

Study on Extension and Farm Advisory Services (EAS)

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THE LIVELIHOODS AND FOOD SECURITY TRUST FUND

UNOPS Fund Management Office
12(O) Pyi Thu Lane, 7 Mile, Mayangone Township, Yangon, Myanmar
Phone: +95 1 65 7280~87, Fax: +95 1 65 72 79
Email: lift@unops.org
lift-fund.org | facebook.com/liffund



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This report is prepared by:

AFC Consultants International GmbH (AFC)
Dottendorfer Str. 82
53129 Bonn, Germany
Phone: +49-228-985790 / Fax: +49-228-9857979
E-mail: info@afci.de / Web: www.afci.de



Team Members

Christoph Weber, Team Leader
U San Thein, Team member
Aung Kyaw Phyto, Team member
Heather Mary Morris, Team member

For any further information please contact at AFC:

Johannes Buschmeier
Tel: + 49-228-98579-60
E-mail: johannes.buschmeier@afci.de

Johannes Geisen
Tel.: +49-228-98579-57
E-mail: johannes.geisen@afci.de

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Abbreviations and Acronyms

ACIAR	Australian Centre for International Agricultural Research
ADRA	Adventist Development and Relief Agency
CAEDP	Community Agricultural Economic Development Platform
CAHW	Community Animal Health Worker, synonym with VAHW
CARTC	Central Agriculture Research and Training Centre (in Hlegu)
CBO	Community-Based Organisation
CDZ	Central Dry Zone
DAR	Department of Agricultural Research
DICD	Department of Industrial Crops Development
DoA	Department of Agriculture
DRD	Department of Rural Development
EAS	Extension and Farm Advisory Services
eop	end of project
FFS	Farmer Field School
GoM	Government of Myanmar
GRET	Groupe de Recherche et d'Echanges Technologiques, French NGO
HYV	High Yielding Varieties
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IP	Implementing Partner of LIFT
IRRI	International Rice Research Institute
LBVD	Livestock Breeding and Veterinary Department
LIFT	Livelihoods and Food Security Trust Fund
MAFF	Management Advice for Family Farms (In Myanmar: MaLaSaKa)
MAS	Myanmar Agricultural Service
MC	Mercy Corps
MoAI	Ministry of Agriculture and Irrigation
MoLFRD	Ministry of Livestock, Fishery and Rural Development
MFI	Microfinance institution
PGS	Participatory Guarantee System
PNO	Pa-O National Organisation
PVS	Participatory Varietal Selection
SAI	State Agricultural Institute
SCS	Selective Concentrative Strategy (extension approach)
SHY	Special High Yielding Program, similar to SCS
SPT	Single Plant Transplanting
SRI	System of Rice Intensification
SSS	Southern Shan State
SWSS	Salt Water Seed Selection
TdH	Terre des Hommes, in the context of the report the Italian branch of the NGO
T&V	Training & Visit (extension approach)
UoF	University of Forestry
UVS	University of Veterinary Science
VAHW	Village Animal Health Worker, synonym with CAHW
VDC	Village Development Committee
WTRP	Whole Township Rice Production Program
WHH	Deutsche Welthungerhilfe, German NGO
YAU	Yezin Agricultural University

Executive Summary

Traditionally there have been only two public extension and farm advisory service providers active in Myanmar, the Department of Agriculture (DoA) and the Livestock Breeding and Veterinary Department (LBVD).

DoA was active on the crop side with a distinctive focus on rice and mainly oriented towards the achievement of production targets. Although farmers are free now to grow the crop of their choice, DoA is still focusing very much on rice.

LBVD is mainly active on animal disease surveillance and control; the activities on animal breeding and nutrition are very limited.

In 2013 the Ministry of Livestock, Fishery and Rural Development (MoLFRD) became the focal ministry for rural development beyond agriculture.

All EAS providers in the public sector lack a clear strategy, are characterized by a centralized administrative and management structure which is not conducive to initiate and implement extension activities focused on the needs of the farming communities. Budgetary restrictions do neither favour frequent visits to the villages nor the implementation of any activities beyond the basic routine work.

In the private sector mainly the suppliers of fertilizer and agro-chemicals became important providers of information and advice at various levels. There is wide range of input-supply shops at township level and this network is fast expanding. Additionally the main fertilizer and agro-chemical companies became very active in the countryside and their agronomists tour the villages and arrange farmers meetings and field-days. There is a fierce competition between several companies to strengthen their position in the fast growing market.

Seed companies also play an increasing role in the provision of EAS particularly in the maize and vegetable sub-sectors.

Some commercial companies have strong informal linkages with the public institutions and their personals as business partners.

The third major group of EAS providers are agricultural/rural development projects. Here the Livelihood and Food Security Trust Fund (LIFT) established in 2009 is a major player, which finances a wide range of projects all over the country with various innovative and comprehensive EAS approaches. Other international or bilateral development organizations like IRRI, FAO, JICA and ACIAR have been implementing agricultural projects since a long time as well.

The agricultural education sector is concentrated on 12 State Agricultural Institutes offering a 3-year diploma course and the Yezin Agricultural University (YAU) offering further studies on B.Sc., M.Sc. and Ph.D. level.

Outside the educational sector the Department of Agricultural Research (DAR) is conducting applied research focusing on plant breeding again with the main emphasis on rice.

The formal linkages between the three sectors of EAS providers –public, private, projects- are emerging and still at an infant stage, but developing.

In the public sector exchange and linkages between agricultural education, research and extension are weak and both budgetary and administrative regulations and the prevailing management style rather contribute to a wide-spread “silo-mentality”.

The overall agricultural and rural development process needs a stronger basis of rational and economic considerations. On national as well as on farm level the financial benefit for the country’s economy respectively the farmers’ income needs to be the priority.

The government urgently has to set political priorities, create a suitable legal and regulatory framework and improves law enforcement; otherwise there is the imminent risk that a largely unregulated process mainly driven by the private sector will define the tunes.

An intensified and continuous policy dialogue is essential to set these priorities and directions for the further development of extension and farm advisory services.

The absorption capacity of government institutions on all administrative levels needs to be enlarged to stay aware of the dynamic developments of EAS in the project and private sectors and incorporate these experiences into the development strategy on national level.

Given the wide range of agro-ecological zones and consequently the wide range of prevailing cropping patterns as well as the different degree of market integration of the farming communities there is a need for a comprehensive decentralization process in agricultural education, research and – most urgently – in extension. On the one hand the technical messages need to address issues like the economic drivers of the prevailing cropping pattern more than it is the case at present; on the other hand the approach has to be modified to increase the access to and the acceptability of the messages by the farming community.

The concept that a fully public-financed extension service will operate efficiently and effectively nationwide and covering all major crops is unrealistic and needs to be modified. Other actors will increase their activities in EAS and the roles of the various actors need to be discussed and taken into account during the re-definition of the mission of public EAS.

