preparation for the following summer rice crop. The market had not yet been established for some new varieties so it was difficult to sell. Some farmers therefore grew the higher yielding new varieties for food so they could put more land under the very popular Pawsin varieties for sale (much higher price).

Adoption of improved management (BMP / NRM) practices by collaborating farmers:

Around 90% of farmers in the FGDs reported that they had adopted one or more of the improved management practices or new varieties being promoted by the projects. The single most important or useful things they reported as adopted are listed in Table 7 (some farmers mentioned two and occasionally three things).

Table 7: Single most important / useful things adopted by FGD farmers

No.	Single most important / useful thing (or two) adopted	No. of farmers	No. female	% of respondents
1	Fertiliser management.	41	9	33%
2	Raised seedbed / Seedbed management	40	6	33%
3	New varieties	32	13	26%
4	Drum seeder	16	3	13%
5	Land levelling	14	3	11%
6	Hand / line transplanting.	11	2	9%
7	Weed management / herbicides	11	2	9%
8	Use good quality seed.	9	4	7%
9	Seed selection using salt water.	7	1	6%
10	IPM / Pest monitoring / identification / control.	5	0	4%
11	Dry Direct Seeded Rice (DDSR)	4	0	3%
12	Quality seed multiplication	2	0	2%
13	Use less seed / Seed rate / Plant spacing	2	0	2%
14	Right-time harvesting	1	0	1%
15	Soil testing.	1	0	1%
16	Water management.	1	0	1%
	Overall:			
	Total No of respondents from the FGDs	123	25	100%
	Number of farmers who had adopted something.	109	22	89%
	Number of farmers who had adopted NOTHING	14	3	11%

***Source**: Field work for this evaluation.*

It was surprising that some of these things were not new and had been promoted by NGOs and the DOA previously. Farmers explained however that they had known about such practices before, but had not adopted until now because they had not been convinced: “they were only talking”. Farmers emphasised the value of learning by doing and learning by testing that they had experienced with the project. They were also impressed by the usefulness of the improved management practices demonstrated with some remarking that they had not known their own varieties could grow so well. Some farmers mentioned that they really valued this in depth practical kind of knowledge since it was very hard to get. Some also mentioned rather surprisingly that they valued the knowledge about management practices more than knowledge about new varieties. This was because it was relatively easy to learn about new varieties from other farmers once they were out, but hard to get real knowledge and understanding about BMPs.

Some farmers also mentioned that although they now really understood the different BMPs and would like to adopt them, they could not do so because they were too costly or they did not have enough labour. It is clear nevertheless that almost all farmers had adopted something. It is clear also that the systematic and rigorous on-farm demonstration and PVS processes had been very useful in this.

Adoption of improved Post-harvest practices:

As discussed in section 3.1.4, significant sustainable change has not yet been achieved in the supply chains for post-harvest equipment or the adoption of improved post-harvest practices.

The difficulty of achieving such change was underestimated and probably beyond the realistic scope of the project.

Conclusions on adoption and the PVS and BMP / NRM processes:

The PVS approach and methodology is systematic, thorough, methodologically robust, well documented and fairly widely understood. It was much appreciated by farmers, especially for its learning, and also by many extension workers (see below). The mother trial process provided an objective and transparent way for farmers to select potential varieties. Given the complexity of the farmers' decisions making process for adoption, it is understandable that only a proportion of those selected for the baby trials was subsequently selected by farmers for adoption. Adoption is not usually spontaneous and is usually led by a small number of the more innovative early adopters. Others may be expected to follow later (although the early adopters may be the better off farmers).

The complete PVS process (see section 3.1.1) would continue beyond the baby trials stage with further stages for scaling up and out, and technology tracking and assessment. This would include a seed multiplication component and could also address issues such as the development of markets for the new varieties. The design of the IRRI A and B projects does not include these activities directly but through development of capacity for the (IP and government) extension and research services. The project did add in some wider dissemination of seed and training of farmers in quality seed multiplication but this was not well rooted in an overall methodology or framework.

The ET is of the opinion that sufficiently sound and coordinated strategies for seed multiplication and dissemination have not yet been developed. The projects" capacity building work did not include this (beyond the scope of the projects) . IRRI is very well placed to support such work however and recommendations are provided in section 5.3).

The demo trials for BMP / NRM practices was useful for validation and refinement of recommendations, and also very much for learning by the farmers involved.

A key question is whether this level of effort was justified, and whether the same could have been achieved more cheaply with less rigorous approaches. A possibility here would be the use of rigorously implemented "Farmer Field Schools" (FFS). Rigorously implemented means the inclusion of systematic testing of new or refined technologies by farmers. This would require a strengthening of the more usual FFS approach.

Such an approach would not be appropriate for the baby trials since the data from these needs to be of a high standard for analysis to feed into the national variety registration process and decision making about fast-track multiplication of seed. This would also not be appropriate for proper scientific validation of management practices.

A rigorous FFS approach could however be appropriate for wider dissemination of proven seed varieties and BMPs where adoption is proving difficult. The value of learning by doing and testing has been shown by this project. In this regard, the design of such FFS approaches could usefully draw on the experiences of this project.

4.2 Use of mapping and GIS

Section 3.2.1 presents a fairly detailed discussion of the work carried out and achievements made for mapping, development of GIS, recommendation domains and capacity building. The aim of IRRI B was that the DAR / DOA and selected NGO IPs should be using GIS-based tools to target options for improved livelihoods. In other words, they should have functioning GIS capacity. It is clear from section 3.2.1 that while capacity has been improved, functioning units or people have not been made operational.

The difficulty of achieving such change was underestimated and almost certainly beyond the realistic scope of the project. It is important to build on and add value to the major piece of work done to produce the GIS maps, and develop functioning systems. If this is not done, much of the potential value of the work done will be lost. Recommendation is made to this effect in section 5.3.

4.3 Improved NGO IP extension systems / services

Improved capacity of partners is a key objective for both the IRRI A and the IRRI B projects at the output and purpose levels respectively. Improved functioning of extension systems is included in the indicators for IRRI A but not for IRRI B. Well-functioning extension systems of the NGO partners (and DOA) are high-level objectives required for the extension of the improved varieties and BMPs to other farmers beyond those collaborating with the project (see the "Theory of Change" in Figure 3). This applies mostly to the core IPs working with IRRI A rather than the IRRI A or B supporting IPs. This is therefore one of the key developmental changes that the project should have achieved, at least to some degree.

The main improvements to the capacity and extension services provided were found to be[5]:

- The individuals working directly with the projects had learned a great deal from their involvement in the more systematic and rigorous approaches of the project, with access to high quality support from national and international experts, and occasional training. These staff were mostly the agronomists employed or assigned for the project. These will mostly leave the IPs at the end of their contracts.
- Other IP staff were also invited to and benefited from a number of field days and trainings.
- Selected new varieties, post-harvest technologies and recommendations that became available were also incorporated into extension and training courses by the individuals involved. Some IPs adjusted their training curriculum to include, e.g. post-harvest technologies.

Broader and more strategic review and improvement of IP extension systems to include improved targeting of extension recommendations and training, use of adaptive demonstrations, more sustainable quality seed production systems, more organised seed dissemination systems, etc would have been possible from deeper collaboration with IRRI but were not carried out. There are several possible reasons for this:

- Neither the IRRI staff nor the IPs met appeared to have fully appreciated the importance of improving the functioning of the IP extension systems, and the possibilities for doing this. IPs tended to see their role as providing support to the IRRI project rather than improving their extension system.
- IRRI saw their function as limited to the development of new varieties and BMPs and the related recommendations and training material that IPs should adopt.
- IPs generally did not see much need to change their extension system or services. These are in any case provided through projects and cannot be changed easily in mid-stream.
- The major outputs in terms of new varieties, fact sheet guidelines, GIS maps etc did not come until towards the end of the projects.

The ET regards this as something of a lost opportunity. Closer inter-institutional and inter-personal collaboration could have had significant spin-off benefits. It may be however that collaboration was closer at the start but was disrupted by staff turnover.

[5] This discussion draws much on the findings of the interviews with IPs and IRRI staff carried out for this evaluation, as well as project reports and data. Unfortunately the ET was only able to meet a few IPs and not always the senior personnel, since several IPs had already completed their LIFT-supported projects, and offices had been closed and staff dispersed.

This was discussed with IPs and one suggestion was that this needed to be better recognised and endorsed at a high level in each institution. A full-time in-country manager may also have provided better continuity and support (see also section 2.2). This should facilitate a culture of lower-level collaboration and cross-learning. Some IPs had actually felt however that IRRI had not shared information sufficiently well. All IPs met who had been involved in the data collection for baby trials said that this had been too demanding.

It should be noted in concluding this discussion that the notion of improving IP extension systems and services is something of a challenge. NGO IPs do not have long-lasting extension systems. They generally establish project systems that provide short or medium term extension services as part of and in accordance with the requirements of specific projects that are funded (e.g. by LIFT). IPs often build community capacity for mutual support and sometimes support private sector advisory services. At the end of the project however, the project systems come to an end and the staff (with their individual capacities) disperse. This was observed directly by the ET as a constraint on meeting several of the IPs.

Sustainable improvement to IP extension systems and services requires specific action. One approach would be to incorporate Improved extension designs into the projects that IPs implement, by IP changing its underlying approaches at a high level in the institution so that these are built into project systems and / or influencing project design directly, Another more fundamental but challenging approach would be for the MoAI, regions and townships to develop and provide policy support for sound coordinated systems that work in harmony with the systems of the DOA / DAR and local governance. IP-implemented projects would then key into and support development of these. This idea is incorporated into recommendations for development of unified quality seed production and dissemination systems in section 5.3.

4.4 Improved DOA / DAR systems / services

Improvement of DOA extension and some DAR rice research and seed flow[6] functions are important developmental changes that are needed in order to reach other farmers beyond those collaborating with the project (see the "Theory of Change" in Figure 3). The DOA and DAR were core partners for IRRI B and the IRRI B purpose focuses on capacity for rice extension. This therefore mostly concerns IRRI B, but also IRRI A to some extent.

Department of Agriculture (DOA):

Project collaboration was mostly with the township office but also with the District and Regional offices. The township office is the focus for DOA extension. Townships have significant numbers of degree or diploma staff (e.g. 20 to 30) who are mostly field based. Townships are organised into zones (e.g. around 4) with Extension and Education Centres (not all with physical facilities) and Village Tracts as the local focus for extension. Staff support quality seed production and extension. Certified or quality seed production focuses on DOA Seed Farms, "contact farmers", and the "100 acre" seed production demos. Extension tends to be ad hoc since resources and very limited. The organisation and capacity of the system appears to have been improving, and the IRRI projects supported this in a small way.

The main improvements to the capacity and extension services that appear to have been generated by the project were found to be:

[6] "Seed flow" refers to the production of certified seed for sale to farmers. This moves from "breeder" seed (produced by DAR) to "foundation" seed (previously produced exclusively by DAR, but now also by DOA seed farms) to "registered" seed (previously produced exclusively by DAR, but now also by DOA seed farms) to "certified: seed (produced by DOA directly on its seed farms or by recognised "contact farmers").

- The individuals involved in adaptive research, GIS mapping and other project activities had learned a great deal from this collaboration. Several staff mentioned how much they had appreciated the more rigorous approach and "doing things properly". They felt this had improved their confidence, and farmers had also become more confident and easier to mobilise.
- The improved varieties and some new management recommendations had been incorporated into DOA training and extension programmes by the individuals who had been involved in the project (mostly at DOA Township level).
- The DOA liked some aspects of the PVS approach (e.g. adaptive trials) and would like to incorporate some parts into its work but lacked the resources and had not yet done this.

Department Agricultural Research (DAR):

Selection, breeding, testing and approval of new seed varieties and production of breeder, foundation and registered seed are key functions of the DAR that are of relevance for improving rice productivity and the IRRI projects. The DAR has a strong and well qualified body of staff, but is constrained by financial resources for research and operations.

The projects worked closely with the DAR at the highest level and staff were seconded (one full time to LIFT A) to work with the project. The project also invited a number of DAR staff on different types of training.

The project did not aim to make any system or developmental improvements for the DAR except perhaps to establish some GIS functionality. The project has however made some useful contributions as summarised below.

- The capacity of some Individual staff has improved through learning on the job and more formal training.
- The DAR has learnt about the PVS methodology (this was new to them) and appreciated how the project approach has been able to short cut the varietal selection and testing process. The time from identification to approval by the National Seed Committee and official release has been reduced by some years. They would like to follow this but do not have the resources.
- No significant GIS functionality has been generated as discussed in section 3.2.1.

Improved Seed Flow system[6]:

The project did not include making specific improvements to the seed flow system. The project did not have an adequate plan for sustainable multiplication of quality seed. The training of seed farm staff can however be expected to have improved the capacity of seed farms

Improvements in the seed flow system from capturing (or estimating) demand to production to dissemination are very much needed in order to speed up the availability, particularly of newly identified seed. The system is still rather ad hoc, and lags behind demand because it relies on specific orders. There is much scope for improvement and this should be relatively easy if coordination can be improved. A recommendation is made to do further work in this (section 5.3).

Both the DAR and the DOA expressed concern that some farmers had multiplied some of the not-yet-released varieties used for the PVS baby trials and provided seed to other farmers. in some cases, new local names had developed. This was considered as potentially confusing if not harmful, and contrary to the seed law. These concerns of the DAR / DOA will need to be addressed if the fast-track varietal selection and release process developed through the projects is to be continued.

Improved linkages between research and extension:

The DOA and DAR actually work quite closely. The DOA also has seed farms and is part of the seed flow system. The DOA actually has some research responsibilities since the DAR does not have staff in the different farming areas.

The project worked very closely with both the DOA and the DAR, as well as a number of IPs. This may have had some spillover effects in improving linkages but the ET did not assess this. There were no specific project tasks for improving such linkages.

4.5 Gender mainstreaming

The project made a concerted effort to include and engage females in the PVS training and their assessment of the varieties. The design of the PVS trials specifically included gender mainstreaming. The project established separate reporting and feedback routes through male and female members of each village where the trials were established. A gender perspective was included in all surveys and data collection. The M&E data was disaggregated by gender. The FGD discussions did not reveal any major issues. All FGDs asked specifically if they felt that women had been adequately involved, responded positively (although the groups were only 27% women), and some groups said this had been "more than enough".

4.6 Unplanned or unintended impacts / consequences

A number of problems were found during the implementation of the field work. The strong communication / networking and collaborative work ethic of IRRI, plus its ability to access or mobilise quite high level capacity, enabled a number of these to be resolved. These included:

- When the quality of the seed from the DOA / DAR seed farms was found to be inadequate, the projects carried out targeted training of DOA and DAR staff in 2013 and 2014. This resolved the issue.
- Some farmers had complained about the deteriorating quality of their own variety. The project was able to clean and multiply high quality seed of these local varieties for farmers.
- Farmers in several places also complained about the multiplicity of different herbicides with unhelpful or misleading labelling. IRRI was able to organise to test all herbicides and make clear recommendation on those which were effective.
- The project was also able to access senior staff of different specialisations in order to properly analyse and understand and make recommendations for some quite complex farmer problems relating to e.g. soil, pests and diseases, etc.
- The project also contributed technical input to support the MoAI on developing the "Myanmar Rice Sector Development Strategy".

This ability and flexibility of the project to recognise, access the resources and solve farmers' problems was seen as a strength of the project and a lesson learned.