A number of structural changes and reforms are required to improve the linkages between the agricultural education, research and extension institutions on the one hand, but on the other hand also adjusting the orientation of agricultural policy in general towards the problems and the needs of the farming community. Since LIFT and other development agencies have a considerable experience in agricultural development in the country, these experiences should be considered in this reform process.

The structural reforms and strategic redefinition in the public sector will take a considerable time and will only evolve as part of the overall political reform process. Therefore it seems advisable that the donor community takes a coordinated initiative to bridge this transition period by supporting three regional training centres for the training of extension staff on up-to-date technical know-how from seed multiplication to post harvest storage with a strong component on on-farm demonstrations, but also providing training on extension methodologies with due consideration of the experiences of the recent past.

Regional experiences of neighbouring countries in South-East Asia and a continuous exchange of information between these countries need to be strengthened as well.

In the medium-term increased efforts are essential to include farming in the vocational educational training (VET) system in order to increase the competences and capabilities of farmers as entrepreneurs, but –equally important– making professional farming an attractive choice for young people in rural areas of the country.

1

Purpose, approach and Implementation of the study

The purpose of this study is to provide a qualitative analysis of the supply and demand sides of extension and farm advisory services (EAS) in Myanmar, in order to guide future policy and investment choices faced by the Government, donors, the private sector and the development community.

The main objectives of the study are:

- A comprehensive analysis of EAS in Myanmar that documents supply and demand side needs, as well as the range and viability of the services currently available (efficiency, effectiveness and sustainability).
- Identification of the interaction and linkages between the various EAS approaches.
- On the basis of the findings of this study, provide recommendations for further development of EAS in Myanmar and for potential contributions from LIFT. Identify possible entry points and opportunities for LIFT to engage with Government, public and private stakeholders in order to improve EAS in Myanmar.
- Review relevant international experiences with improving EAS in other countries for the purpose of comparison and to support strategic recommendations.

The study considers value chains of five major crops (rice, pulses, oilseeds, maize and vegetables).

The provision of other services such as rural finance is not part of the study; issues of input supply and marketing are considered only to the extent that they are related to the provision of EAS.

The survey team consisted of the international team leader and three national specialists. The national specialist for gender participated in the survey for three weeks out of the six-week survey period. The core team completed a desk review, focusing on the reports of the implementing partners (IPs) as submitted to LIFT, but also considering other relevant reports and documentation (see Annex 1: desk review). Prior to the field survey, the core team visited relevant public institutions in Nay Pyi Taw and Yezin, as well as in Hlegu. In close cooperation between the team and LIFT, two townships in each of the three regions defined in the ToR were selected for the survey:

Region / State	Townships
Ayeyarwaddy region	Bogale, Mawlamyinegyun
Magwe region	Yenangchaung, Mahlaing
Shan State	His Hseng, Kalaw

The survey took place from 21st of January to 3rd March 2015 in six townships. In each of the six townships that had been selected, the team spent one week, including one day for travel, visiting four villages identified in accordance with the following criteria:

- Two villages in a dynamic area with easy access to markets and services, which under the prevailing conditions implied villages close to the centre of the township. One of the villages was a “LIFT-IP”-village, the other one a “non-LIFT”-village.
- Two villages in a less dynamic, more remote area with reduced access to markets and services; here again, one village was a “LIFT-IP”-village, the other one a “Non-LIFT”-village.

Overall, a total of 22 villages were surveyed; in Mawlamyinegyun and Yenanchaung townships the respective remote “Non-LIFT”-village was omitted since, based on additional information available, the extensive traveling time to these villages did not seem justified..

In the villages, one part of the team met with farmers and farmers groups, gathering information in structured interviews with a general focus on EAS and discussing key issues in more detail to gain additional information.

In three of the six townships (one township per region), one additional team member visited the same villages in order to conduct structured interviews mainly with women, focusing on gender aspects of EAS.

During the remaining two days, the core survey team visited a large number of stakeholders, mainly in township centres like input-supply shops, merchants, brokers and traders and processors. The team also visited markets in all townships surveyed to assess the range of produce, quality, varieties and prices.

The focus of the fourth team member was the role of the public sector in the provision of EAS, but also with regard to agricultural research in general and seed supply in particular. In the field of agricultural education, the team visited Yezin Agricultural University (YAU), three of its outreach campuses (Hlegu, Magwe, Aungban), the Heho State Agricultural Institute, the Hlegu Vegetable and Fruit Research and Development Centre and DoA seed farms in Mahlaing and His Hseng.

2

Definition and role of extension and farm advisory services (EAS)

In order to avoid misunderstandings and to enable readers to identify with the key messages of this study, a short mainstream definition of EAS is being provided below:

Extension and advisory services imply more than just the transfer of technologies. In a broader sense, EAS means the transfer of know-how and information, which will eventually enable the client/farmer to make his/her autonomous decision to change or modify the production and/or adopt innovations.

Know-how and information comprise two main areas:

- Technological improvements such as the use of new or improved crops, fertilisers, agro-chemicals and other measures for weed, pest and disease control; improved cultivation and irrigation techniques; soil and moisture conservation; crop harvesting and storage; animal breeding, nutrition, health and husbandry; and farm mechanisation.
- Organisational improvements in farm management, planning, budgeting and record keeping; agricultural credit; marketing; cooperatives and farmers' organisations/self-help groups.

In both areas, successful extension might lead to an improvement or the optimisation of the present system, but it might as well lead to the successful integration of an entirely new farming activity into the existing farming system.

The interest of the farmer is at the centre of the extension and advisory work. The farmer is free to decide between the alternatives, but he/she is also responsible for the consequences of his/her decisions. In the long run, the capacities and competences of the farmer to analyse his/her situation, to formulate problems and to identify solutions should increase. Very often, successful extension does not only have a positive impact on the farm as an enterprise, it also has repercussions on the socio-economic set-up of the farm family and on household economics. The extension worker must be familiar with the local farming system and have thorough knowledge of farmers' decision-making challenges under the prevailing conditions.

Over the past five decades, a public agricultural extension system as defined above did not exist in Myanmar. The state's production targets, especially for rice, were at the focus of agricultural services provided to the farmers. The approach was centrally planned, with top-down implementation.

Following the opening-up of the country and the democratic reforms of recent years, in particular since farmers were allowed to grow the crop of their choice, discussions about participatory extension, farmer-led extension etc. have intensified. While it is correct in principle that farmers' interests should be at the centre of any extension efforts, this study will make clear that this approach also has its limits.

Despite the dramatic changes undergone in a short period of time, past experiences will continue to make an impact on the behaviour of the vast majority of farmers and other stakeholders.