No unintended negative impacts were observed apart from the concerns of the DOA / DAR about farmer multiplication, dissemination and renaming of new varieties that had not yet been officially released. When asked about any negative effects of the project, several FGDs mentioned that the demo-trials had taken much of their time; but they all then said that it had been worth it. This was seen as a positive indication of the interest generated by this kind of high quality adaptive participatory research.

4.7 Overall effectiveness of the two projects

Both projects appear likely to achieve most of their purpose-level logframe targets (Annex 4) although IRRI B will fall short on GIS tools being in use (probably over optimistic). The purpose

indicators and targets however do not adequately reflect the crucial developmental changes relating to improved extension and seed services that are needed to achieve spread of the new varieties and BMPs beyond the collaborating farmers (in line with the underlying theory of change). The projects have provided much training and the capacities of individuals have improved. This has not as yet translated into much system or change as explained above. Both projects are therefore judged as effective in terms of achieving their respective purposes, but there are shortcomings with regard to sustainability and uptake by other farmers.

4.8 Value for Money

The length of time needed for field work to assess implementation and adoption etc (due in part to the lack of the projects' household, etc surveys) and compilation of implementation and indicator data, left insufficient time to assess the financial value of benefits compared to costs or derive any other value for money" (VFM) indicators. Valuation of relatively intangible public good benefits such as improved varieties, knowledge of management practices and extension capacity would also have been difficult. The following therefore presents some key points relating to the likely value for money of the projects as understood by the ET.

The Budget and Expenditure Summary tables (to the end of 2014) in Annex 6 show that the main cost driver for both IRRI A and B was international technical staff salaries. The budget for human resources was about the same as that for programme costs at just over 40% of the total (for both IRRI A and B). Office / administration costs were just over 10% of the total budget. The proportions of funding going for international and national salaries does not seem excessive, particularly considering the knowledge generation nature of the two projects, and the need for and use of international staff. The use of international-level expertise appears to be entirely justified. Overall office / administration costs at just over 10% of the total budget also seems to be modest and justified.

The rate of expenditure at the end of 2014 compared to the total budget appears to be on track for IRRI A (77% of the budget used in 79% of the time), but lagging behind for IRRI B (46% of the budget used in 72% of the time). the shortfall in IRRI B at that time was mainly related to "programme costs". IRRI B felt that much of this was due to the inability to pay funds directly to the DOA / DAR.

Both projects appear to have achieved their planned logframe targets within budget (IRRI A) or below budget (IRRI B).

The value of the outputs and benefits generated by the project is difficult to determine due to the nature of the outputs as public goods (new varieties, knowledge of improved management, capacity of extension services, etc). The measurable value of benefits is not generated until these outputs are accessed by large numbers of people who thereby improve their productivity and income. The ET team found definite signs of significant adoption by the collaborating farmers and improved capacity of the individuals providing extension. The ET therefore feel that project outputs are likely to generate significant future benefits that will be high compared to the cost. This is more likely to be the case if the recommended follow up work is supported (see section 5.3.2).

Through collaboration with multiple partners and in particular, the DOA and DAR, the project was able to "leverage" additional resources in terms of manpower, office space, knowledge and networks. A classic example would be the miniscule costs needed to support two M.Sc. students (met by the ET) at Yezin Agricultural University. The project paid only the research costs, and the research was of benefit for the project as well as the students.

Considering these various factors, the ET feels that both projects are likely to have been good value for money.

5 CONCLUSIONS, LESSONS LEARNED AND RECOMMENDATIONS

5.1 Overall Conclusions

Both the IRRI A (Delta) and the IRRI B (CDZ and Delta) are considered to be strong, well implemented and successful projects. Although separate projects, they followed the same two-pronged approach of adaptive participatory research and demonstration that improved farmers' rice productivity and income, and building extension capacity to improve dissemination. IRRI B used remote sensing and GIS technology to develop recommendation domain maps to improve targeting and fast track key research and extension functions. IRRI B started a few months after IRRI A, but they worked closely together and will hold a joint final workshop in September, shortly before ending (IRRI A in September and IRRI B in November 2015).

Relevance: Both IRRI A and IRRI B were considered as highly relevant in terms of their objectives, and the collaborative multi-stakeholder design and implementation. The programme design and logframes would have benefited however from greater clarity and recognition of the common developmental changes desired by the two projects with indicators that better reflected the underlying theory of change that was common to both projects.

Achievement of planned results: Both projects followed the logframes and achieved almost all of their planned output targets and milestones. Both projects demonstrated high technical quality in several demanding and challenging tasks (PVS mother and baby trials, BMP / NRM trials, data collection and analysis, GIS mapping). A number of improved varieties and management practices have been identified and demonstrated. The LIFT IPs, DOA / DAR and farmers have all benefited from a considerable amount of training, as well as very valuable learning by doing IRRI B has in addition prepared fairly detailed GIS maps of rice cropping systems, stress zones (salinity, flood and drought) and recommendation domains, and comprehensive "Fact Sheets" presenting the variety and management recommendations for the main (7) recommendation domains. IRRI A fell short mainly on the targets for post-harvest supply chains and adoption (that were probably over optimistic). IRRI B has not yet prepared user-friendly guidelines and tools for extension targeting, but plans to do these by the end of the project.

Achievement of purpose: Both projects appear likely to achieve most of their specified purposes although IRRI B will fall short on GIS tools in use (probably over optimistic). The purpose indicators and targets however do not adequately reflect the crucial developmental changes, relating to improved extension and seed services, that the two projects should work towards in order to achieve the underlying theory of change. Both projects are therefore judged as effective in terms of achieving their respective purposes, but there are issues with sustainability and further uptake by other farmers.

Achievement of desired developmental changes: The desired developmental changes are improved functioning of NGO IP extension services and the DOA / DAR extension and seed flow services, and adoption of improved varieties and management practices by a core of collaborating farmers.

The projects have worked closely with NGO IPs (mostly IRRI A) and the DOA and DAR (mostly IRRI B but also IRRI A to some extent) and provided a considerable amount of different types of training. This has generated considerable learning and capacity improvement for those closely involved. The project did not provide support for any institution-level or system improvements (this was not required) which were left to the IPs and DOA / DAR to do themselves. The ET felt that IPs had generally missed an opportunity for deeper collaborative learning with IRRI. It was noted also that the extension approach and services they provide are built around a series of projects and there is no long lasting extension system. The DOA and DAR greatly appreciated

the approach and methodologies for PVS, BMP demo trials and GIS mapping to support research and extension, and the individual involved appears likely to incorporate selected approaches into their work. This lacks an institution-level focus however and the departments have serious constraints with operational funding. The departments however are well endowed with staff and the DOA has a strong long-term presence in rural areas. This represents a good opportunity.

The training and particularly the learning by doing experienced by collaborating farmers has also generated considerable deep learning and good uptake of improved management practices by most collaborating farmers. There appears to have been significant although patchy adoption of a selection of the new varieties identified by a relatively small proportion (estimated at around half) of the early adopter collaborating farmers.

Sustainability and spread: The main concern is for sustainability of the improved capacity of the IPs and DOA / DAR. This capacity includes access to improved varieties, extension guidelines, research results and rice cropping system, stress and recommendation domain maps, but is concentrated mainly in the individuals who were involved with the projects. This will dissipate for the institutions unless it can be institutionalised. One of IRRI's strengths however is the continuity that it will provide through its long term collaboration with DOA / DAR, and the likelihood that LIFT and other IPs will also continue their collaboration IRRI.
Project duration was not really long enough to ensure (1) development and strong adoption of farmer accepted verities, best management packages, and post-harvest technologies with established supply chains, and (2) improved IP and DOA / DAR extension and seed systems and services operating and spreading these benefits to other farmers. This was particularly the case for IRRI B which had only two monsoon and two summer seasons in an area with highly variable rainfall and risk of crop (and research plot) failure. In considering the duration of support from LIFT however, it should be remembered that rice breeding and variety selection to dissemination is a much longer process within which the project had specific objectives of directly relevance for LIFT (i.e. to systematically improve the availability of appropriate rice varieties and management practices for poor farmers, and improve the functioning of extension and seed flow systems).

Need for follow up actions: The above indicates that there is a strong need and very good opportunities for specific follow up actions to build on and consolidate the work of the two projects. These are taken up in the recommendations below.

5.2 Main Lessons Learned of value beyond the projects

1 The type of high quality adaptive participatory research trial demos used in the IRRI projects involving multiple stakeholders proved itself useful to develop extension recommendations and capacity that is useful for farmers and extension staff.
- It can fill the gap between research and extension services and between these and the farmer. This can provide a stronger underlying framework for actions to build livelihoods and food security, even in a fairly short period.
- The need for such support will vary over time as well as geographically and initiatives should be considered for support on a case by case basis.

2 Well implemented adaptive trial demos were found to be particularly effective for learning leading to adoption, as well as for generating research data and demonstration sites.
- Farmers and extension staff implementing the trial demos experienced deep learning from the learning by doing and learning by testing. This convinced farmers to adopt things they had heard about before but never appreciated. Extension staff learnt much and gained in confidence. Although the trials involved much work on the part of the farmers, they said that it was worth it.
- Such trials also stimulated local interest, farmer to farmer discussion and cross

learning: through standing out at prominent accessible places, the regular visits and interest from outside and some public field days.
- High quality work and "doing things properly" were found important to achieve these benefits. This required frequent visits by competent staff who have access to experts to provide the best guidance that farmers have confidence in.
- The trials with clearly different treatments (such as the "four factor" trial) were the best.

3 Investment in high quality, practical, formal training for selected farmers as part of a package of activities that is linked to other activities with wider groups of farmers in the village and that brings leader farmers up to a certain level to help others can be justified.
- The quality seed production training at Myaung Mya seed farm was mentioned by several farmers met: particularly the practical work with all stages of seed production at the same time on one site. The integrated crop management training was also mentioned.
- Once established, such courses should be used repeatedly with batches of farmers. Only three trainings were held at Myaung Mya.

4 New varieties selected by farmers at the PVS mother trials are not necessarily better than their own varieties and may turn out to be unsuitable for various reasons that may not be apparent from the mother trial.
- This is understandable and should be considered as part of the screening and validation process.

5 Truly collaborative networking that can access and connect high-level expertise to ground-level situations, can work well to bring appropriate resources to bear to solve problems.
- The collaborative institutional culture and networking of IRRI and the IRRI project were conducive to strong horizontal and vertical communication and sharing of ideas.
- This was able to identify constraints and opportunities in the field and bring the appropriate expertise to solve the problem or develop the opportunity: e.g.
  - Credible holistic analysis of problems of different farming systems in different agro-eco zones.
  - Review and testing of the many inadequately or misleadingly labelled herbicides on the market to determine which were the most effective and spread this information.

6 The purpose of expensive large area remote sensing and mapping exercises should be clearly established at the beginning, and sufficient to justify the work. The project should include development and operationalisation of the tools needed to make use of the map products and generate the benefits expected. The task is not complete without this. This should not be a technology driven process that just produces beautiful maps. If this really works, then it is relatively easy to scale up the area coverage.

7 The recommendation domain concept in highly variable environments such as the delta and CDZ is a complex concept that needs further work to operationalise it and add value. Once this has shown its worth, it can be applied to other areas.

8 It is important to share results of research in a clear and understandable way with all key stakeholders. This should be done through separate special purpose documents designed according to the research and data to be presented and the intended audience. The progress (e.g. annual) reports or research papers should not be the main means of reporting the research. If good results reports are prepared, the progress / annual reports can be shorter and refer to or annex the research reports.

9 Complementary projects should be designed specifically and explicitly to complement each other, with a clear explanation of how this should be done. The IRRI B design document and logframe made almost no reference to IRRI A and the logframe had a different

purpose and appeared to be completely different. The two projects however followed the same underlying theory of change and had the same approach to adaptive research.

5.3 Main Recommendations

5.3.1 Recommendations for project completion

The following recommendations are made for IRRI A and IRRI B to carry out before the end of the projects as part of project completion.

No	Recommendations for project completion	Section Ref:
1	Develop a more digestible format for presentation of the recommendations for varieties and crop management practices contained in the current "Fact Sheets". This should be aimed at the intended users.	3.2.3
2	Test and adjust the training material for "technology targeting in the rice environments of Ayeyarwady delta and CDZ" training course that has been prepared.	3.2.3
3	Provide the digital map data and guidance on its use to those trained in GIS.	3.2.1
4	Liaise with DOA / DAR on the likely demand for new seed varieties and initiate production.	General

5.3.2 Recommendations to support IRRI follow-up project

The report has mentioned in several places that follow-on work is needed to build on and add value to the work done by the two IRRI projects.

Since agriculture is the main driver of wealth creation in most rural areas and the DOA / DAR are major long-term actors, it makes sense for LIFT to have a stronger engagement with DOA / DAR. One strategy for this can be to support IRRI in purposive collaboration with the DOA / DAR. This can also be linked with the work of other IPs in the field. Such support can provide a good way for LIFT to influence rice-related policy development (e.g. seed flow and promotion and dissemination systems, developing the Myanmar rice sector development strategy, development of policy and strategy for the seed sector, etc).

IRRI has a very strong comparative advantage for all of this work because of its technical capacity, experience and strong connections with the DOA / DAR as well as many IPs and LIFT. This makes IRRI central to and the natural lead for, all these various initiatives. These initiatives can be grouped as components of a single follow on project that LIFT should support with IRRI as the lead partner. For these reasons as well as convenience, transparency and accountability, support should be provided directly to IRRI rather than through another project implemented by an IP. The various recommendations that provide the components of this follow on project are presented below.

No	Recommendation for support to IRRI follow-up project	Section Ref:
1	Develop and establish a **rationalised and unified quality seed production system** that links with and strengthens the DOA system with approved "contact farmers" for quality declared or certified seed. • The DOA has a basic system that can easily be strengthened and expanded.	4.4

No	Recommendation for support to IRRI follow-up project	Section Ref:

	• Many IPs support similar systems that may not link to the DOA for quality and are not coordinated with the DOA or other IPs.
	• This requires:
	  o the optimum number and distribution of QDS farmers in a township (to fulfil the demand but sustain a viable market). The GIS map data can be used for this.
	  o Guidelines and rules for uniformity and quality control.
	  o Use of DOA / DAR expertise for quality assurance.
	  o Links to the DOA / DAR for coordinated supply of registered seed.
	  o Development of high quality training.
	  o Training of DOA / DAR and IP staff.	

2	Develop and establish a **rationalised and unified system for the promotion and spread of new varieties** of seed, that all IPs and the DOA / DAR can feed into. • The network of QDS / "contact" farmers developed for quality seed production can be used together with village tract and village administrators to spread new varieties of seed. This can also be used for broad extension advice, and to provide feedback to the DAO / DAR on demand for different varieties of seed. • This could include local demo trials by the QDS contact framers. • Small promotional amounts of seed could be provided through contact farmers to promote and spread new seed varieties. The amount should be such that they do not destroy the market for the QDS seed producers. • This will require strategy development, guidelines, training material and training.	4.4
3	Develop and introduce **extension and training material** based on explaining and incorporating into extension, the Fact Sheet recommendations and recommendation domains: This will require: • Developing and testing of the recommendation domain and "fast-tracking" concept. • Development of training material. • Training of trainers.	3.2.3

4	**GIS mapping**: Develop and operationalise a system within DOA / DAR for GIS functionality and use of the GIS mapping tools.
	• Tasks and methodologies for using the GIS data generated through IRRI B and other data that may be available will need to be developed. These tasks are likely to include e.g.:
	  o Agricultural planning in general.
	  o Design of optimum seed multiplication system to meet demand according to population and rice cropping system (a classic GIS task).
	  o Seed demand estimation, multiplication and distribution systems.
	  o Targeting of recommendations (using recommendation domains and fast-tracking),
	  o Monitoring pests and disease outbreaks and planning and management of control programs.
	  o Design, planning, management and coordination of agricultural campaigns, seed multiplication and distribution and other programs.
	• Implementation of this initiative is likely to require:
	  o Identify the tasks to be addressed.
	  o Develop, test and prepare guidelines for these.
		3.2.1 and 4.2

No	Recommendation for support to IRRI follow-up project	Section Ref:
	○ Develop training material and support training of the previously trained DOA / DAR staff. Some IP staff may be included. ○ Support operationalisation of functional systems. • This depends on genuine institutional interest from the DOA / DAR indicated by recognising the functions, providing dedicated staff (at least part-time with such tasks included in job descriptions) and computers. Complete and functioning GIS systems need: ○ Trained and competent staff with GIS job functions assigned, and access to technical backup. ○ Tasks with guidelines and thematic knowledge-based backup support. ○ Hardware: normal computers (no large printers) and office space. ○ Software: use free software. ○ Data: from IRRI B and downloaded if internet fast enough.	
5	**Post-harvest and value chain development support**: Several IPs work in this important area but lack the high level of technical understanding that IRRI has demonstrated. This component of the IRRI project received limited attention and was not fully developed, IRRI is very well placed to do this, in partnership with e.g. Myanmar Rice Federation and Rice Traders and Millers Associations (Dr Muir), other private sector enterprises and selected IPs. This will need a more intensive engagement with the private sector than has been the case so far. A facilitation (rather than direct support) approach would be best. It appears that IRRI does not have sufficient experience in this area and may need to engage additional private sector development expertise (another partner?). Support would include Work would include: • Continue to facilitate private sector development of local production of the light thresher and development of private sector led supply chains and dissemination. • Intensify facilitation of private sector led ways to develop, promote and spread the use of hermetic / air tight bags (at least for quality seeds) and other post-harvest technologies. This could link with the network of QDS "contact farmers". • Development of linkages with large millers to develop the market for new varieties, and high quality rice, possibly through collective marketing arrangements. • Development of business models and technical design specifications as a public good for private-sector uptake.	3.1.4
6	Collaborate with DAR to develop a **recognised fast track system for processing new rice varieties**. This should find ways to address outstanding issues including: • Unregulated spread of not-yet-released varieties under farmer-managed testing. • Assessment of likely demand for exceptionally promising new varieties. • Etc.	3.2.1 and 4.2
7	Support MoAI / DOA / DAR with development of **rice-related policy and strategy**; e.g. • Myanmar rice sector development strategy, • Seed sector development, etc.	

5.3.3 Recommendations for LIFT

No	Recommendation for LIFT	Section Ref:
1	LIFT should support IRRI directly as the lead implementer of a follow-on project that includes the components as outlined in a section 5.3.2. This should fund IRRI directly rather than through other IP projects.	5.3.2
2	LIFT should continue to explore other ways to work more explicitly with DOA / DAR / MoAI to develop its capacity and systems through learning by doing. Encourage IPs to do this more purposively. LIFT can work with these in its engagement with government to influence policy development.	n/a
3	LIFT should oblige all IPs that it supports to follow the rationalised and unified systems for quality seed production, and the promotion and spread of new varieties as would be put in place through the follow on IRRI project recommended above (section 5.3.2).	5.3.2
4	Programme Office should keep a more complete archive of project documents, reports, and relevant documentation and tools produced by the projects. • Documents should be kept in searchable PDF or Word or Excel files and not as image-only PDF files (as seems to be the current practice). This makes them easier to search, mark up and extract from.	n/a
5	All projects over 2 years duration should have had some kind of mid-term review, with the intensity of the review adjusted according to the need. • This may range from an extended joint monitoring visit and review, to supporting an independent review followed by joint review of the findings and decisions on the way forward. • The IRRI projects would have benefited from a relatively light joint review (Programme and IRRI staff) to review progress and make decisions about adjustments in a clear and transparent way.	n/a

MAIN DOCUMENTS CONSULTED

Programme Documents / Proposal and related documentation:

- Project Document / Proposal for IRRI A (2012).
- Project Document / Proposal for IRRI B (2012).
- Logical Framework for IRRI A (2012).
- Logical Framework for IRRI B (2012).
- Revised Logical Framework for IRRI B (Jan 2013).
- Memorandum of Agreement: IRRI A (12 Feb 2012, 21 Feb 2012).
- Memorandum of Agreement: IRRI B (10 Aug 2012).
- Annual workplans and budgets for IRRI A and B (selected).

Project Progress Reports:

- IRRI A Annual Reports for 2012, 2013, 2014.
- IRRI B Inception Report (2012).
- IRRI B Annual Reports for 2012, 2013, 2014.

Project , M&E reports and briefing presentations:

- Briefing Meeting presentations from IRRI A and B (25 and 26 June 2015).
- M&E report to LIFT (June 2015).
- Beneficiary monitoring data spreadsheets.
- Baby trial data form.
- Farmer Diary questionnaire.
- Training data spreadsheets.

Extension and training material and guides:

- Fact Sheets (recommendations for varieties and management practices) for 7 recommendation domains.
- Training material for the basic, intermediate and advanced GIS trainings.
- “Guidelines and training curriculum for technology targeting in the rice environments of Ayeyarwady delta and Central Dry Zone of Myanmar”, LIFT / IRRI, June 2015.

LIFT Monitoring Field Visit Reports:

- Field visit Report: IRRI A, 3 to 4 September 2013, Nay Tun, Delta Programme Coordinator.
- Field visit Report: IRRI B (5 townships in the Dry Zone): 28 Apr to 2 May 2014: Nay Myo, Programme Officer.
- Field visit Report: IRRI B (Dry Zone): 1 to 3 December 2014: Antoine Deligne, Livelihoods and Food Security Specialist; Nay Myo, Agriculture and Livestock Officer; Aung Kyaw Kyaw, M&E Officer.

LIFT Documents:

- LIFT (2012 a) LIFT Programme Document 2010, updated 2012.
- LIFT (2012 b) LIFT Logframe: updated 2012.
- LIFT (2013, July) LIFT Operational Guidelines for Implementing Partners and the Fund Manager.
- LIFT (2014) LIFT Strategy (and Results Framework) October 2014.

Other relevant documents:

- Paris T.R, Manzanilla D., Tatlonghari G., Labios R., Cueno A. and Villanueva D. (2011) "Guide to participatory varietal selection for submergence-tolerant rice". IRRI, Maniola.
- "Suitable regional cropping pattern according to climate change": presentation by the Deputy Minister U Ohn Than on 18 September 2013.

ANNEX 1: Terms of Reference and evaluation questions

Annex 1a: Terms of Reference

1. General Background

UNOPS is the Fund Manager (FMO) for the Livelihoods and Food Security Trust Fund (LIFT) in Myanmar. LIFT is a multi-donor fund (2010 – 2018) to address food insecurity and income poverty in Myanmar. The donors to LIFT are Australia, Denmark, the European Union, France, Ireland, the Netherlands, New Zealand, Sweden, Switzerland, the United Kingdom and the United States.

The overall goal of LIFT is to sustainably reduce the number of people living in poverty and hunger. LIFT's purpose is to increase the incomes and nutrition status of poor rural people by means of interventions that increase income, food availability, utilization and stability of access to food. Its designated outcomes are in income, resilience, nutrition, and pro-poor policy developments.

LIFT works with and through support to implementing partners (IPs) such as international NGOs, national NGOs, United Nations agencies, international organisations (CGIAR, IFIs), academic and research institutions and the Government of Myanmar. LIFT is currently funding projects at Union level and in Ayeyarwady Delta, Dry Zone and Chin, Kachin, Shan, and Rakhine states.

Read more about LIFT on www.lift-fund.org.

2. Background on the assignment

All LIFT-supported projects are subject to a final evaluation. LIFT is now recruiting a consultant to carry out a final evaluation on two projects implemented by the International Rice Research Institute (IRRI) which end in the 3rd quarter of 2015.

The **IRRI Delta Project** focuses on providing technical advices a number of LIFT partners for the implementation of trials (Participatory Varietal Selection (PVS) and natural resource best management practices) and to strengthen their staff and farmers capacities in terms of seed production, post-harvest management, best practices, etc. The project has established a Post-Harvest Alliance to test a number of post-harvest equipment (dryers, threshers, air tight storage bags, etc.).

The **purpose of IRRI Delta Project** is to "work closely with NGO partners in three townships in the Ayeyarwaddy Delta to improve food security and livelihoods of 1500 rice producing households in the lower Delta". The project focuses on providing technical advice to facilitate greater food security by raising productivity, reducing risk through stress-tolerant germplasm, and increasing the sustainability of rice-based cropping systems, through the following outputs:

- **Output 1**: Improved rice crop management practices demonstrated and new varieties tested in three townships in the lower delta.
- **Output 2**: Strengthen capacity of partners, including scientists and extension personnel from LIFT IPs, and the private and public sector

The **IRRI Research Project** works more closely with Department of Agriculture . The main objective is to map the various riceenvironments in 3 townships of the Delta (Bogale, Mawgyun, Laputta) and 3 townships of the Dry Zone (Pyawbwe, Pakkoku, Sagaing) to define specific recommendations for each specific environment. It undertakes also a large participatory assessments of farmer practices, productivity and risks in different rice environments.

The **purpose of the IRRI Research Project** is to "contribute directly to LIFT partnerships, and wider development efforts, through establishing common approaches to support the fast-track delivery of appropriate management options and rice varieties to farm communities", through the following outputs:

- **Output 1**: Descriptions and GIS databases of rice areas affected by stress in Ayeyarwady, Magway, Sagaing and Mandalay regions prepared and used by LIFT partners and DOA (Department of Agriculture).
- **Output 2**: Evaluation and participatory assessments of productivity gains and risk reduction through newly available varieties and management practices in different rice environment.
- **Output 3**: Guidelines for technology assessment and better targeting of rice varities and management options prepared and disseminated.

Both projects implement activities in three townships of the Delta: Bogale, Labutta and Mawlamyinegyun. In addition, the IRRI Research Project covers a wide area in the Delta, Bago and the Dry Zone, including MaU Bin, Pyawbwe, Thasi, Wundwin, Nyaung U, Pakkoku, Seikphyu, Myaing, Sagaing and Ye U.

Both projects apply Participatory Varietal Selection (PVS) method to assess the adaptability of new high yielding and stress tolerant rice varieties to various environment in view of their subsequent official release by the National Seed Committee. IRRI also works on the identification and demonstration of integrated best management practices for monsoon and dry season rice cultivation.

3. Scope of Work for the Final Evaluation

The entire project period will be evaluated. The review will assess achievement of the outputs and outcomes of the programme on the basis of the project logframe, and LIFT logframe, and attention to livelihood issues. The specific objectives of the evaluation are to:

a) Independently assess the results of project activities against planned outputs, targets and milestones;
b) Independently assess the implementation and the management of implementation constraints and challenges; Identify and explain what developmental changes have occurred (beneficial or detrimental), to what extent they can be attributed to the project, and to what extent they will be sustainable;
c) Assess the value for money achieved, or to be realised later, from the investments and associated activities, including the distribution of costs and benefits.

4. Approach and methodology

The consultant will work under the supervision of the Lead Technical Officer and be responsible for all evaluative activity including:

1. Desk Review: A review of IRRI Project Proposals, logframes, data records, reports, IEC published and distributed and other information (e.g field visit reports, 6 monthly project progress narrative reports, M&E data reports, and any technical reports relevant to the final evaluation objectives);
2. Consultations with LIFT M&E and Programme Officers;
3. Consultations with IRRI staff, relevant Government staff, and other LIFT IPs involved in the project;
4. Design & Implementation of the final evaluation work:
   - ❖ methodology and workplan
   - ❖ key issues within the limited scope of field work (as agreed with LIFT & IRRI).

- ❖ confirmation of the arrangements and methods for interviews and consultations for Focus Group Discussions (FGD) and Key Informant Interviews (KII);

5. Identification of lessons learned from the project; and
6. Debriefing presentations and Reporting.

The evaluation will gather current records and the experiences and opinions of IRRI and its partners, and be able to establish the pre-project condition, observe the project practices, influences, responses and initial changes, and assess some attribution to the project interventions.

LIFT will provide a facilitator to support the Consultant in the logistics and arrangements for research and consultations, and to respond to questions of the Consultant mainly on the interpretation of interviewee responses, and of written and spoken information.

To demonstrate objectivity hence credibility of the review, the Consultant will clearly demarcate between sources of information, comment, opinion and interpretation.

5. Deliverables and payments

The following documents / events will be required, at approximate times: ·

- Work plan (prepared during home based desk review) ·
- Evaluation questions and checklists for FGDs and KIIs (3 days after arrival) ·
- A debriefing session with IRRI and LIFT (and potentially IRRI partners) to discuss the findings and lessons (3 days after the field work) ·
- A draft Evaluation Report (10 days after the debriefing) ·
- A Final Evaluation Report (7 days after LIFT feedback on the Draft).

Payment terms can be agreed at contracting stage.

6. Timing and workplan

The consultant will work both home based and in country for up to 40 days over a period of 2 months (mid-June to mid-August, dates to be confirmed with consultant), including an estimated 14 nights in field areas and 14 nights in Yangon. The mix of time in the various field areas and Yangon may be varied according the needs of the review and as agreed with the Supervisor.

The evaluation field work in the project area will be conducted in July 2015.

7. Monitoring and Progress Control

The Evaluation Specialist will work in close coordination with the international Programme Officer and will be expected to report in a timely fashion on the assigned tasking notes.

Annex 1b: Specific Evaluation Questions provided by LIFT

(1) Selection and dissemination of new varieties

The PVS trials have been one of the largest investments done in both projects. A significant number of varieties have been tested at a large scale. The process has been very participatory and in many occasion the farmers were enthusiastic about some of the new varieties. However it seems that IRRI has struggled to test the varieties in specific stress environments, they rather tested the result of these varieties across all environments, not necessarily providing for specific recommendations as expected.

In some occurrence the farmers still mentioned their previous varieties as either performing better or having better characters in terms of taste and adaptability to stress than the newly selected ones. FMO noted also that registered seeds for the new varieties were compared to farmer quality seeds of the old varieties.

- Were the PVS trials carried out during the project duration relevant and sufficient to provide reliable recommendations to farmers?
- Were the PVS trials implemented according to standard?
- Has IRRI been able to test the varieties in relation to specific stress-prone environments?
- According to farmers, is the new genetic material selected performing significantly better than their earlier varieties?
- Has PVS generated a significant demand for the new varieties?
- Is there a plan to multiply and disseminate those varieties?
- Are the IPs, DoA and DAR staff well aware of the advantages of the new selected varieties and able to provide appropriate recommendations to farmers?

(2) Maps, Natural Resource Management (NRM) trials and recommendations to apply to specific rice environments

Both projects have carried out a number of trials for best management practices, Natural Resource Management and integrated management practices on nursery management, fertilization, water management, weed control alongside with the new varieties. These demonstration and trials have to be related to specific rice environments so as to develop recommendations linked to the maps developed by the Research Project.

- Have the maps been produced according to standard?
- Have the specific rice environments been identified?
- Has IRRI developed recommendations for specific rice environment as a future extension tool?
- Were these recommendations developed with the IP and government partners?
- Have these recommendations been sufficiently tested in farmer fields?
- What potential economic benefits are generated by these new management practices?
- What is the level of adoption of these recommendations by the farmers involved in trials and demonstrations? Have the constraints to adoption been identified by the project?