3

The situation of extension and farm advisory services (EAS) in five important value chains in Myanmar

Five value chains of important crops have been analysed with regard to the provision of EAS. Naturally, the choice of crops has been influenced by the prevailing cropping pattern in the survey areas, as well as by the priority activities of the respective LIFT-IP. For instance, Metta in Hsi Hseng focuses on upland rice, a crop that is in strong competition with hybrid maize in the area. To provide another example, Terre des Hommes in Yenanchaung focuses on vegetable production with water-saving technologies, while vegetables are not the predominant crop in the central dry zone.

Taking these factors into consideration, the following crops have been selected for analysis:

- Rice as the main crop in the Ayeyarwaddy delta and to a lesser extent upland rice in Hsi Hseng in Southern Shan State (SSS)
- (Hybrid) maize in Hsi Hseng in SSS
- Oilseeds, particularly sesame and groundnuts. in the central dry zone
- Pulses in the central dry zone
- Vegetables in the area around Kalaw/Aungban in SSS

3.1 Rice in the Ayeyarwaddy delta

In many regards, rice is by far the most important crop in Myanmar:

- It is cultivated on approximately 19 million acres, equivalent to about one third of the total area under cultivation.
- Rice supplies the main part of energy in the daily diet of the Myanmar people (between 70 and 80 percent).
- It contributes significantly to Myanmar's gross domestic product and its export earnings.

Due to its agro-ecological conditions, the Ayeyarwaddy delta has always been considered the rice bowl of the country, and all LIFT-IPs in the survey area in the delta focus on rice as the main crop.

In 2008, cyclone Nargis hit the delta region with devastating effects, and international emergency relief operations started here. On the agricultural side, this meant that the first priority was to enable the farming community to re-embark on rice cultivation as soon as possible after the devastation.

By funding a large number of projects, LIFT has been successful in establishing a wide umbrella of interventions in the area of rice production, which in the meantime have developed from emergency relief in the early years after cyclone Nargis to support for sustainable development.

The main actors of the network in the two delta townships surveyed (Bogale and Mawlamyinegyun) are the following:

- The International Rice Research Institute (IRRI) as the leading international research institution on rice and member of the Consultative Group on International Agricultural Research (CGIAR). IRRI has a long history in Myanmar, dating back to late 1965 (IRRI, 2000), and a number of IRRI-led/implemented rice development projects have been financed by various donors (IRRI, 2015).
- The Department of Agricultural Research (DAR) as the national institution for applied research and, in this function, long-term partner of IRRI in rice research (through its predecessor, the Central Agricultural Research Institute (CARI)), which was established in 2004 only).
- DoA, operating in both townships as the main public extension institution on crop husbandry.
- Deutsche Welthungerhilfe (WHH)/Groupe de Recherche et d'Echanges Technologiques (GRET), working as a consortium in both townships, whereby WHH operates in Bogale and GRET in Mawlamyinegyun.
- Radanar Ajar, operating in Bogale with an emphasis on rice seed production.
- Proximity Designs, working in both townships (and Labutta).
- The private sector, mainly rice millers and agricultural machinery manufacturers and suppliers.

IRRI, due to its long history of successful development cooperation in Myanmar and its excellent reputation as the international rice research institution, enjoys high-profile political support and recognition in the country and therefore benefits from an unusually high level of policy cooperation at the national as well as the regional level. IRRI's assets also include its long-standing relationship with DAR as well as extensive experience of cooperation with DoA¹.

IRRI's main roles in the network of LIFT-funded projects in the delta include the provision of technical expertise, assistance in establishing demonstration plots and the training of staff of the national extension and research partners, as well as LIFT IP staff working in the delta, in order to enhance their technical capabilities and competence.

Technically, IRRI is active in the rice value chain, starting from seed and varietal selection to post-harvest storage and milling. The IRRI projects in the delta region are not involved in rice breeding, but assist DAR in screening varieties. While breeding is at the focus of DAR in Yezin, most new varieties are linked to foreign genetic material supplied by IRRI.

Since lack of information about improved varieties and inadequate access to high-quality seeds are two major bottlenecks, IRRI and the IPs have adopted participatory approaches to variety selection and cooperate closely in the design and implementation of demonstration plots. The participatory variety selection (PVS) clearly showed that farmers' participation yielded very positive results. In PVS, the role of women is significant, since features like taste, cooking pattern etc. can traditionally be judged far better by women, being important factors for consumers as well.

All IPs are active –in different ways– in seed multiplication and cooperate with DAR and/or DoA in this area. To counter the mistrust among the majority of farmers with respect to the quality of seeds, a participatory guarantee system (PGS) is piloted by GRET. PGS implies that seed producers jointly do the rouging, i.e. the removal of odd plants, to avoid the deterioration of seed quality and enable the entire group to guarantee the quality and purity of the seeds. DoA is in charge of seed inspection and the IPs generally provide transport and catering for the DoA staff involved in this activity.

In recent years, demand for certified rice seeds seems to have been on the increase, since all seed-producing farmers interviewed for this survey reported an increasing number of direct customers. Accordingly, the ratio of seeds taken by the respective IP for sale to farmers beyond the reach of the seed producers has been declining.

With regard to cultivation techniques, certain elements of the system of rice intensification (SRI), like single plant transplanting (SPT), are being propagated. Any future moves towards rice intensification need to consider the emerging labour shortage and should therefore focus less on manual labour than on the mechanisation potential.

In cooperation with DoA, DAR and the IPs, IRRI designs and implements demonstration activities and trials on fertilisation and irrigation. A number of different types of post-harvest storage methods are also being tested and demonstrated, and seed banks are supported by the IPs. IRRI expects all farmers involved in demonstration projects

¹ Until 2012, it was called Myanmar Agricultural Service (MAS)

and trials to keep “farmer diaries”, which constitute a first step towards record keeping by the farmers concerned.

In the past, Mercy Corps and WHH have also cooperated with rice mills, providing credit to upgrade their technical equipment. In exchange, the rice mills either had to grant some benefits to the farmers selling rice to them, like free storage of rice, or, alternatively, repay the equivalent value to a village revolving fund over an extended period.

Particular EAS approaches

Learning Centres

GRET is promoting the Learning Centres approach, which is a hybrid between demonstration plots and farmer field school approaches. A progressive farmer is supported financially and technically to set up a demonstration that combines several technical innovations, keeping proper records under regular supervision of the project agronomist in order to facilitate technical and economic analysis. At the same time, this learning centre is the place where technical training events for large numbers of farmers from other villages are arranged and exchange visits are organised.

The ratio of financial support from the project is a critical issue: for example, assigning a 70 percent share of the investment costs to a 0.5 acre drip irrigation plot seems high, provoking the argument from other farmers, that such extensive support from the donor would enable them to also adopt the innovation, while they would not be able to do so when limited to their own resources. There is no general rule for the share of a project subsidy for an innovative investment; factors to be taken into account are the risks involved in the specific investment as well as the importance to demonstrate the innovation in practice. For later adopters an alternative source of financing, such as a local MFI, is advisable. GRET in particular facilitates in parallel the access to microfinance and hire purchase services for the farmers to access equipment.