(3) Post-Harvest Alliance:

Together with partners and the private sector in Bogale, the Delta Project has set up a Post-Harvest Alliance to discuss and test new post-harvest technologies. These new technologies seem relevant, but their economic value is in some case difficult to assess. Also, for a significant number of farmers and especially the small holders accessibility to these post-harvest equipment is difficult, either due to distance, cost or because they don't process their paddy themselves and they lack incentive for quality.

- What have been the results of the new post-harvest technologies tested for improving rice quality and value?
- What are the potential economic benefits for the farmers using these technologies?
- Are these technologies accessible to farmers? What are the constraints for accessing post-harvest services?
- Is the alliance an efficient tool to learn about / disseminate these new technologies? Should it be replicated?

(4) Household and post-household surveys to understand the household-level benefits associated with different technologies adopted:

The results of these surveys will be available only by the week before the evaluation starts. The consultant will be asked to review the survey results.

- What is the purpose of the household surveys? Is it relevant?
- What significant understanding, learnings have been generated through these surveys?

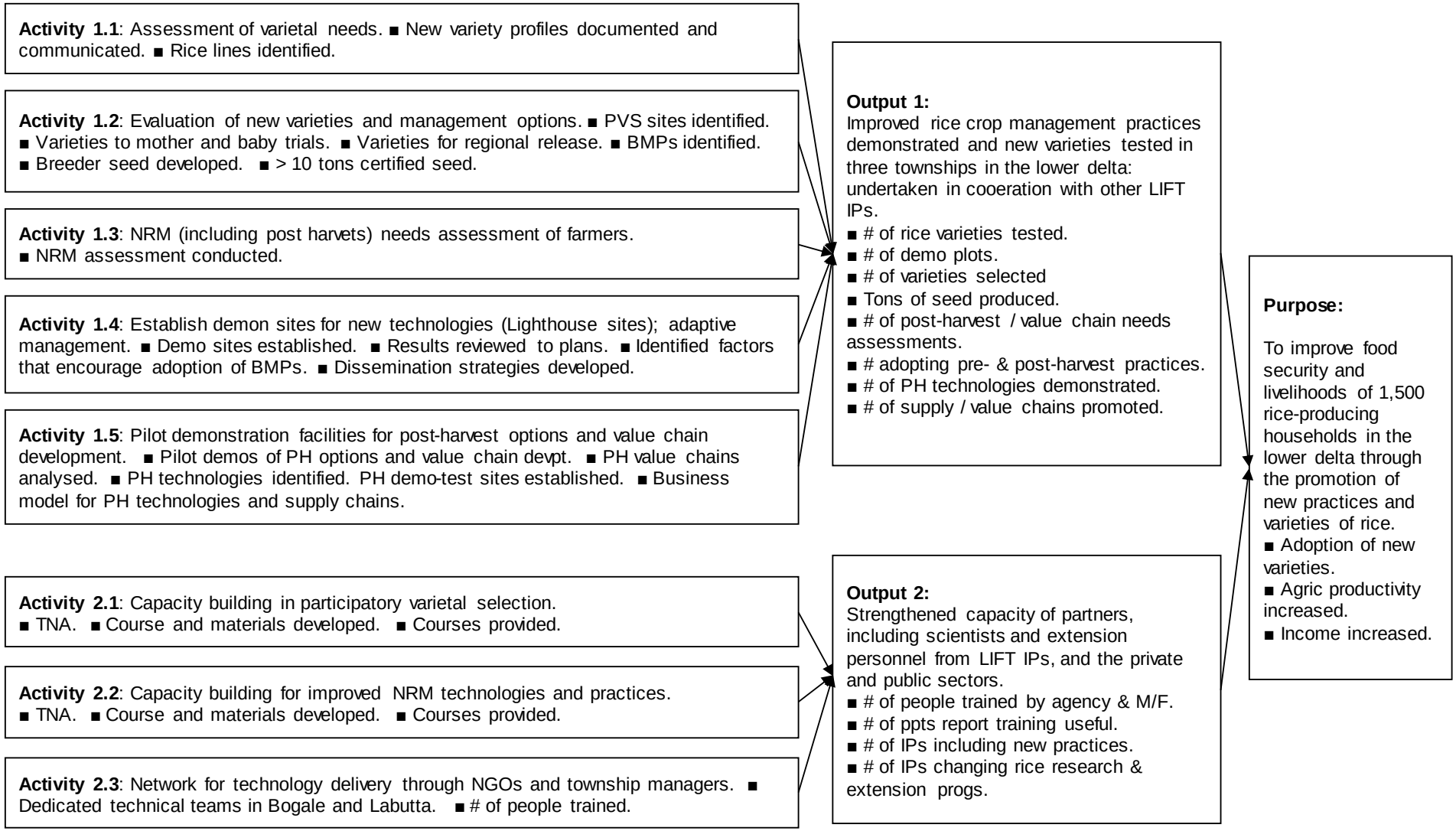
(5) Overall assessment of the linkages between research and extension services, technical supports to IPs, DoA and DAR:

IRRI is an international research organization mobilizing high level expertise of international researchers as well as local researchers. These two projects were not expected to work as other field projects managed by NGOs. IRRI is in a unique position to bridge the gaps between research and extension. The overall expectation from LIFT was that these two projects will help the IPs to access technical expertise and develop better extension practices based on proven technologies, and link government institutions with field-based projects.

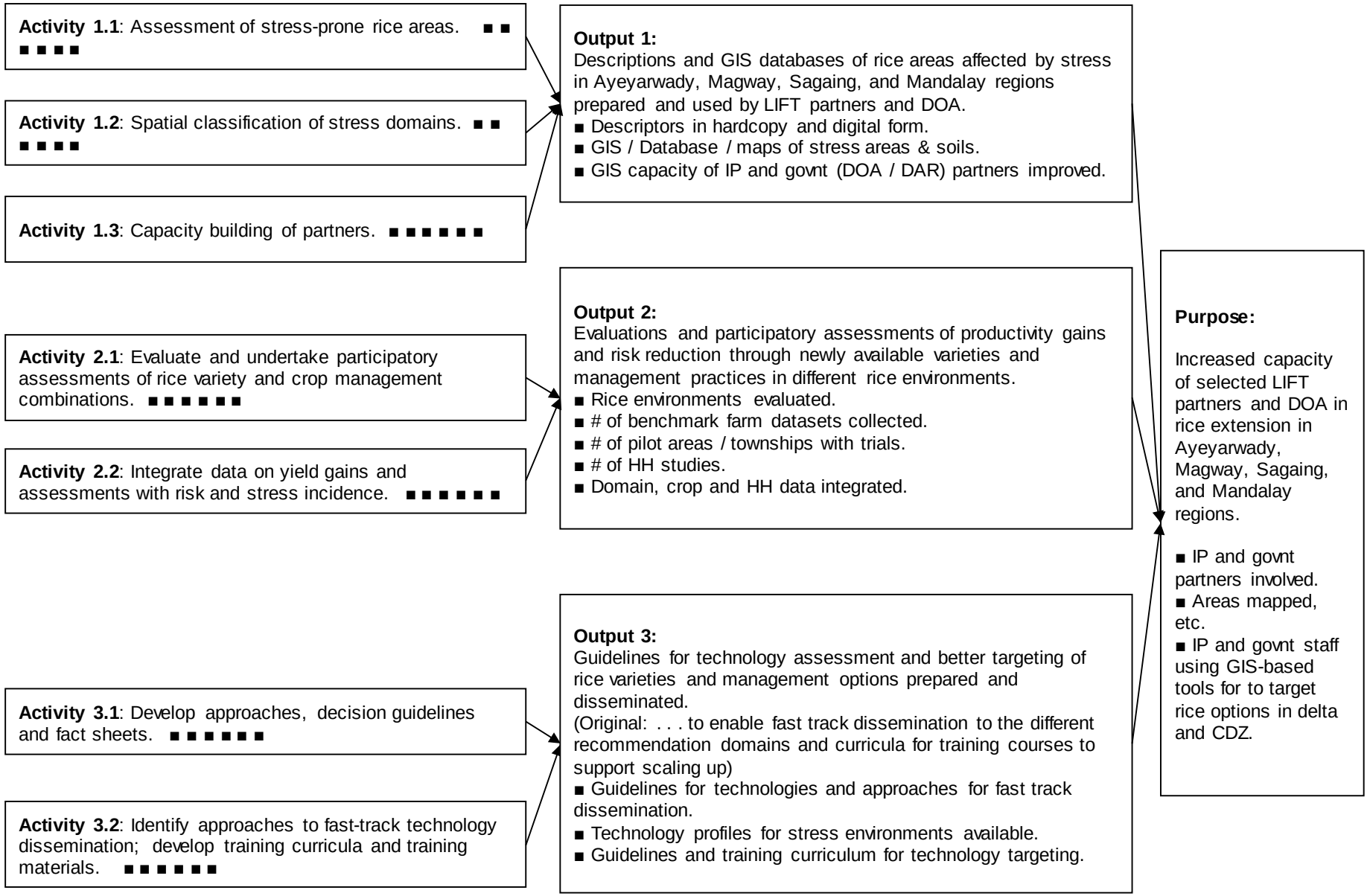
- Has IRRI played the expected role in linking research and extension?
- Was the project built on relevant and effective extension methodologies?
- Were the IPs and DoA satisfied with the technical supports and training received? Has it led to changes in their extension approaches and the techniques promoted?
- Have DoA staff improved their extension practices and their ability to respond to farmer needs, to become more participatory?
- Is DAR adapting its research agenda to issues identified by farmers?
- Are there learnings from the project that needs to be advocated to the Ministry to be developed at larger scale?
- In view of the specific role of the project, what is its value-for-money?
- Is this model of intervention linking research and development field work to be recommended for future programmes?

ANNEX 2: Project Results Chain diagrams (from the project Logframes)

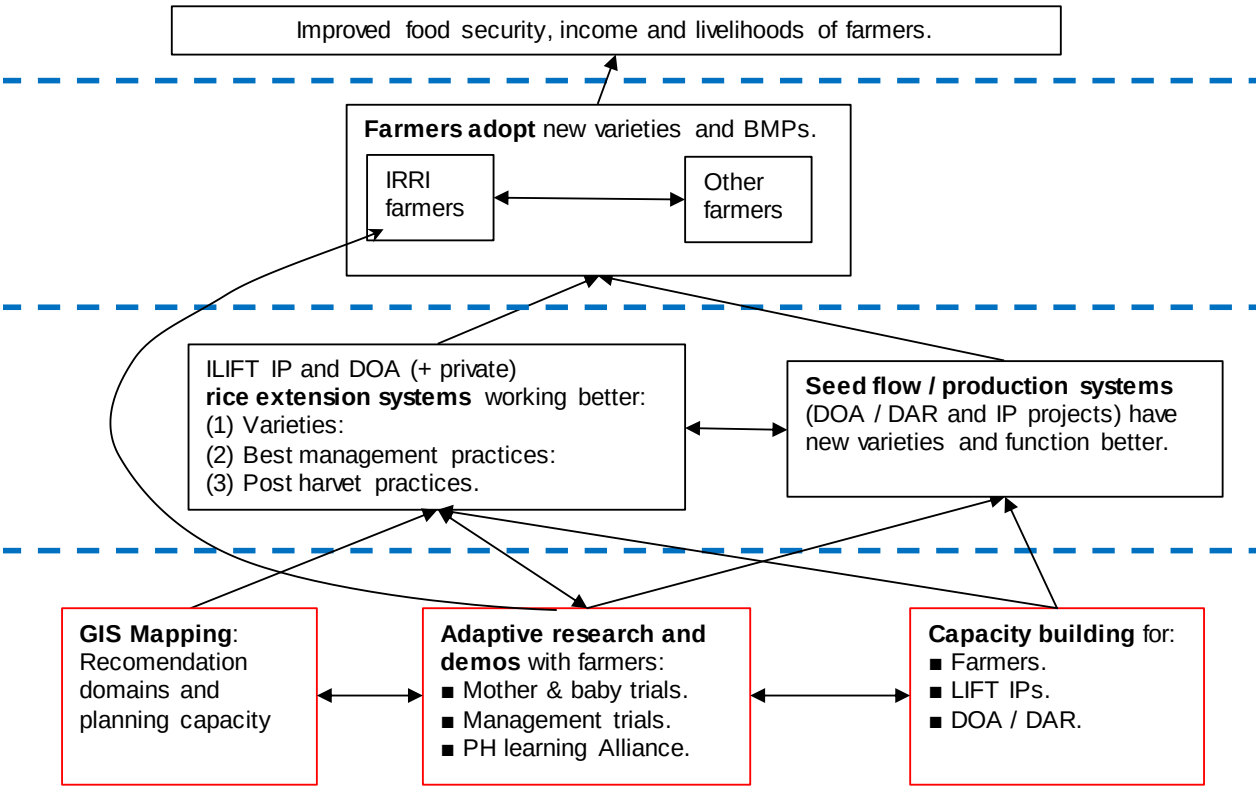
Annex 2a: IRRI A Results Chain diagram:



Annex 2b: IRRI B Results Chain diagram:



ANNEX 3: Outline "Theory of Change" diagram (prepared by the Evaluation Team)



ANNEX 4: Achievement of Results against the Project Logframe

Rating system and criteria for overall assessment of Outcomes and Outputs

No	Likely level of achievement by the end of the project		Rating
1	Fully achieved: more or less completely (e.g. > 90% if quantitative).		**1**
2	Mostly achieved (e.g. more than half: 50% to 90%).		**2**
3	Partly achieved (e.g. less than half: 10 to 50%).		**3**
4	Not achieved to any significant or satisfactory degree (e.g. < 10%).		**4**
5	Unable to assess: no information, OR the Outcome / Output was cancelled.		N/A

Annex 4a: Achievement of Results against the Logframe for IRRI A

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
PURPOSE: To improve food security and livelihoods of 1,500 rice-producing households in the lower delta through the promotion of new practices and varieties of rice:					
Ind P1	No. of HHs adopting new varieties and improved practices (both pre and post-harvest). • Adoption of new varieties.		• 2,250 HHs.	**Target likely to be fully achieved:** • The project estimates that 2,363 farmers have been **involved** in new practices and testing new varieties (briefing presentation, July 2015). • The target for **adoption** is likely to be met or nearly met since almost all farmers met during the field work for this evaluation claimed to have adopted one or more of the improved management practices. • It is more useful however, to consider adoption of varieties and IMPs separately, and with separate targets. In this case, the field work for this evaluation would estimate: • Almost all (estimated at 90%) collaborating farmers have adopted one or more improved management practices. • A significant proportion (estimated at around 50%) of the collaborating farmers are likely to have adopted one or more new varieties. • More reliable estimates should be made through analysis of the HH Survey, Farmer Diaries, Farmer Beneficiary Register and FGD data.	**1**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
Ind P2	No. and percentage of targeted HHs reporting at least a 10% increase in agricultural productivity of land and / or labour. • Agric productivity increased.		• 1,500 HHs. (10% of targeted HHs)	**Target likely to be mostly achieved.** • The 2014 Annual Report estimated 1,050 HHs reporting > 10% increasing productivity. The basis for this was not clear. • This should be assessed through analysis of the HH Survey, Farmer Diaries, Farmer Beneficiary Register and FGD data. • A reasonable estimate of increased productivity can be made from data on adoption and knowledge of the likely yield increase from adoption of different technologies.	**2**
Ind P3	No. of target farmers who report increased income of at least 10% as a result of the new practices and varieties. • Income increased.		• 1,500 HHs.	**Data not yet available.** • This indicator reflects indicator P2 and should be assessed through analysis of the HH Survey, Farmer Diaries, Farmer Beneficiary Register and FGD data.	**N/A**
OUTPUT 1: Improved rice crop management practices demonstrated and new varieties tested in three townships in the lower delta: undertaken in cooperation with other LIFT IPs:					
Ind-1.1	No. of rice varieties tested and no. of demonstration pilots managed (years 1, 2 and 3). • # of rice varieties tested. • # of demo plots.		• 18 demo sites managed and 2 varieties selected (should be "tested").	• **NOTE**: The target should be for varieties tested rather than selected since this repeats the target below. **Target fully achieved and exceeded.** • 57 rice varieties tested at 32 successful Mother trials (4 failed due to adverse conditions) by July 2015. • 17 demo sites established (1 failed) by July 2015. • A total of 2,230 farmers received seed for on-farm testing to validate suitability under farmer conditions. • Of these, a total of 893 farmers (26% F) were taken as PVS Baby Trial / demo plots from which data was collected for analysis (319 in 2013 wet season, 219 in 2014 dry season, 198 in 2014 wet season and 157 in 2015 dry season). • A total of ?? improved management trials or demo-trials of different types were carried out. • This included a total of 17 "four-factor" demo trials that had a strong demonstration effect (9 in 2014 monsoon and 8 in 2015 dry season).	**1**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
Ind-1.2	No. of rice varieties selected and amount of seeds produced (year 3). • # of varieties selected • Tons of seed produced.		• At least 2 varieties selected: • 10 tons of seed produced.	**Target fully achieved and exceeded:** • 12 monsoon varieties and 10 dry season varieties were selected by farmers from Mother Trials (Annex 8). • 2 monsoon and 3 dry season varieties sent to National Seed Committee for registration during project (Annex 8). • 2 monsoon and 2 dry season varieties released by National Seed Committee during project. • 30.7 tons of "preferred" varieties of seed distributed to 2,230 farmers from 2012 to 2015. • 5.6 tons of seed (preferred varieties) given to IPs for their distribution programs: e.g. to around 370 farmers at 15 kg each.	**1**
Ind-1.3	Pre and post-harvest needs assessment (= value chain and NRM analysis) completed in project villages and townships. • # of pre- & postharvest / value chain needs assessments.		• Value chain and NRM analysis completed in 4 villages (changed by project to 3 townships).	**Target fully achieved.** • Postharvest and value chain analysis carried out in 3 townships through (1) household information from the detailed household survey of 2013, (2) assessment of the rice value chain and stakeholder mapping, and (3) collaborative problem analysis (PIPA) with the Learning Alliance.	**1**
Ind-1.4	No. of farmers adopting improved pre and post-harvest practices designed to reduce losses and / or improve rice quality. • # adopting pre- & post-harvest practices.		• 1,500 farmers.	• **NOTES**: • This indicator refers to adoption of **pre / post-harvest practices** to reduce loss or improved quality, rather than improved varieties or management practices to which indicator P1 refers. • Since this indicator focuses on adoption, it is really an outcome indicator and should be at the Purpose level alongside P1. • The target is inconsistent with the scale of implementation of Postharvest activities and is too high. **Target likely to be only partly achieved.** • A total of 302 farmers were **involved** in pre- and post-harvest demonstrations and training (2014 Annual Report p.34). • It appears likely that only a relatively small proportion of these have **adopted** any pre / post-harvest practices. • Some farmers with access to the flatbed driers are using these for a fee.	**3**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
Ind-1.5	No. of harvest and post-harvest (PH) technologies demonstrated and supply chains for PH technologies promoted. • # of PH technologies demonstrated. • # of supply / value chains promoted.		• 4 PH demo units established (= Flat-bed drier, 5 ton storage cocoon, 50 kg hermetic super bag, grain quality kit).	**Demo target mostly achieved:** • 2 villages with PH demo units (flat-bed drier, etc) in Bogale / Labutta, and Mawlamyinegyun townships. • 2 villages with Solar Bubble drier and other PH demos. • 6 villages with other PH demo. • "Learning Alliance " groups in 2 of these MGN villages to develop PH and value chain options.	**2**
			• 2 townships with supply chains for PH technologies established.	**Supply chains target not significantly achieved:** • One local manufacturer was supported to manufacture lightweight TC-800 threshers. The design was modified and the first model not good enough and the work continues. • Local importers of other PH technologies (e.g. hermetic bags, solar bubble dryers, grain quality kits) identified and able to supply on demand, but demand is very weak and local supply chains are not yet established. • The project strengthened the main service provider (Pioneer) for installation of flat bed dryers. on demand. The demand however is still lacking. • Much more work is needed to develop viable supply chains and / or more local manufactures.	**4**
OUTPUT 2: Strengthened capacity of partners, including scientists and extension personnel from LIFT IPs, and the private and public sectors:					
Ind-2.1	No. of people trained (disaggregated by agency and sex). • # of people trained by agency & M/F.		• 100 people trained (>30% F: >25% government agencies). • At least 15 demo plots of high quality.	**Target fully achieved and exceeded.** • A total of 1,685 (27% F) farmers, and 208 (62% F) personnel from IPs, DOA, DAR, YAU and the private sector received different types of training. • Over 50 high quality demo plots were established being 42 Mother trials, 18 four-factor and IBMP demo trials.	**1**
Ind-2.2	Percent of participants who report training as useful; who believe they have gained greater skills or knowledge (disaggregated by agency and sex of participant, and knowledge / skill. • # of ppts report training		• 90% positive feedback.	**Indicator data not provided.** • The project reported that evaluations were carried out immediately after (some ?) trainings to receive feedback on the effectiveness of the training but this was not translated into reported indicator data • It is likely however, that the target would be mostly achieved, since most farmers and IP / government staff interviewed were positive about the training. Some were expressed strong positive feelings.	**N/A**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
	useful.				
Ind-2.3	No. of LIFT IP and government extension officers extending (or planning to extend) new varieties, improved practices, (pre and post-harvest) and farmer participatory adaptive research. • # of IPs including new practices.		• 75 staff / officers	• **NOTE**: This is interpreted as meaning that extension staff have changed or improved the way they do extension or adaptive research. This would include promotion of new varieties or better ways of doing current or new practices. **Likely to be mostly or fully achieved.** • This was not specifically assessed. Given the positive responses of most staff met by the ET however, it seems likely that a good proportion of the 190 or so staff (97 government; 93 IPs) trained, have or will improve the way they do extension, etc through inclusion of new verities or management practices or providing higher quality extension and training.	**1**
Ind-2.4	No. of LIFT IPs reported changing their rice research and extension programmes as a result of training and research collaboration with IRRI. • # of IPs changing rice research & extension progs.		• 4 IPs.	• **NOTE**: This is interpreted as meaning that IPs or DOA / DAR have significantly changed their programmes at the institutional / strategic level (rather than by individuals): to distinguish from indicator 2.3 above. **Target likely to be only partly achieved.** • The project reported (briefing presentation, July 2015) that 6 IPs (WHH, Mercy Corps, GRET, AVSI, Radanar Ayar, Aryone Oo) have changed their extension and training programs. • The interviews with some IPs (not all the above were available) indicated that this may be through inclusion of e.g. new varieties, improved management practices and postharvest technologies, etc, Mercy Corps also implemented a new radio programme using IRRI researchers as resource people. The ET feels that for some IPs at least, this does not generally constitute a significant enough change in their strategies or programmes.	**3**

***Source**:*
1. Based on original signed IRRI A Logframe.
2. Results data comes mainly from Annual Reports, "Briefing document to supplement annual reports for the external review of IRRI project R1.3", and field work for this evaluation.

Annex 4b: Achievement of Results against the Logframe for IRRI B

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
PURPOSE: Increased capacity of selected LIFT partners and DOA in rice extension in Ayeyarwady, Magway, Sagaing, and Mandalay regions: (Original: To strengthen LIFT partners' extension approaches in order to increase rice yields and / or profitability, or reduce livelihood risks . . .)					
Ind P1	Stakeholders (LIFT and government partners) involved in development of resource and land use assessments as maps, guidelines, decisions tools, best-bet options, training materials. • IP and govnt partners involved.		• Stakeholder workshops held in delta (40 participants), CDZ (30) for regional staff, and in either Nay Pyi Taw (30) for national level staff.	• **NOTE**: The previous "partners using common approaches to land use assessment in annual activity planning" target is not consistent with the indicator statement and is more or less repeated by a similar indicator under P3 so has been removed. • **Target fully achieved**. • DOA and DAR staff were fully involved at relevant stages in GIS mapping, ground truthing, adaptive research trials and demonstrations, assessment of research results, development of recommendations and fact sheets, etc • A total of 568 DOA / DAR staff received training.	**1**
Ind P2	Stress prone areas for rice mapped, and descriptions available of productivity gains and risk reductions resulting from new management and varietal options. • Areas mapped, etc.		• Analyses of 100% rice areas in 7 townships at high resolution (approx 1:50,000).` • Partners using recommendation domains, maps to target 'best bet' options for farmers in 7 townships. **NOTE**: This target moved to P3.	• **NOTE**: The previous "partners using recommendation domains, maps to target 'best bet' options for farmers in 7 townships" target is not consistent with the indicator statement and has been moved to P3 where it is relevant. **Fully achieved.** • Have produced maps at 250 m resolution for flood, drought and salinity stress zones cropping systems, patterns, and developed basic recommendation domains to support targeting. • Productivity gains from new varieties with or without improved management practices, and under farmer management, have been assessed, documented and disseminated.	**1**
Ind P3	No. of LIFT and government partners using GIS based tools to target options for improved livelihoods (by type of partner, no of staff by sex etc). • IP and govnt staff using GIS-based tools for to target rice options in delta		• Staff at national level and within 7 townships using common approaches for rice technology targeting in stress prone areas. • Partners using recommendation	**Partly achieved.** • Staff still tend to use their own knowledge of stress zones, cropping systems and notional recommendation domains to target appropriate recommendations to farmers in the different areas. • Some use may be made of the printed maps to improve understanding, but very little use being made of GIS-based tools for targeting improved options.	**3**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
	and CDZ.		domains, maps to target 'best bet' options for farmers in 7 townships (from P2).		
NEW:	Improved capacity and functioning of extension systems / services of LIFT IPs and government (DOA / DAR).		• No target set.	• **NOTE**: The Purpose statement related to improved capacity and extension services and is not adequately covered by the above indicators	
OUTPUT 1: Descriptions and GIS databases of rice areas affected by stress in Ayeyarwady, Magway, Sagaing, and Mandalay regions prepared and used by LIFT partners and DOA:					
Ind-1.1	Descriptors and characteristics of drought, salinity and submergence prone rice areas available in hard copy and in digital form. • Descriptors in hardcopy and digital form.		• Spatial data and reports on stress domains for Delta and CDZ prepared and agreed with stakeholders.	**Fully achieved.** • Flood, drought and salinity stress zones for the Delta and CDZ have been characterised, mapped (digital and hardcopy), documented and agreed with stakeholders. • Durable hardcopy maps printed and distributed main stakeholders.	**1**
Ind-1.2	Data on distribution of rice areas affected by stress (drought, salinity and submergence) and major soils available as data-base and maps. • GIS / Database / maps of stress areas & soils.		• High resolution classification for the major rice areas of 7 townships (as map overlays in hard and digital format). • Spatial data on stress integrated with trial data as map and report on recommendation domains in delta and CDZ (from Ind-1.1 above).	**Fully achieved.** • High resolution (50 m.) GIS maps of rice cropping systems for each of 7 townships prepared, validated and agreed with stakeholders, and distributed. • Map of major soil types digitised from available hard-copy maps. • Recommendation domain maps prepared from map overlays using stress zones, soils, cropping systems and other data. Digital and hardcopy maps prepared.	**1**
Ind-1.3	GIS capacity of key partner agencies (LIFT NGOs and DOA / DAR) improved. • GIS capacity improved.		• 30 staff of DoA and LIFT partners attend training sessions; 6 staff attend GIS	**Mostly achieved.** • A total of 22 government, NGO and IRRI staff were trained in GIS at basic (22), intermediate (18) and advanced (11) levels, and 2 IRRI staff received TOT training.	**2**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
			specialist training. • Key partner agencies (LIFT NGOs and DoA) have staff cadre familiar with use of GIS tools for targeting options.	• 105 staff received brief training in GPS utilization. • The training was sufficient to give staff a degree of familiarity with GIS, but not with GIS tools for targeting options since the methodologies and tools have not yet been developed. • The level of knowledge achieved was insufficient for most staff (unless previously trained in GIS) to be competent in independent use of GIS.	
OUTPUT 2: Evaluations and participatory assessments of productivity gains and risk reduction through newly available varieties and management practices in different rice environments.					
Ind-2.1	Evaluations of rice options in different rice environments. • Rice environments evaluated.		• By 2014, performance of best bet options in 20 pilot areas discussed with LIFT partners. • By 2015, LIFT partners using common approaches to identify key constraints, and to select and promote best-bet options to improve farm livelihoods,	• **NOTE**: The adoption of new approaches by the DOA, DAR and IPs is regarded as a Purpose-level target and is not considered here. **Target fully achieved.** • A total of 34 researcher-managed pilot trial demo sites with 16 PVS mother trials (6 monsoon, 6 summer) and 18 BMP / NRM trial demos were established in 12 townships in Ayeyarwady, Mandalay, Magway and Sagaing regions. • A total of 400 farmer-managed Baby trials were established and used to provide data for assessment of yield, etc. • Swarna sub 1 (Ye Myoke Kan Sapa 1) seed totalling 39.5 tons was distributed to 1,360 farmers in flood-prone areas for testing on 1,920 acres: mainly in Ayeyarwady, Bago and Yangon regions. . • Results have been analysed and discussed at workshops with DOA / DAR and NGO IP staff. • 5 monsoon varieties and 6 dry season varieties selected by farmers from Mother Trials (Annex 8). • 2 monsoon and 2 dry season varieties sent to National Seed Committee for registration during project (Annex 8). • 1 monsoon and 2 dry season varieties released by National Seed Committee during project. • DOA, DAR and IPs aware of adaptive PVS processes and methods.	**1**
Ind-2.2	Numbers of benchmark farm data sets collected. • # of benchmark farm datasets collected.		• 150 in 2013. • 100 in 2014.	**Target fully achieved.** • 400 benchmark farm datasets; 128 standard crop information interviews, township interviews, and NRM surveys undertaken, including areas across eight townships. In addition, 98 field data	**1**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
				sheets (FDS) with geo-locations were collected for Swarna-Sub 1 (Source: 2014 Annual Report).	
IND-2.3	Numbers of pilot areas/ townships with field trials. • # of pilot areas / townships with trials.		• 20 pilot areas across 7 townships (by 2014).	• **NOTE**: This is covered by Ind-2.1 above. **Target fully achieved and exceeded.** • A total of 64 pilot trial sites with PVS mother trials and NRM completed IN 9 townships (as above).	**1**
Ind-2.4	Numbers of household studies. • # of HH studies.		• 150 in 2013. • 100 in 2014.	• **NOTE**: This is strongly related to Ind-2.2 above. **Target mostly achieved.** • In addition, the baseline and follow up household survey covered 120 HHs for the Delta and a further 120 for the CDZ.	**2**
Ind-2.5	Domain, crop and household data integrated. • Domain, crop and HH data integrated.		• 4 reports and map sets.	• **NOTE**: This is covered by Output 1. **Target fully achieved.** • The mapping (cropping system, stress and soil) data, crop performance and household characteristics data were integrated to generate improved understanding of stress gradients, refinement of stress zone and recommendation domain boundaries, and better targeted recommendations.	**1**
OUTPUT 3: Guidelines for technology assessment and better targeting of rice varieties and management options prepared and disseminated. (Original: . . . to enable fast track dissemination to the different recommendation domains and curricula for training courses to support scaling up)					
Ind-3.1	Guidelines for technology options, and targeting approaches to fast-track dissemination: • Guidelines for technologies and approaches to fast-track dissemination.		• Guidelines available for assessments and targeting of "best bet" technology options to recommendation domains.	• **NOTE**: Indicators 3.1 and 3.2 overlap and are not clearly distinct. Ind 3.1 is therefore interpreted as being guidelines for technology targeting (how to target different farmers with appropriate recommendations to "fast track" dissemination), while Ind 3.2 concerns only the technology profile or "Fact Sheets" which are also guidelines. The nature and content of the Ind 3.1 guidelines is not clear. **Target partly achieved.** • **Guidelines**: Technology / technical guidelines for targeting have not yet been prepared, • **Tools**: The main tools have been prepared and provide the starting point for technology targeting: (1) cropping systems maps, (2) stress zone maps, (3) recommendation domain maps, (4) document describing recommendation domains, and (5) the full set of "Fact Sheets". • **Stakeholder discussions**: Approaches for technology targeting and dissemination of best bet technology options discussed with	**3**