Farm advisory services linked to infrastructure investment

Proximity Designs (PD) initially started with a two-pronged approach. The first component is a cash-for-work infrastructure programme to rehabilitate embankments protecting fields from salt water intrusion. The second one is a “Farm advisory service (FAS)”, sharing innovative crop management techniques allowing farmers to cultivate a second rice crop in the dry season. In the course of the project, both components became better integrated, and as a result, communities could make optimal use of improvements to their infrastructure. The FAS is also backed up by the mobile-phone-based “on-call service”, which is well-known and appreciated even outside the PD project villages.

Management advice for family farms (MAFF, in Myanmar language the acronym is MaLaSaKa)

MAFF is an advisory approach assisting learning and decision making, which addresses technical, economic and socio-organisational dimensions. The main objective is to strengthen farmers’ managerial capacities to analyse the various dimensions of farm management from production to marketing and take better decision regarding the resource (land, labour, inputs, money, crops, and livestock) allocation between various farm and off-farm activities. MAFF uses a range of decision-support tools that enable farmers to analyse their technical and economic results.

The process starts with an initial farm diagnosis with the support of an advisor. Afterwards a close dialogue between farmer and adviser commences, with the aim to make farmers agents of their own development. The process addresses change as a series of small steps rather than as a large leap that could be risky and not matching with the family farm needs and wishes.

The approach, which is innovative in Myanmar, requires considerable training efforts for a specialised “MAFF adviser” and is “advice-intensive” and relatively costly due to being holistic and based on step-wise implementation. .

The uptake rate of approximately two to four families per village remains low. Moreover, it seems questionable whether a public EAS provider will incorporate this approach over the medium term.

Considering the prevailing conditions in a delta village, a first step towards higher economic awareness of farming households would be the implementation of a simple system of record keeping, followed by gross margin calculations for the farming business and eventually income and expenditure records for the entire household. In brief, the introduction of MAFF on a large scale might be considered as taking the second step before the first.

Community agricultural economic development platform (CAEDP)

As in most countries with a socialist political system, the term “cooperatives” has been discredited, since cooperatives used to be part of the government system, implemented in a narrow top-down approach. This was also the case in Myanmar (LIFT, 2013).

The CAEDPs are community-owned service providers, which cover several villages (normally two to six) and are operated by WHH/GRET. Initially the group of farmers who were CAEDP members purchased at the beginning of the cropping season a limited range of inputs in bulk and sold these to their members, partly credit-based.

Later on some groups were established as farmer-managed input store that provides a wider range of products all year, also to non-members. At this stage, these stores no longer provide credit.

For these second generation CAEDPs, the combination of relatively high fixed costs (mostly salaries) and cash sales only has resulted in financial losses –whereas private competitors sell at higher prices, but on credit-. Although the basic approach of bulk purchase remains valid the concept therefore needs to be modified to better consider how the CAEDPs can develop new or more efficient services rather than competing with existing private sector actors.

WHH has established six CAEDPs, which offer market information, inputs, collective storage and marketing for paddy and machinery services.

The provision of machinery services –though on a modest scale– has proven to be successful as well and will likely develop into a viable alternative to private machinery service providers – in general better-off farmers who offer machinery services once they have finished the respective work on their own land.

Collective management of machinery has mostly failed in agricultural development projects all over the world, but common ownership does not necessarily also imply common management. Various types of machinery rings exist, based either on joint or on individual ownership. Several IPs have also procured two-wheel tractors, which were initially given to an individual farmer who is responsible for maintenance and repair, while obliged to provide services to other farmers. The modalities are normally regulated by a committee.

In order to avoid the wide-spread risk that mechanisation entails increasing income disparities between well-off farmers, who are able to finance investments in machinery, and the majority of smallholders, who are unable to do so, approaches to make machinery services available to large numbers of farmers at cost price are worth developing.

The concept of cooperatives and similar associations is a core element of agricultural/rural development in communities consisting predominantly of smallholder farmers. Experiences from other transition countries show clearly that the many advantages of voluntary cooperatives as authentic self-help organisations are not achieved easily, since the obstacles to the implementation process are manifold. This process normally takes a considerable amount of time and cannot be completed in the course of a few years only.

Promoting business-type cooperative and the exposure to trade will have a number of positive repercussions on the farmers involved and on their views on farming. For instance, they will learn about record and account keeping, the principles of credit versus cash payments and other fundamental business skills.

Coordination between EAS providers

In order to institutionalise the cooperation and facilitate a continuous exchange of information, the Bogale Agricultural Technical Working Group (BATWG) was established in 2009 comprising IPs in addition to DoA and IRRI.

In general, the EAS activities in the two delta townships combine all major providers from the public, private and project sectors. For some years, the cooperation between the public and project EAS has also been institutionalised in the BATWG. A remaining challenge is the issue of crop protection, since private sector activities are presently only vaguely linked to the public and project sectors (for example in the design and implementation of demonstration projects and/or trials).

The fact that even in the northern parts of the townships, where continuous supply of freshwater allows double cropping, summer rice cultivation is on the increase (despite higher economic returns of pulses, especially green gram), indicates that proper plant protection measures were likely not known to farmers at the time they switched to summer rice. Rice is undoubtedly the crop of choice during the monsoon season, but in summer, alternative crops

should not be neglected by EAS providers. Risk is a major factor in farmer decision making which may explain why they are not always adopting practices that seem to provide higher economic returns.

Two other factors supported the impressive results of the interlinkages between the various stakeholders in EAS and the wide range of interventions along the rice value chain in the delta region:

- The majority of IPs have relatively long-standing working experience in the region, and
- Agricultural projects are concentrated in the three townships of Bogale, Mawlamyinegyun and Labutta.

3.2 Oilseeds, particularly sesame and groundnuts, in the central dry zone

One of the IPs in the central dry zone, TdH Italia, implements the project “Soilless horticulture and other water-saving technologies for landless and marginal farmers (SOW IT)”. The EAS activities of the project are limited, and only vegetables (mostly leafy, green vegetables) are grown by the targeted beneficiaries in the project township Yenanchaung.

The other IP, the consortium led by HelpAge International in Mahlaing township in the project “Reducing Economic Vulnerability through an Equitable/Inclusive Approach to Livelihoods (REVEAL)” addresses a broad range of issues, and “increased agricultural production and household incomes” is only one of the six outputs of the project. In general, the project places the emphasis on strengthening CBOs, in particular the VDCs in the target villages, in order to enable them to discuss, draw up and implement “integrated community action plans”.

Since, at the time of the survey, neither of the two IPs is active in oilseeds, most of the limited findings of this chapter originate from the farmers in the eight villages surveyed in the Central Dry Zone (CDZ) and from secondary sources; the findings are only to a very limited extent based on the two IPs.