No	indicator	Base-line	Target / Milestone by End of Project	Cumulative achievement (likely) by End of Project	Rating (#)
				stakeholders These will continue to be a major part of the project activities to the end of project.	
Ind-3.2	Technology profiles available for stress environments. • Technology profiles for stress environments available.		• 6 fact sheets for management and variety options for CDZ and delta.	**Target fully achieved.** • 7 "Fact Sheets" prepared in a participatory way with stakeholders: pending approval by DAR. These are very concise (one A3 sheet or poster) and not easily used. There is need to make them more digestible for users.	**1**
Ind-3.3	Guidelines and training curriculum for technology targeting. • Guidelines and training curriculum for technology targeting.		• 6 guidelines for option x stress targeting in Delta and CDZ.	• **NOTE**: Technical "Guidelines" are covered by Inds 3.1 and 3.2 above. This indicator and target are therefore interpreted as focused on **training course curricula, trainer guidelines and training material** for the different courses needed to support technology targeting by different stakeholders. **Target partly achieved.** • **One** training course on "technology targeting in the rice environments of Ayeyarwady delta and Central Dry Zone of Myanmar" has been prepared with draft **trainer guidelines** and **curriculum** (document) and **training material** (CD). This is aimed at teaching staff in extension services and local universities and covers details of how IRRI B was carried out: PVS, BMP trials, remote sensing, GIS and mapping, etc. • The ET feel that the above training is not the most relevant subject area and **other training courses are needed** to support research and extension staff in a practical way to improve their development and extension of improved technologies to target farmers in different areas. • The indicator was therefore assessed as **less than half achieved**. This work will be continued.	**3**
NEW:	Number of **trainings** and people trained (M/F) to build capacity of farmers, extension and research staff of different organisations.	N/A	• No target set.	• **NOTE**: The IRRI B logframe only covered training for GIS and this was under Output 1. There is need to cover other capacity building and the training provided. This new indicator was therefore added. **No target set - Adequately covered:** • Around 1,500 (31% F) farmers, government (DOA, DAR and YAU), NGO, private sector, and IRRI people trained (some received more than one training) in 95 training events.	**1**

***Source**:*
1. Based on revised IRRI B Logframe: Version 2 revised 8 Jan 2013.
2. Results data from Annual Reports and "Achievements to June 2015 against output indicators" report from IRRI B.

ANNEX 5: Contribution to LIFT Programme Indicators

No	LIFT Programme Logframe Indicators	IRRI Project reported data (#1)				Comments of the Evaluation Team
		Base-line	Target by EOP	Achieved (No.)	Achieved (Percent)	
	Purpose indicators:					
LIFT P1	No. of target HHs with increased (agriculture, fishing, livestock, enterprise etc.) incomes	Zero	1,400	2,475	177% Too high.	The level of achievement is likely to be closer to 1,260: 90% of collaborating farmers estimated to have adopted improved management practices, and / or new varieties. Needs data from quantitative HH survey.
LIFT P2	No. of target HHs with at least 5% agricultural productivity gains	Zero	1,400	2,884	206% Too high.	As for P1 above, but probably lower.
LIFT P3	No. of target HHs with increased and/or diversified food consumption	Zero				N/A.
LIFT P4	No. of target beneficiaries (HHs) with an increase in food security by at least one month	Zero				As for P1 above.
LIFT P5	No. of target HHs with increased assets	Zero				N/A.
LIFT P6	No. of target Female Headed HHs with increased assets	Zero				N/A.
Output 1 : Increased agricultural production and incomes, includes horticultural crops, livestock, farm forestry, aquaculture, and "inputs" include credit:						
1.1	No. of target HHs aware of new/improved agriculture technologies or techniques					Collaborating farmers and those who attended field days / demonstrations.
1.2	No. of target HHs who adopt/use improved agricultural practices (list: rice, horticulture, livestock, etc)					As for P1 above.
1.3	No. of HHs in LIFT supported villages accessing credit from low interest micro finance groups, or village savings and loans associations, for agriculture					N/A.
Output 2 : Non-agricultural livelihood activities include credit to non-agricultural activities and marketing support as well as wild capture fishery:						
2.1	No. of trained people who establish enterprises (gender disaggregated)					N/A.
2.2	No. of HHs in LIFT supported villages accessing credit from low interest micro finance groups, or village savings and loans associations, for non-agricultural livelihoods					N/A.
2.3	No. of targeted HHs with increase in income from non-agricultural activities and vocational					N/A.

No	LIFT Programme Logframe Indicators	IRRI Project reported data (#1)				Comments of the Evaluation Team
		Base-line	Target by EOP	Achieved (No.)	Achieved (Percent)	
Output 3 : Sustainable natural resource management and environmental rehabilitation:						
3.1	No. of HHs participating in improved resource management or rehabilitation					N/A.
3.2	No. of participants trained in sustainable resource management or rehabilitation topics (sex disaggregated) who think the training was useful					N/A.
Output 4 : Effective social protection measures that increase the incomes:						
4.1	No. of HHs supported by CfW activities that think the intervention was timely and effective.					N/A.
4.2	No. of HHs supported with cash/asset transfer who are able to invest in productive activities/assets that increase their income					N/A.
4.3	No. of HHs who are able to reduce the No. of food insecure months or days.					N/A.
	Output 5 : Capacity of civil society strengthened:					
5.1	No. of local NGOs better skilled in technical issues and project and financial management					Around 8: All the local NGOs that supported /collaborated with the project.
5.2	No. of trained CBOs applying training in LIFT funded activities					N/A.
5.3	No. of changes in technical or project management made by local NGOs in LIFT funded activities					The two or three NGOs that changed the implementation of their projects in some ways.

***Note #1**: Project data from M&E report to LIFT.*

ANNEX 6: Budget and Expenditure Summary Tables

As at 31 December 2014 with 79% of IRRI A project time used:

IRRI A: Budget description	Budget (USD)	Budget as % of Total	Expenditure Total (USD)	Expenditure as % of total expend	Expenditure as % of line budget	Balance (USD)
1. HUMAN RESOURCES	**919,185**	**44%**	**689,234**	**43%**	**75%**	**229,951**
1.1 Salaries International Staff	**633,471**	**30%**	**459,255**	**28%**	**72%**	**174,216**
1.1.1 Technical Staff	496,525	24%	329,196	20%	66%	167,329
1.1.2 Administrative Staff	136,946	7%	130,059	8%	95%	6,887
1.2 Salaries National Staff	**204,763**	**10%**	**162,135**	**10%**	**79%**	**42,628**
1.2.1 Technical Staff	130,836	6%	98,042	6%	75%	32,794
1.2.2 Administrative Staff	73,927	4%	64,092	4%	87%	9,835
1.3 Short-Term Technical Assistance	**80,951**	**4%**	**67,845**	**4%**	**84%**	**13,106**
2. OFFICE COSTS, EQUIPMENT AND SUPPLIES	**215,365**	**10%**	**137,766**	**9%**	**64%**	**77,599**
2.1 Transport Vehicle Rental and Running Costs	**114,518**	**5%**	**53,132**	**3%**	**46%**	**61,386**
a. Vehicle Rental	92,727	4%	45,422	3%	49%	47,305
b. Vehicle Maintenance and Repair	2,319	0%	2,273	0%	98%	46
c. Vehicle Fuel and Running Costs	4,636	0%	4,603	0%	99%	33
d. Boat Rental	14,836	1%	834	0%	6%	14,002
2.2 Vehicles, Equipment, Furniture, etc	**65,000**	**3%**	**66,374**	4%	102%	**-1,374**
a. Vehicle purchase	6,000	0%	5,263	0%	88%	737
b. Furniture, Common Office Equipment and Renovation	35,000	2%	35,345	2%	101%	-345
c. Computer Equipment, Electronics, Power Generation	24,000	1%	25,766	2%	107%	-1,766
d. Motorbikes	-	0%	-	0%		0
2.3 Office Rental and Running Costs and Others	**35,847**	**2%**	**18,260**	**1%**	**51%**	**17,587**
3. PROGRAMME COSTS	**846,581**	**40%**	**694,720**	**43%**	**82%**	**151,861**
3.1 LIFT Output 1	**748,623**	**36%**	**633,862**	**39%**	**85%**	**114,761**
a. Varietal evaluation	409,540	20%	353,223	22%	86%	56,317
b. Adaptive management of NRM technologies	339,083	16%	280,639	17%	83%	58,444
3.4 LIFT Output 4	**97,958**	**5%**	**60,858**	**4%**	**62%**	**37,100**
a. Capacity building	97,958	5%	60,858	4%	62%	37,100
Sub-Total: Direct Costs:	**1,981,131**	**94%**	**1,521,720**	**94%**	**77%**	**459,411**
4. INDIRECT COST (6% of Direct Costs)	118,869	6%	91,303	6%	77%	27,566
Grand Total:	**2,100,000**	**100%**	**1,613,023**	**100%**	**77%**	**486,977**

***Source**: LIFT Accounts.*

As at 31 December 2014 with 72% of IRRI B project time used:

IRRI B: Budget description	Budget (USD)	Budget as % of Total	Expenditure Total (USD)	Expenditure as % of total expend	Expenditure as % of line budget	Balance (USD)
1. HUMAN RESOURCES	**842,819**	**42%**	**493,747**	**53%**	**59%**	**349,072**
1.1 Salaries International Staff	**631,362**	**31%**	**365,867**	**40%**	**58%**	**265,495**
1.1.1 Technical Staff	590,815	29%	334,196	36%	57%	256,619
1.1.2 Administrative Staff	40,547	2%	31,671	3%	78%	8,876
1.2 Salaries National Staff	**174,366**	**9%**	**98,699**	**11%**	**57%**	**75,667**
1.2.1 Technical Staff	146,907	7%	84,828	9%	58%	62,079
1.2.2 Administrative Staff	27,459	1%	13,871	2%	51%	13,588
1.3 Short-Term Technical Assistance	**37,091**	**2%**	**29,180**	**3%**	**79%**	**7,911**
2. OFFICE COSTS, EQUIPMENT AND SUPPLIES	**231,238**	**11%**	**76,759**	**8%**	**33%**	**154,479**
2.1 Transport Vehicle Rental and Running Costs	**64,641**	**3%**	**24,290**	**3%**	**38%**	**40,351**
a. Vehicle Rental	30,023	1%	18,357	2%	61%	11,666
b. Vehicle Maintenance and Repair	5,873	0%	1,886	0%	32%	3,987
c. Vehicle Fuel and Running Costs	22,563	1%	2,210	0%	10%	20,353
d. Boat Rental	6,182	0%	1,837	0%	30%	4,345
2.2 Vehicles, Equipment, Furniture, etc	**85,250**	**4%**	**34,554**	4%	41%	**50,696**
a. Vehicle purchase	68,750	3%	28,077	3%	41%	40,673
b. Furniture, Common Office Equipment and Renovation	-	0%				
c. Computer Equipment, Electronics, Power Generation	4,500	0%	4,500	0%	100%	0
d. Motorbikes	12,000	1%	1,977	0%	16%	10,023
2.3 Office Rental and Running Costs and Others	**81,347**	**4%**	**17,915**	**2%**	**22%**	**63,432**
3. PROGRAMME COSTS	**825,888**	**41%**	**300,469**	**33%**	**36%**	**525,419**
3.1 LIFT Output 1	**571,599**	**28%**	**227,268**	**25%**	**40%**	**344,331**
a. Assessment of stress-prone rice areas	287,959	14%	119,407	13%	41%	168,552
b. Evaluate and undertake participatory assessments	283,640	14%	107,861	12%	38%	175,779
3.4 LIFT Output 5	**254,289**	**13%**	**73,200**	**8%**	**29%**	**181,089**
a. Capacity building	254,289	13%	73,200	8%	29%	181,089
Sub-Total: Direct Costs:	**1,899,945**	**94%**	**870,975**	**94%**	**46%**	**1,028,970**
4. INDIRECT COST (6% of Direct Costs)	113,997	6%	52,258	6%	46%	61,738
Grand Total:	**2,013,942**	**100%**	**923,233**	**100%**	**46%**	**1,090,709**

***Source**: LIFT Accounts.*

ANNEX 7: Implementation Data Tables

Annex 7a: IRRI B PVS and BMP / NRM, etc trials by township

No.	Townships	Total # of RM trial / demos	PVS Mother Trials	PVS Baby Trials	NRM-Fertilizer	Dry Direct Seeded Rice	AWD	IBMP	Swarna Sub 1 (YMKSP-1)	Cropping system map
1	Labbuta	4	2	Yes	0	0	1	1	Yes	Yes
2	Mawlamyinegyun	3	1	Yes	0	0	1	1	Yes	Yes
3	Bogale	2	0	Yes	0	0	1	1	Yes	Yes
4	Thazi	7	2	Yes	1	3	0	1	0	0
5	Ye-U	4	3	Yes	1	0	0	0	0	Yes
6	Myaing	4	2	Yes	0	0	0	2	0	0
7	Wundwin	3	1	Yes	0	0	1	1	0	Yes
8	Pyawbe	2	1	Yes	0	0	1	0	0	Yes
9	Nyaung-U	2	1	Yes	0	0	1	0	0	0
10	Sagaing	1	1	Yes	0	0	0	0	0	0
11	Pakokku	0	0	Yes	0	0	0	0	0	Yes
12	Monywa	0	0	Yes	0	0	0	0	0	Yes
13	Seikphyu	1	1	Yes	0	0	0	0	0	0
14	Wetlet	1	1	Yes	0	0	0	0	0	0
15	Maubin	0	0	Yes	0	0	0	0	Yes	Yes
	Totals:	**34**	**16**	**400**	**2**	**3**	**6**	**7**	**1,360**	**N/A**

Annex 7b: Rice seed production

Rice seed production for IRRI B

No.	Variety	TONS of seed produced by project				
		2012	2013	2014	2015	Total
1	Swarna sub-1		21	10	8	39
2	Salto Sin Thwe Latt				2.5	2.5
3	Sin Thu Kha				2.5	2.5
4	GSR				0.5	0.5
5	Anawabo				0.1	0.1
6	IR 87705-44-4-B			1.82	2.037	3.857
7	IR 87707-182_BBB			1.185	1.071	2.256
8	IR 10T 107			2.0	3.9375	5.9375
9	Shwe Pyi Htay			1.575	4.809	6.384
10	IR 87707-446-BBB			0	2.6775	2.6775
11	IR 07A 234			0	1.281	1.281
	Total Tons of seed produced:					**66.993**