With respect to their cultivation areas, sesame and groundnuts rank third and fourth after rice and beans. Yields of sesame are slightly higher, those of groundnuts slightly lower than the world average, and past production increases originated mainly from area expansion, rather than higher yields per acre.

Although the “oil crops research centre” under DAR has been established in the regional capital Magwe, it has hardly made any impact on seed supply. Farmers do not know the centre, which produces significant quantities of seeds only on demand. The management of the centre reported insufficient cooperation between DAR and DoA as well as insufficient financial and material resources as major problems. Another constraint is the lack of trust between farmers and government staff: farmers usually don’t look for advices from DAR and DoA staff. These staff also lack of experience and understanding of EAS approaches. All these factors contribute to limit the interactions between farmers and public EAS providers. As an initial step to increase confidence, the research centres and seed farms could start designing simple communication strategies with the neighbouring farmers. Involving the government staff in NGO projects will also increase their exposure and understanding of participatory approaches. Increasing interactions between farmers and public EAS providers is an important first step.

In Mahlaing township, the IP organised seed supply, mainly for sesame, from the “Central Agricultural Farm” in the vicinity of the township centre, facilitated by two factors:

- In some of the surrounding villages, a considerable number of people have worked or still work on this farm and therefore trust the seed quality and purity.
- The former township manager of DoA resigned from his post and now works as one of the two agricultural specialists in the project’s Mahlaing office.

This example demonstrates again that farmers trust the quality of seeds from public sources only when directly involved in seed production, as in the rice seed production PGS and PVS in the delta region.

Secondly, the trust in official procedures and regulations remains very low; the system works satisfactorily mostly on the basis of personal relationships.

The project provided assistance for the establishment of seed banks, mainly for sesame (and rice) seeds. Moreover, improved cultivation techniques, focusing on organic fertilisers and better use of irrigation water are propagated. The project supposedly uses the FFS approach, however, it is not entirely clear in what form this approach is applied.

The project report states that a wide range of topics (from seed selection to natural pesticides production and mushroom production) is dealt with in the FFSS; consequently, participants “find it challenging to apply new techniques learnt during the trainings, as there were many topics covered and not enough practice” (HelpAge report to LIFT 2013).

In Mahlaing, DoA conducted several demonstrations of new varieties of groundnuts, but farmers in the villages surveyed were not aware of this.

The experience shows that farmers rarely trust the result of demonstration activities carried out within government-owned research fields. It is recommended to organise demonstration activities in farmer’s plots.

Agronomists of the main private fertiliser/agro-chemical companies like AWBA, Golden Lion and Diamond Star were also traveling in the villages of the CDZ, with frequency and intensity varying widely in line with the quality of the road infrastructure and, consequently, the potential business volume.

The support, expressed by all EAS providers, for oilseed cultivation in the villages surveyed in the CDZ is rather low. From the interviews it became clear that plant protection, especially in sesame, is a challenging problem for most farmers. They frequently reported a virus transmitted by insects (?), which in years with a prolonged dry spell during the monsoon season easily destroys the entire crop. TdH Italia is aware of this problem and intends to address it.

The farming communities demonstrate impressive competence in the marketing of their oilseeds: They are well aware of actual prices and the main marketing channels and sell their crop either to merchants/brokers or directly to one of the numerous oil mills in the region.

3.3 Pulses

The various types of beans and pigeon peas are cultivated as the second and fifth crops, as far as the area under cultivation is concerned. Over the past decades, pulses experienced the largest increase in cultivated area, largely as a result of trade liberalisation and the subsequent increase in domestic prices for pulses to world market price levels after 1988 (Fujita, K., 2006).

Myanmar has a long history of cooperation with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India, which has the mandate for genetic improvement of the three legumes pigeon pea, chickpea and groundnut (ICRISAT 2011).

As recently as during 2007 – 2011, the Australian Government financed the project “Increasing food security and farmer livelihoods through enhanced legume cultivation in the central dry zone of Burma (Myanmar)”, jointly implemented by the Australian Centre for International Agricultural Research (ACIAR) and ICRISAT. Project components were the establishment of village seed banks; trials of low cost technologies for crop production and protection; PVS; the development of community-based seed production; a storage and distribution system; and the implementation of more than 540 baby trials in the region, covering the three legumes chickpea, pigeon pea and groundnut (ACIAR 2011). Although the project also comprised a significant training and extension component, during the survey, this project was not mentioned by farmers, DoA staff or at the oilseeds research centre in Magwe. It was not obvious why awareness of this project was so low. More detailed information on the JICA-financed project “Water saving agricultural technology in the CDZ (WSAT)” was not available, although some equipment financed by this project could be found in the oilseeds research centre.

The main pulses grown in the villages surveyed for this study in the CDZ are chick pea, pigeon pea, mung bean and butter/lima bean. Seed supply is not considered to be a major problem, although the HelpAge consortium has promoted seed production and multiplication of pigeon pea on a limited scale. In both townships the DoA did not report any activities in the pulses sector.

For private sector companies, pulses are of limited interest only, since fertiliser requirements of legumes are low because of their ability to conduct atmospheric nitrogen fixation. Farmers did not mention any major pest or disease problems in pulses, with the exception of pigeon peas in Hsi Hseng, implying that the need for agro-chemicals is also low at present.

The marketing of pulses takes place at the local level; there are numerous traders/merchants in the area, who buy pulses of all types. Since pulses are relatively easy to store, farmers ration their harvest time sales to the amounts needed to cover their immediate cash needs, selling the remainder in smaller quantities later on in the hope that

prices will rise.

When farmers do not have storage facilities, they sometimes keep their produce in the traders' ware houses located near the market. The farmers wait for higher price to sell to and get paid by the trader. These arrangements require long term trust relationships as the trader may sell the product when the opportunity arises without the farmer agreement.

In Hsi Hseng, particularly, pigeon pea is a traditional perennial crop, which requires relatively little labour and other inputs and provides a financial return equal to or even higher than maize; however, maize has a much shorter growing period and can be followed by a crop of niger under normal weather conditions.

The use of pigeon pea as a perennial crop has been reduced in recent years, since plants often attract diseases in the second year.

Again, the collective support of all EAS providers for the cultivation of pulses in the survey villages in the CDZ and in Hsi Hseng is rather low. From the interviews it became clear that plant protection is the key problem in the cultivation of pigeon pea. Pulses are usually grown as a low-cost crop, which receives inputs on a marginal scale only.

3.4 Maize

For some years, maize has been the main cash crop in Hsi Hseng, predominantly hybrid maize produced by commercial companies like CP (Thai) and Silver Dove in Taunggyi. At the national level, maize is being cultivated on approximately 470 000 ha, in terms of area under cultivation the seventh crop in the country.

The IP in Hsi Hseng is the Metta Development Foundation (METTA), which in 2001 was one of the early adopters of the FFS approach. METTA propagates upland rice cultivation in the project; in an earlier project the FFS approach was also used for perennial crops.

The uptake of upland rice cultivation is to a large extent influenced by external factors beyond the control of Metta. Maize is a typical cash crop, providing a considerably higher economic return than upland rice. It has lower labour requirements than upland rice –for instance, weeding is both easier and faster– but requires considerable amounts of fertiliser to exploit its genetically-defined high- yield potential. Accordingly, the investment requirements for maize are considerably higher than for upland rice, rendering production particularly costly if financed by credit.

Families with easy access to relatively cheap rice for home consumption therefore tend to grow hybrid maize, whereas farmers in villages without easy access to cheap rice tend to focus on upland rice cultivation.

As stated above Metta as the relevant LIFT IP in the township, does not support maize cultivation in the area. Since a number of villages in Hsi Hseng are located in the Pa-O self-administered zone, DoA and other public EAS providers do not visit these villages either. DoA staff supposedly does not feel safe in the Pa-O SAZ.

Cultivation of hybrid maize began five to seven years ago and was at that time promoted actively by the Pa-O National Organisation (PNO) and spread from one village to neighbouring villages. Seeds and other necessary inputs are readily available in Hsi Hseng, and the crop can also be marketed easily in the township centre. To achieve a good price, one has to market the maize either very early in the season in August (Hsi Hseng maize producers are generally early on the market) or one needs proper storage facilities in order to be able to sell very late, in April.

There were no reports of significant pest or disease problems in (hybrid) maize in the area. In one of the villages surveyed, several farmers indicated that they were growing a variety of crops including hybrid maize and upland rice as a measure of risk minimisation.

In the absence of significant EAS from the public sector or from Metta as the LIFT IP, hybrid maize has spread in the area mainly because of its attractive economic return, good coverage of the input supply side and marketing opportunities by the private sector.

Research activities by the public sector were insignificant, and there is little hope that DAR will ever be able to compete with the private sector on hybrid maize seeds. Therefore, and considering the limited budgetary resources, DAR should in the future focus on crops, which are of low or limited interest for the private sector, such as rice and some oilseeds and pulses.

3.5 Vegetables

Vegetable production has a long tradition in SSS around Aungban, where the wholesale market that also supplies Yangon is located.

Beneficial agro-ecological conditions and a reasonable transport infrastructure facilitate the production of high-value cash crops in the region. Farmers' market integration is more developed than in other regions of the country, and the average living standard is considerably higher, as shown by the relatively high standard of houses in most villages. Social cohesion in the villages surveyed was quite strong, the variation in the size of land holdings is far less pronounced than in other regions.

AWBA as one of the major fertiliser and agro-chemical companies employs a total of 35 agronomists for seven townships in the region. In Aungban, around the wholesale market, a large number of input-supply shops exist. Since farmers in this dynamic region have frequent contacts in Aungban, the market and the input supply shops are significant providers of EAS as well.

Innovations usually spread from village to village, and once a new crop is cultivated by one farmer in a village, other farmers will follow rapidly.

The concept of the new LIFT-funded project seems to be an appropriate approach to stimulate and streamline further development of vegetable production: Mercy Corps, as the formal IP, invests its expertise in the organisation of farmers and group formation, while private companies like the East West seed company provide technical expertise. At present, recent developments somehow resemble a gold rush: If a crop is affected seriously by a disease or pest, a new crop is introduced and cultivated until new pests/diseases occur at a high rate of infestation. This has been the case with potatoes and tomatoes in the area; supposedly, a soil-borne disease seriously affects both crops, and increased use of agro-chemicals proved unsuccessful. Such a strategy cannot be successful in the long term.

It can be assumed with some likelihood that the amount and choice of agro-chemicals have considerable effects on the environment, particularly on the quality of the water in the numerous small streams and rivulets eventually flowing into Inle Lake. For this reason as well, the injection of high-level technical competence and capabilities provided by the private sector, which also has a long term interest in the region as a market, is highly desirable.

An ever growing number of sloping areas is being cultivated, mainly for staple crops. In contrast to the "old" fields, which were laid out in proper terraces a long time ago, the new fields on the hills are highly prone to erosion. In this regard as well, there is a distinctive need for regulation and law enforcement. If the newly cultivated fields are not laid out in terraces, serious erosion problems will be unavoidable.

4

The supply side, main providers of EAS

4.1 Public sector

4.1.1 Department of Agriculture (DoA)

At present, the DoA remains the most important extension provider at all administrative levels, claiming to cover the whole country and the entire spectrum of crop husbandry, including soils and seeds (with seed multiplication on farmers' fields), setting up demonstration projects with contact farmers, developing plant protection, resolving land use issues etc.

The department has undergone a number of structural reforms within the MoAI, as shown in Figure 1. The Department of Industrial Crops Development (DICD) is currently being merged with DoA. Industrial crops had been separated from general agriculture in 1994, and the ongoing unification of all crops in one department could be interpreted as a step in the right direction: Farmers should grow the crops they have identified as being most suitable for their farm; real or so-called "national interests" should not force farmers to cultivate crops against their will.