Annex 7c: Post-harvest support for different villages

No.	Village	IP	Township	Type of collaboration	Specific interventions / activities
1	Kyee Chaung		Mawle-myaingjyun	**Learning Alliance and Integrated PH pilot / demo village:**	• **Learning Alliance** group. • **Flatbed dryer** installation (linked with GRET "inventory storage"), promotion and demonstration together with other villages in Bogale and Maw'Gyun. • Hermetic storage. • TC 800 thresher demonstration (Nov. 2014).
2	Pa Dae Gaw		Mawle-myaingjyun	**Learning Alliance and demo Village**:	• **Learning Alliance** group. • Light Weight Thresher (TC 800) demonstration.
3	Nan Phaw-Kalar Chaung	Mercy Corps	Labutta	**Integrated PH pilot / demo village**:	• **Flatbed dryer** installation (in cooperation with Mercy Corps), promotion and demonstration together with other villages in Labutta. • Demonstration of Light Weight Thresher TC800.
4	Aung Taw Mu	Mercy Corps	Labutta	**PH demo vge:**	• **Solar Bubble Dryer** Demo. • Hermetic Storage. • Storage trial using Super bags, Pioneer bags and control. • Demonstration of GrainSafe II and Grainsafe III (with Mercycorp).
5	Pa Thet	WHH	Bogale	**PH demo vge:**	• **Solar Bubble Dryer** demo. • Hermetic storage. • GrainSafe II demonstration with WHH.
6	Dar Chaung	WHH	Bogale	**PH demo vge:**	• Hermetic Storage. • Storage trial using Super bags. • Pioneer bags and control. • Demonstration of GrainSafe II.
7	Thar Phyan Gyi	WHH	Bogale	**PH demo vge:**	• Hermetic Storage, Demonstration of GrainSafe II.
8	Ngapi Tone Hle	WHH	Bogale	**PH demo vge:**	• Hermetic Storage. • Demonstration of GrainSafe III with WHH.
9	Min Hla Su	WHH	Bogale	**PH demo vge:**	• Demonstration of GrainSafe III with WHH.
10	Yae Kyaw	GRET	Bogale	**PH demo vge:**	• GrainSafe II storage demo with GRET.

ANNEX 8: Varieties selected by the farmers through PVS (PA and SE)

(Selected through preferential analysis (PA) and and sensory evaluation (SE) for the PVS mother trials)

Annex 8a: Varieties selected by the farmers in the Delta

#	Variety	Season	Years	Maturity (days)	Plant Height (cm)	Potential Yield (t/ha)	Amylose Content (%)	Prominent Traits	Status of Variety Release in Myanmar
Varieties for the Monsoon / Wet Season:									
1	Saltol Sin Htwe Latt	Wet	2012 & 14	142	108	5.0-5.5	20.4	Salinity tolerance	Released 2013
2	Sin Thu Ka	Wet	2012 & 13	140	115	5.0-.06	23.7	Resistant to BLB	Released 2007
3	Shwe Pyi Htay	Wet	2012	120	105	4.5-5.0	25.1	Aromatic	Released 2007
4	Shwe Ta Soke	Wet	2012	172	148	4.0-5.0	27.2	salinity tolerance; anaerobic germination	Released 1985
5	Sin Thwe Latt	Wet	2013	140	135	6.0-6.5	20.4	high yield	Released 2004
6	Annawabo (Local)	Wet	2013	115				Local salt tolarent	Landrace
7	BR11-Sub1 (Yemyoke Khan 2)	Wet	2013	135	110	5.0-6.5	24	submergence tolerance; high yield	Released 2015
8	GSR IR1-12-D10-S1-D1	Wet	2013	115	105	5.5-6.5		Aromatic and high yield	New for testing
9	IR83140-B-11-B	Wet	2013	115	105	6.0-6.5	21.5	salinity +submergence tolerance; blast resistant; high yield	New for testing
10	Inpara 3	Wet	2014	140	107	5		Submergence tolerant with good grain quality	New for testing
11	IR 85309-Sub 1-156-1-1-1	Wet	2014	136	110	5.5		Submergence tolerant	New for testing
12	PSBRc 18	Wet	2014	130	92	5		Salinity tolerant	New for testing
Varieties for the Summer / Dry Season:									
1	IR 10T 107 (Sin Swe Yin)	Dry	2012 / 13	115	122	5.4	21.6	salinity tolerance	Released 2015
2	IR 10T 108	Dry	2012 / 13	116	121	4.8	19.5	salinity tolerance	For registration
3	IR 10T 109	Dry	2012 / 13	117	95	5	25.3	salinity tolerance	For registration
4	IR 10T 111	Dry	2012 / 13	118	113	4	24.7	salinity tolerance	For registration
5	CSR 36 (Swe	Dry	2012 / 13	135	110	4	23.6	salinity tolerance	Released 2015

#	Variety	Season	Years	Maturity (days)	Plant Height (cm)	Potential Yield (t/ha)	Amylose Content (%)	Prominent Traits	Status of Variety Release in Myanmar
	ASEAN)								
6	BR28-Saltol	Dry	2013 / 14	110	105	5.0-5.5	26.6	salinity tolerance	New for testing
7	IR86384-46-3-1-B	Dry	2013 / 14	114	130	4.0-4.5	-	salinity +submergence tolerance	New for testing
8	IR86385-55-2-1-B	Dry	2013 / 14	119	129	4.5-5.0	-	salinity +submergence tolerance	New for testing
9	IR86385-80-1-1-B	Dry	2013 / 14	110	110	5.0-5.5	-	salinity +submergence tolerant	New for testing
10	Salinas 12	Dry	2013 / 14	115	105	5.0-5.5	Yes	salinity tolerance	New for testing

Annex 8b: Varieties selected by the farmers in the Central Dry Zone

#	Variety	Season	Years	Maturity (days)	Plant Height (cm)	Potential Yield (bsk/ac)	Amylose Content (%)	Prominent Traits	Status of Variety Release in Myanmar
Varieties for the Monsoon / Wet Season:									
1	IR 10T 107 (Sin Shwe Yan)	Wet	2013 & 14	15	124	100	21.6	Salinity tolerant	Released 2015
2	IR 87705-44-4-B	Wet	2013	116	120	100	18.9	Drought tolerant	For registration
3	IR 87707-182-B-B-B	Wet	2013	112	126	100	24.3	Drought tolerant	For registration
4	IR 08N 184	Wet	2014	124	100.4	120			New for testing
5	IR 09A 152	Wet	2014	118	89.4	122		Aerobic rice	New for testing
Varieties for the Summer / Dry Season:									
1	Shwe Pyi Htay	Dry	2013 / 14	127	105	100	23.1	Aromatic rice	In 2007
2	IR 10T107	Dry	2013 / 14	115	124	100	21.6	Salinity tolerant	Released 2015
3	IR 87705-44-4-B	Dry	2013 / 14	115	120	100	18.9	Drought tolerant	For registration
4	IR 87707-182-B-B-B	Dry	2013 / 14	113	126	100	24.3	Drought tolerant	For registration
5	IR 87707-446-B-B-B (Yeanelo-4)	Dry	2013 / 14	114	132	100	21.3	Drought tolerant	Released 2015
6	IR 07A234	Dry	2013 / 14	123	96	100	19.4	Aerobic rice	New for testing

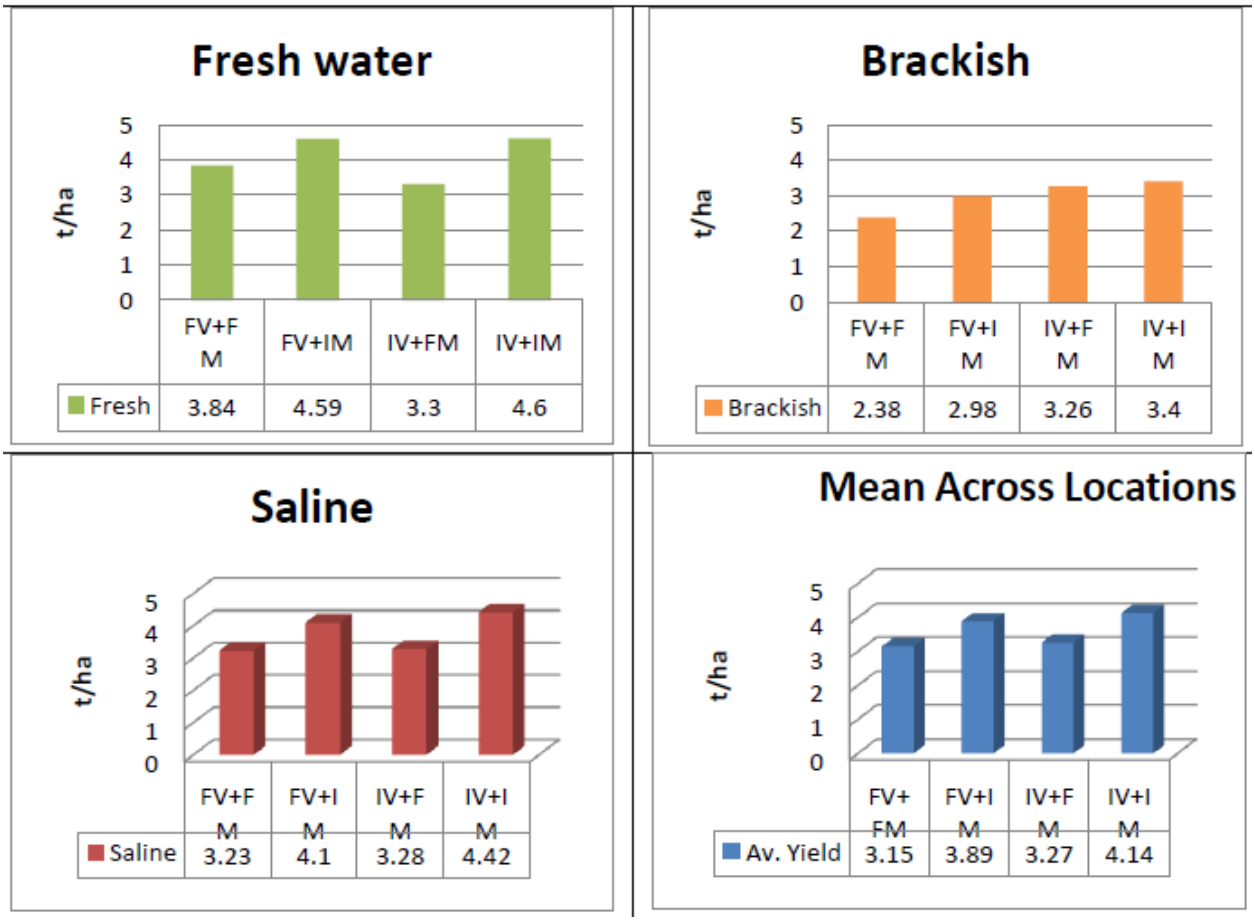
ANNEX 9: Indicative yield graphics (from four-factor trials in the Delta)

Mean rice yield of each combination (variety + practice) across three water eco-zones.

Water eco-zone	FV + FM	FV + IM	IV + FM (#1)	IV + FM (#1)
Fresh	3.84	4.59	3.30	4.60
Brackish	2.38	2.98	3.26	3.40
Saline	3.23	4.10	3.28	4.42
Mean yield (t/ha)	**3.15**	**3.89**	**3.27**	**4.14**

Source: IRRI A Annual Report for 2014.
Note #1: Mean of two Improved Varieties.

Yield advantage of variety, management, and combination of both over FV + FM for three water systems: fresh, brackish, and saline.



Source: IRRI A Annual Report for 2014.

ANNEX 10: Main People Consulted

LIFT (FMO, Programme, M&E, etc)

- Mr Antoine Deligne , Livelihoods and Food Security Specialist, LIFT Programme Office.
- Ms Libera Antelmi Dazio, Livelihoods and Food Security Specialist, LIFT Programme Office.
- Mr Nay Myo, Agriculture and Livestock Officer, LIFT Programme Office.
- Mr Aung Kyaw Kyaw, M&E Officer, LIFT M&E Unit.
- Mr Thein Zaw, Programme Officer (Rakhine), LIFT Programme Office.
- Dr Anne Coghlan, M&E Officer, LIFT M&E Unit.
- Mr Steve Dowall, Lead Technical Officer, LIFT Programme Office.
- Mr Harald Kreuscher, Programme Officer, LIFT Programme Office.
- Mr Nay Tun, Delta Coordinator (Bogale office), LIFT Programme Office.
- Ms San Dar Aung, Program Officer (Contract Management), LIFT Programme Office.
- Ms Yee Yee Thant, Program Officer (Contract Management), LIFT.
- Mr Zaw Naing Oo, Programme Officer, LIFT Programme Office.
- Mr Han Thar Soe, Programme Officer, LIFT Programme Office.
- Mr Than Tun, Off-farm Income Generation Officer, LIFT Programme Office.
- Myat Su Alin, Programme Officer, LIFT Programme Office.

IRRI Staff met:

- Dr Grant Singleton, Principle Scientist and Coordinator IRRC, IRRI.
- Dr David Johnson, Head of CESD (LIFT B / Research), IRRI.
- Dr Martin Gummert, Senior Scientist (Post Harvest), IRRI.
- Dr Ye Tun Tun, Post Doctoral Fellow (LIFT A / Delta / ACIAR), IRRI.
- Dr Khin Thawda Win, Post Doctoral Fellow (LIFT B / Research) , IRRI.
- Dr Nyo Me Htwe, Post Doctoral Fellow (LIFT A / Delta / ACIAR), IRRI.
- Ms Khin Htar Nge, Assistant Scientist (LIFT B), IRRI.
- Ms Aye Aye Thant, Assistant Scientist Bogale), IRRI.
- Ms Palal Moet Moet, Researcher (LIFT A), IRRI.
- Ms Aung Myat Thu, Researcher, IRRI, Labutta.
- Dr Swe Tin Myint Thein, Consultant, IRRI.
- Arelene Julia B. Malabayabas, Assistant Scientist (M&E), IRRI.
- Dr Madonna Casimero, Senior Scientist, IRRI.
- Dr Romeo Labios, Scientist (IRRI Country Rep), IRRI.
- U Than Aye, Project Scientist / Consultant, IRRI.
- Dr To Phuc Tuong, Principle Scientist, IRRI.
- Ms Reianne M. Quilloy, Specialist Knowledge Management and Communication, IRRI.
- Mr Yan Lin Aung, Assistant Agricultural Engineer, IRRI.
- Mr Yan Naing Lin, Head of IRRI Office, Meiktila, IRRI, Meiktila.
- Mr Wai Lu, Field Technician, IRRI, Myaing TS (DAO office).
- Dr R.K. Singh, Senior Scientist / Rice Breeder, IRRI.
- Dr Myo Aung Kyaw, IRRI Consultant and Vice President, Myanmar Rice Federation, and Myanmar Rice Traders Association.

Government / Line Department Staff met:

- Mr U Sein Than, Township Manager, DOA, Bogale TS.
- U Aung Myint Soe, Deputy Staff Officer, DOA, Bogale TS.
- U Aung Hla Oo, Deputy Staff Officer, DOA, Bogale TS.
- Aye Lwin, ALO, DOA, Bogale TS.
- Moe Myint, Assistant Staff Officer, DOA, Bogale TS.
- Mya Thura Kyaw, Assistant Staff Officer, DOA, Bogale TS.
- Khin Thazin Myint, Deputy Officer, DOA, Bogale TS.