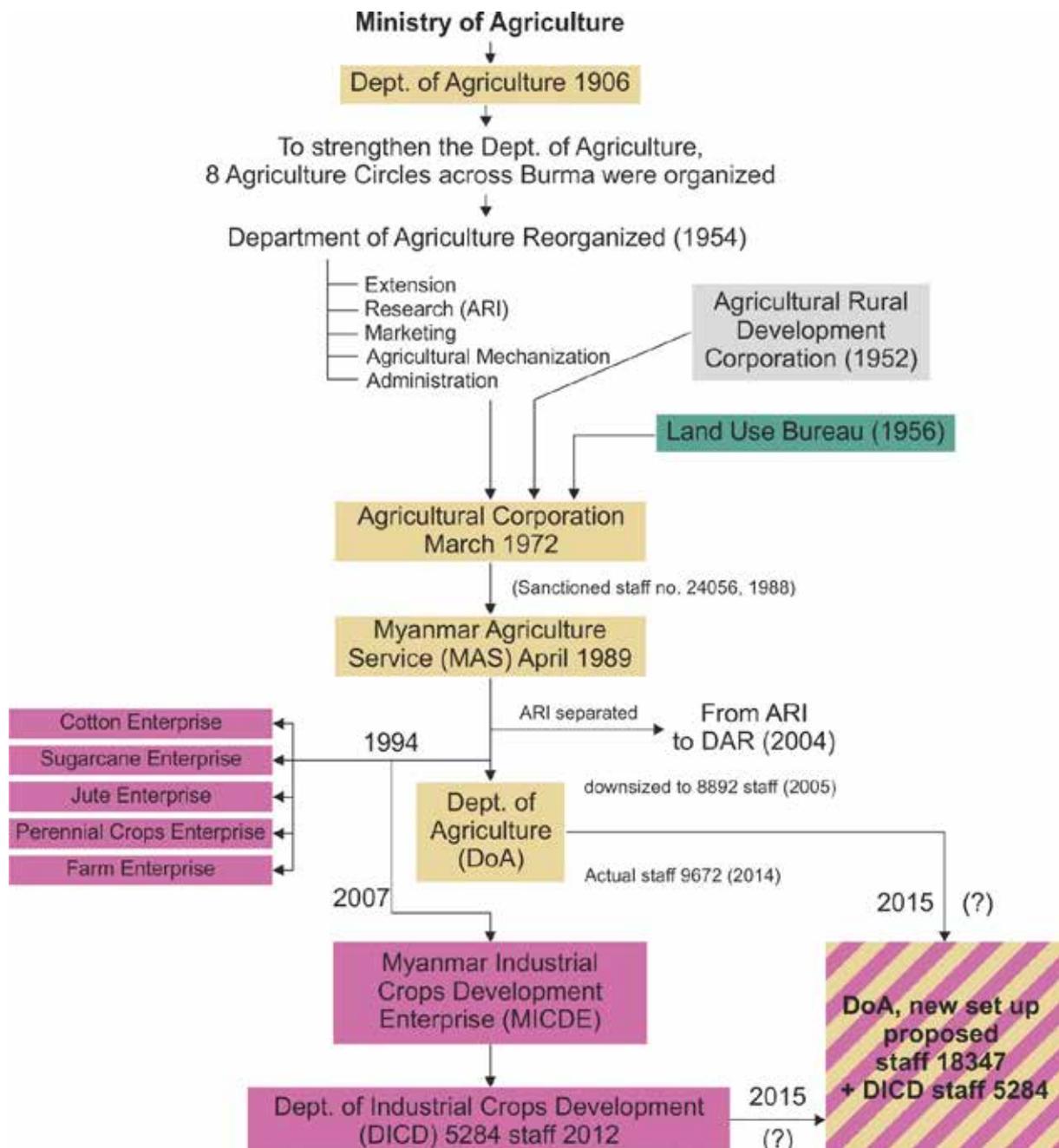
The public agricultural extension service in its different forms has also pursued various extension approaches, which are described briefly below:

In the 1970s (different authors cite different years as the starting point, see San Thein 2010, and Cho, K., 2013), the Special High Yielding Program (SHY), also called Selective Concentrative Strategy (SCS) or Whole Township Rice Production Program (WTRP), was introduced with the aim to increase rice production in approximately 80 townships of the country, where the potential for paddy production was particularly high. In the context of this strategy, crop production and extension camps were established, and teams of extension staff had to live there. On average, one extension worker had to supervise about 300 farmers owning a total of approximately 200 acres. Obviously, collaboration between research and extension was good at the time, but in essence, the program was production-oriented and implemented in a top-down approach, mirroring political priorities and building on mass mobilisation, pressure and interference. Technically, the program was based on the substitution of local rice varieties with high yielding varieties (HYVs) and intense application of fertiliser. In the initial phase, rice yields increased dramatically, but the momentum could not be maintained, since imports of fertiliser declined sharply due to the worsening of the overall economy while domestic production of urea did not reach the set targets. Subsidies were gradually removed, allowing fertiliser prices to increase. The economic return of rice cultivation declined, but farmers nevertheless had to deliver their assigned quota of rice to the government.

In 1974, the World Bank-financed "Lower Paddy Land Development Project" introduced the "Training & Visit (T&V)" extension approach, which defines the main objectives of coordinating research, training and extension. Consequently, this approach links research to local needs and conditions, while at the same time implementing an intensive and systematic training programme for extension workers and farmers. In addition, T&V is characterised by a single line of command, concentration of effort, timely and regular extension activities, and an orientation towards field and farmer. Some elements essential for T&V were not compatible with the regime of the Burmese Socialist Programme Party ruling the country at that time.

Both approaches were implemented around the same time, and there was obviously a certain degree of "institutional competition": The World Bank provided helpful (transport) facilities to extension staff and project personnel, whereas material resources were rather scarce for the extension staff working for SHY/WTRP. Finally GoM was not ready to take another soft loan for the second phase of the WB project, and the project was discontinued.

Historical Development of the Department of Agriculture (San Thein 2015)



For a considerable period of time, a distinctive extension strategy has not been in place. A compulsory element of routine extension work has been the setting-up of demonstration plots on fields of “contact farmers”, with a focus on quality seeds of high yielding varieties (HYVs). But the procurement of fertiliser at subsidised prices came to an end with the liberalisation of the economy, and so did the opportunities for extension staff to earn significant amounts of “pocket money” by selling this fertiliser, which guaranteed close contact with the farming community without major effort on the side of the extension staff.

Over the past 15 years, MAS/DoA also had significant exposure to “modern” farming systems research and extension and to participatory extension approaches like PVS and FFS, but this exposure did not make a sustainable impact.

In 20 of the 22 villages surveyed, DoA staff appeared once per season only, mainly to collect statistical data. In most villages in Southern Shan State, DoA staff have never visited the villages. Only in two villages farmers expressed an interest in seeing DoA staff more frequently; the respondents in one of these villages were both contact farmers of DoA.

In recent year MOAI has been organizing large demonstration plots in Nay Pyi Taw on state owned plots. These plots and the methodologies proposed are beyond the reach of most farmers. These demonstrations seem more oriented

toward presenting the future agriculture in Myanmar for government officials rather than convincing any farmer to adopt new technologies or help them to solve problem.

In most townships across the country, the ministry has established production camps for extension purpose. At present, most of these camps are not functional. Some of them could be used for farmer vocational education, linking them with input dealers, and meeting DOA and NGO staff.

Staff

Over the past two to three years, the number of DoA staff increased in all townships surveyed, although not all positions have been filled as yet. In general, the number of extension staff varies considerably, also depending on the source of data, which may be difficult to compare, since the tasks of extension staff have changed significantly over time. Despite the most recent increase in staff numbers, the downward trend over a long period has not yet been broken:

Table 1: Number of extension staff of DoA and its predecessor organisations

Author	Year	Total number of staff
San Thein 2010	1988	7,427 extension staff under the Agricultural Corporation (AC) [#]
Cho, K. 2003	2003	11,081
San Thein 2010	2007	7,358 Total sanctioned 8,892
San Thein 2010	2009/10	5,595
IFAD 2013	2011/12	3,513

The comparatively high ratio of female staff, at least in the lower ranks of the DoA, is not necessarily a sign of gender equality, but an indicator of a general strategy amongst married couples (there is a high number of couples among YAU graduates). The wife is encouraged to take up a job in government service in the interest of job security, tolerating a modest salary in exchange for some benefits, such as institutional housing and assistance with medical care, while the husband seeks employment with a higher salary in the less secure environment of the private and NGO sector.