- Ms Daw Thein Win, Deputy Officer, DOA, Mawlamyinegyun TS.
- Mr Kyi Moe, Deputy Officer (GIS), DOA, Pathein.
- Mr U Myint Thein, Regional Director, DOA, Ayerarwady Region.
- Mr Li Htein Lin Tun, Assistant Research Officer / Manager, DAR, Myaung Mya Seed Farm.
- Ms Daw Khin Yee, Staff Officer, DOA, Labutta District.
- Mr U Hla Htoo, Deputy Staff Officer, DOA, Labutta Township.
- Ms Daw Nwe Nwe Aye, Deputy Staff Officer, DOA, Labutta Township.
- Ms Daw Zin Zin Htwee, Deputy Assistant Staff Officer, DOA, Labutta Township.
- Dr Ye Tint Tun, Director General, Dept of Agric Research, Yezin, NPT.
- Ms Tin Tin Myint, Deputy Director General, Dept of Agric Research, Yezin, NPT.
- Ms Ohnmar Myint, Rice Breeder, Dept of Agric Research, Yezin, NPT.
- Ms Kyi Kyi Thet, Deputy Director, Int Relations and Economics (GIS), Dept of Agric Research, Yezin, NPT.
- Ms Daw Win Thida Oo, Ass Research Officer, Agronomy (GIS, HH Survey, BMP), Dept of Agric Research, Yezin, NPT.
- Dr Khin Mar Htay, Deputy Director, Water Utilisation Research (AWD), Dept of Agric Research, Yezin, NPT.
- Ms Khaing Khaing Htwe, Research Officer (HH Survey) , Dept of Agric Research, Yezin, NPT.
- Mr Wa Yan Aung, Demonstrator (YAU) and MSc student, Yezin Agricultural University.
- Mr Thant Zin, Assistant Lecturer (State Agricultural Institute and MSc student, Yezin Agricultural University.
- Ms Daw Myint Htay, Township Manager, DOA, Thazi TS.
- Ms Daw Tin Tin Mya, Agricultural Officer, DOA, Thazi TS.
- Ms Daw San Khaing Htwe, Agricultural Officer, DOA, Thazi TS.
- Ms Daw Su New Soe, Agricultural Officer, DOA, Thazi TS.
- Ms Daw Sandas Win, Agricultural Officer, DOA, Thazi TS.
- Mr U Zaw Win Tun, Agricultural Officer, DOA, Thazi TS.
- Mr U Zaw Ye Tun, Agricultural Officer, DOA, Thazi TS.
- Mr U Khin Maung Nyunt, Regional Director, DOA, Sagaing Region.
- Mr U Win Shwe, Township Manager, DOA, Ye U TS.
- Mr U Tin Maung Win, Seed Farm Officer, DOA, Ye U Seed Farm.
- Mr U Theum Aung Oo, Agricultural Officer, DOA, Sagaing TS.
- Ms Daw Kyi Shwe, Farm Manager, DAR, Pankone Research Farm, Ye U TS.
- Mr U San Htwe, Senior Research Officer, DAR, Pankone Research Farm, Ye U TS.
- Mr U Khim Oo, Township Manager, Myaing TS.
- Ms Daw Kyi Kyi Thein, Deputy Staff Officer, Myaing TS.
- Mr U Mg Mg Oo, Assistant Staff Officer, Myaing TS.

Aung Yadana Thom Rice Mill, Bogale

- Mr Ko Myo Mein Aung, Owner and Director, Aung Yadana Thom Rice Mill, Bogale.
- Mr Zan Zaw Oo, Accountant, Aung Yadana Thom Rice Mill, Bogale.

WHH - Welt Hunger Hilfe (Bogale)

- Mrs Jana Koether, Head of Program, WHH (Bogale).
- U Soe Myint, Field Coordinator, WHH (Bogale).
- Thu Zor Thein, Data Administrator (M&E), WHH (Bogale).
- Ms Zin Htoo Hlyan, WHH - IRRI Agronomist, WHH (Bogale).
- Ms Nimar Win, WHH - IRRI Agronomist (now employed by WHH), WHH (Bogale).

GRET (Bogale)

- Ms Premila Masse, Technical Advisor (Delta), GRET (Bogale)
- Phyo Thu Wai, Programist, GRET (Bogale)

- Soi Aung Kyaung, MIS, GRET (Bogale)
- Ms Yadanar Win, GRET - IRRI Agronomist, GRET (Bogale)
- Mr Than Hlike, GRET - IRRI Agronomist (now employed by GRET), GRET (Bogale)

Radanar Ayar (Bogale)
- Mr U Thom Myint, Secretary General, Radanar Ayar.
- Mr Thura Aung, Director of Programme, Radanar Ayar.
- Ms Ngu Wah Hlaing, Programme, M&E and Learning, Radanar Ayar.
- Thet Naung Soe, Senior Livelihood Technician / Agronomist, Radanar Ayar.

Proximity Designs (Bogale)
- Mr Myo Khin, Plant Pathologist, Proximity Designs (Bogale).

Mercy Corps (Labbuta)
- Ms May Thingyan, Agriculture Development Officer, Mercy Corps, Labutta.
- Mr Win Naing, Admin and Human Resources, Mercy Corps, Labutta.

VILLAGERS /FARMERS met:
- Pa Dae Kaw Village, Mawlamyinegyun TS: Mon, 29 Jun 15 (5 M, 0 F).
- Dar Chaung Village, Bogale TS: Tue, 30 Jun 15 (10 M, 2 F).
- Mahay Village, Bogale TS: Tue, 30 Jun 15 (1: Mr Khin Mo Myint M, 0 F).
- Ah Kal Chung Village, Bogale TS: Wed, 1 Jul 15 (5 M, 1 F).
- Kyee Chaung Village, Mawlamyinegyun TS: Thu, 2 Jul 15 (6 M, 6 F).
- Minkone Village, Labutta TS: Mon, 6 Jul 15 (11 M, 6 F).
- Htin Pone Kwin Village, Labutta TS: Tue, 7 Jul 15 (10 M, 4 F).
- Aung Taw Mu Village, Labutta TS: Wed, 8 Jul 15 (7 M, 8 F).
- Ah Nyar Su Village, Labutta TS: Wed, 8 Jul 15 (11 M, 0 F).
- Kyar Ni Kan / Mi Oo Village, Labutta TS: Thu, 9 Jul 15 (8 M, 1 F).
- Taung Kone Village, Labutta TS: Thu, 9 Jul 15 (3 M, 0 F).
- Inn Ka Net Village, Thazi Township: Tue, 14 Jul 15 (20 M, 4 F).
- Aung Thar Village, Ye U TS: Wed, 15 Jul 15 (9 M, 3 F).
- Taw Ma Village, Myaing TS: Fri, 17 Jul 15 (9 M, 4 F)."
- Panswar Village, Myaing TS: Fri, 17 Jul 15 (2 M, 1 F).
- Kyaung Kan Village, Myaing TS: Fri, 17 Jul 15 (5 M, 0 F).
- Solipan Village, Myaing TS: Fri, 17 Jul 15 (2 M, 2 F).

ANNEX 11: Interview Guides for Focus Group Discussions and Interviews

A) INTERVIEW GUIDE FOR IP AND GOVERNMENT PARTNER INTERVIEWS

1. What they do: their business: Main task / functions / project / activities for rice?

- Main task / functions / project / activities related to rice research, extension, demonstration, etc for rice varieties, BMPs, post-harvest.

2. What done with IRRI A or B projects?

- Involvement in IRRI A
- Involvement in IRRI B.
- Relevance of IRRI projects.

3. What learnt or gained from the projects, and how useful was this?

- What have they learnt or gained: what were the benefits?
- Thoughts and suggestions on relevance and usefulness of main products or outputs from IRRI A or B. Run through the list and assess:
  - Useful for you / farmers / others,
  - Why or why not. How used?

4. What was adopted: How were practices or the business changed?

- What have you or will you adopt and how? How have you or will you change your business / practices / operations: e.g. for
  - Research: Training: Extension: approach, recommendations, demonstrations: Seed distribution / multiplication programmes: Post-harvest: GIS: etc.
- Physically review and assess the extent and depth of the adoption if possible: e.g. for GIS, training programmes, extension leaflets, etc.

5. Overall feeling / satisfaction (or not) with collaboration with IRRI projects:

- What did you get from IRRI: What did IRRI get from you?
- Overall feeling / assessment of the relationship.

6. Unintended consequences:

- Any other good things / benefits (not yet covered) from involvement with the IRRI projects?
- Any bad things / negative consequences from involvement with the IRRI projects?
- Probe and explore any issues that emerge.

7. Gender and cross-cutting issues:

- NOTE: Gender equity issues should be MAINSTREAMED into all parts of the interview as appropriate. CHECK that this has been done at the end and rectify if not.
  - E.g. how women were involved in PVS, IBMP, etc?
- Review any other cross-cutting issues: environment, social, etc.

8. Any Questions or Suggestions for us?

9. Site Visit:

Visit and assess through observation and discussions on the move: e.g.

- For **IPs**: Check offices, GIS, staff, extension programmes, extension and training material (leaflets, guidelines, etc), etc.
- For **DOA**: Check GIS, seed multiplication, extension, etc.
- For **DAR**: Check GIS, seed multiplication, research (PVS methodology, etc), etc.

B) INTERVIEW GUIDE FOR FARMER GROUP INTERVIEWS

OBTAIN <u>Village Profile</u> and <u>list of trials and training by season</u> before arrival:

If Village Profiles not available get basic data on the village in question 1.

- **Zone**: Prone to salinity, submergence (flood) or drought ?
- No of HHs: Total and no of farmers.
- Area cultivated: monsoon / summer rice.
- Other livelihoods.
- IP project supporting the village and main activities.

NOTE:

- Start time and End time.
- No. of farmers present: M / F.

1. INTRODUCTION:

- Introductions: who we are, purpose, etc.
- Who they are: Nature of the group: formed how, by who, represents who, etc?
- Relation to VDC, IRRI project, other projects.
- Types of farmers / group, relation to projects, etc.
- Main characteristics of village if Village Profile not available, or clarification is needed:

2. AGRICULTURE (rice farming) AND LIVELIHOODS:

- Main agricultural activities: rice (monsoon / summer) and other crops, livestock, other.
- Main sources of income: crops, livestock, other agric, off-farm, etc.
- Other sources of income in the village: understand context and motivation for income / food.
- How rice is sold: marketing.
- Use of credit. Who uses, for what, from where (MADB, others?), frequency, etc.

3. MONSOON RICE:

a) Main varieties grown before IRRI?	% area	Remarks

b) Mother and Baby Trials:

- **Mother Trial** done when, where, # of farmers (total and interviewed), satisfaction, etc?
- Local variety used and why?
- Management of local and IRRI varieties in Mother Trial?
  - Local:
  - IRRI:
- **Baby Trials**: No of farmers involved in baby trials: M: _____ F: _____
- No of these farmers present in FGD / interviewed: M: _____ F: _____
- Management of Local compared to IRRI varieties in Baby Trials?
  - Local:
  - IRRI:

BABY TRIAL Varieties	Yield B/A	Price K/B	B x K	Preference: Why / Why not?
L:				
L:				
IR:				
IR:				
IR:				
IR:				
IR:				

Yield at MT: and BT if different *Preference after MT and BT.*

c) <u>Adoption</u>: Local and IRRI varieties grown by <u>interviewed farmers</u> and % of area:

Indicate "M" or "F": and % of area cultivated for each variety:

Local / IRRI Varieties															

d) <u>Adoption</u>: Number of <u>other farmers</u> in the village adopting IRRI varieties:

IRRI Varieties	Other IRRI Farmers	Others in village	Remarks

e) Availability of seed, and other constraints to spread?

4. SUMMER RICE:

a) Main varieties grown before IRRI?	% area	Remarks

b) Mother and Baby Trials:

- **Mother Trial** done when, where, # of farmers (total and interviewed), satisfaction, etc?
- Local variety used and why?
- Management of local and IRRI varieties in Mother Trial?
  - Local:
  - IRRI:
- **Baby Trials**: No of farmers involved in baby trials: M: _____ F: _____
- No of these farmers present in FGD / interviewed: M: _____ F: _____
- Management of Local compared to IRRI varieties in Baby Trials?
  - Local:
  - IRRI:

BABY TRIAL Varieties	Yield B/A	Price K/B	B x K	Preference: Why / Why not?
L:				
L:				
IR:				
IR:				
IR:				
IR:				
IR:				

Yield at MT: and BT if different *Preference after MT and BT.*

c) <u>Adoption</u>: Local and IRRI varieties grown by <u>interviewed farmers</u> and % of area:

Indicate "M" or "F": and % of area cultivated for each variety:

Local / IRRI Varieties															

d) <u>Adoption</u>: Number of <u>other farmers</u> in the village adopting IRRI varieties:

IRRI Varieties	Other IRRI Farmers	Others in village	Remarks

e) Availability of seed, and other constraints to spread?

5. MANAGEMENT ETC TRIALS:

Trial	When: Year & Monsoon / Summer	No of farmers involved		Remarks: e.g. Treatment, control, etc.	What was result? What was adopted?	No. of farmers adopting			
						This Group		Other IRRI	Other village
		M	F			M	F		
Seedbed management									
Fertiliser management									
Weed management									
Yield loss assessment									
AWD									
IBMP									
4 Factor Trial									
Post-Harvest									

5. MANAGEMENT ETC TRAILS:

For each trial carried out:

- When done? Year and Monsoon / Summer rice?
- No of farmers involved in trial: M F
- Outline of experiment: Treatment / Control, etc.
- What was learnt / result:
- Adoption:
  - What adopted?
  - Number adopted:
    - ❖ This group M / F
    - ❖ Other IRRI farmers:
    - ❖ Others in village:

6. POST HARVEST ACTIVITIES:

- Any Post Harvest activities?
- Who involved M / F
- What learnt?
- What adopted?

7. TRAINING RECEIVED:

- What training received by who?
- How useful? What learnt?

8. MOST USEFUL THINGS ADOPTED:

a. What very useful things have adopted as a result of the IRRI project?

- Only the most useful things (not a long list) that you have actually adopted and are using.
- Including new varieties, management practices, etc.
- For each of the interviewed farmers **to answer one by one**.

b. Which of these are being adopted by other farmers in the village?

- Varieties:
- Management practices:

9. GENDER AND CROSS-CUTTING ISSUES:

- NOTE: Gender equity issues should be MAINSTREAMED into all parts of the interview as appropriate. CHECK that this has been done at the end and rectify if not.
- Involvement and benefits / harm for women (and disadvantaged social groups) :
  - In project activities.
  - In practices that could be or were adopted.
- Any negative consequences for you, women or other social groups (from the IRRI projects)?
  - E.g. reduced need for casual labour, etc.
- Review any other cross-cutting issues: environment, social, etc.

10. OVERALL EXPERIENCES AND UNINTENDED CONSEQUENCES:

f) Overall experience, satisfaction, unintended consequences, remarks:

- **Overall experience** of collaboration with IRRI?
- Any other **good things** / benefits from involvement with the IRRI projects?
- Any **bad things** / negative consequences that happened?
- Probe and explore any issues that emerge.

11. ANY QUESTIONS FOR US?

12. SITE VISIT:

- Physically review and assess the extent and depth of the adoption if possible: e.g. new seed, rice seed collection, post-harvest, extension leaflets, etc.