More reliable and up-to-date information is provided in Table 2, showing the actual number of staff in the six townships of the survey, in addition to the number of village tracts and villages in the townships:

Table 2: Number of staff of DoA in six townships surveyed in early 2015

Township	Sanctioned staff	Actually appointed	Number of village tracts	Number of villages
Bogale	39	15	71	575
Mawlamyinegyun	39	26	108	662
Yenanchaung	31	25	29	145
Mahlaing	39	23*	52	247
Hsi Hseng	24	16	13	338
Kalaw	39	35**	25	257

Sources: San Thein 2015; the number of villages and village tracts is derived from the official website of the Ministry of Home Affairs.

* Five staff are presently assigned to Shwe Taung Seed Farm for hybrid seed production

**Four staff are officially assigned to Kalaw DoA, but with different tasks

[#] The total number of staff of the Agricultural Corporation (AC) was 24,056, the Procurement & Distribution division of AC had a total of 11,102.

Actual staff numbers in all townships remain well below the number of sanctioned staff. Moreover, the number of villages/village tracts in a township does not correlate with the number of extension staff. For example, the ratio of extension villages per extension worker is 5.8 in Yenanchaung and 38.3 in Bogale. While road infrastructure is certainly very poor in Yenanchaung, in Bogale, a large number of villages is accessible by boat only.

Assuming an average number of 50 farming households per village, one extension worker in Yenanchaung has to take care of approximately 300 farmers – not taking into consideration that not all DoA staff in a township are involved in practical extension work. The DoA township manager is an ex officio member of several committees, with the obligation to participate in all relevant meetings; a small number of personnel in the DoA township offices are supplementary staff, including assistants and staff with limited formal qualifications.

Budget

The budget of MoAI is divided into two sections, an administrative (current) part and a project (investment) part. In the three year period 2008 – 2011, the Irrigation Department and Water Resources Utilisation Department received 97 percent of the total project/investment budget, while despite its considerable number of staff, DoA received only a meagre 6 percent of the administrative/current budget (JICA 2013).

DoA in general has a relatively limited budget for transport and daily subsistence allowances and used to have access to better departmental transport facilities in the past. The compensation paid for using private motorcycles is not adequate. Compensation for duty travel (divided into “Travel Allowance, TA and “Daily Subsistence Allowance, DSA”) is not sufficient to motivate staff to engage in field trips, although it likely covers the costs). General practice implies that allowances are either divided equally among all staff (at a flat rate) or used as bonus for “hard working” staff.

Field offices also explained that they normally get only 50 to 70% of the budget the request for field implementation. The unbalanced allocation of MOAI budget is criticized internally, but there is no real public debate about it and there is no transparency on budget allocation.

Management

Despite the political changes of the recent past, the management style within the department has not changed fundamentally, remaining mostly top-down. Also, the strong focus on rice remains in place, whereas high-value cash crops by and large continue to be neglected.

As far as “normal extension work” is concerned, demonstration plots are to a significant extent “show-case” demonstrations for high-ranking officials visiting the township. Experienced township managers establish these plots already at the beginning of the season, usually near the township centre with easy road access, anticipating the preferences of visiting officials. Demonstration plots, normally marked by flags and signboards, are visible all over the country. Complying with the objective to meet visiting officials’ expectations, these demonstration plots sometimes border on the absurd: while one plot shows rice variety A for official 1 from the Union level government, another plot at a nearby location can show rice variety B for official 2 from the regional government.

A certain level of monitoring of performance and budgets is undoubtedly essential. However, existing control measures seem to largely discourage staff while not serving their purpose. If a township manager continues to receive a budget for seeds/implements (“Myo/Htun”), which has been cancelled for many townships due to a high level of misappropriation, and starts on-farm seed multiplication, he/she may be penalized for unfavourable weather conditions or disease problems that result in lower-than-expected yields, as the budget assumes full cost recovery.

Most of the time, the township manager would be involved in coordination meetings at the township level, also attending meetings at the next higher level(s) of administration and accompanying the head of the General Administration Department (GAD) or other high ranking official visitors when touring the township.

Townships all over the country are categorized into A, B, and C townships according to their economic/agricultural importance and potential. A DoA township manager of a grade “A” township fills a higher position than his/her colleague in a grade “C” township. The category of a township also determines whether there are “subject matter specialists (SMS)” posted in this particular township, with the three most relevant SMS being from the seeds, plant protection and land use divisions of DoA. In townships without SMS, the DoA extension staff also fill the position of agent for the SMS at the district level.

Due to the low salaries the performance of extension staff at the township level is rather modest, because most of staff are involved in one or more alternative income generating activities.

The main motivation for young graduates to join DoA –besides the job security strategy mentioned above– seems to be to gain some work experience in order to be able to look for a better paid alternative. Many NGO/IP staff with an agricultural background started their career with DoA. The combination of a low, but secure salary with a rather modest workload may also be attractive to some staff. Secondary motives to join DoA are the opportunity for further studies while being on the government payroll, the possibility to travel abroad and also a certain level of pride among representatives of the older generation if their children work for the government.

During the second visit to DoA in early April 2015, it was confirmed, that township DoA managers can apply at the regional level for an additional budget if they intend to implement additional demonstration projects; however, such applications remain rare. It is unrealistic to expect a high level of intrinsic motivation among extension workers if genuine extension work is not appreciated or not even noticed by senior staff.

Reputation

Beyond lack of resources and a top-down management style, the third major problem of DoA is the persistently high level of mistrust between the department and the farming community, reflecting the legacy of past experiences. The overwhelming majority of villagers do not perceive DoA as a supportive institution, but rather as the long arm of the government, operating in the interest of the government instead of serving their own interests. A typical statement by a big farmer in Bogale was “DoA staff does not need to visit our village, because we obey all the rules”.

The high level of mistrust is also reflected in the seed multiplication efforts on farmers’ fields, which some DoA township managers continue to initiate despite bureaucratic procedures and risks. While DoA staff in general lack experience in participatory interaction with the farmers, the latter are first and foremost interested in their own material benefits. Very often, this results in low-quality multiplied seeds that do not meet the defined standards. Positive changes to this relationship require long-term processes, which in turn depend on the broader political environment.

The issue of the hybrid rice variety “Plae Thwe” is not suited to boost the morale of DoA staff at the township level and does not contribute to higher levels of trust between DoA and the farming community: MoAI puts considerable pressure on the DoA township offices to identify farmers who are willing to buy seeds of this particular variety. Since the quota for this variety is relatively high by the standards of the rice-growing area and the practice is also implemented in the CDZ, extension workers need to work hard in order to identify farmers who “volunteer” to purchase seeds of this variety.

4.1.2 Livestock breeding and veterinary department (LBVD)

The Livestock breeding and veterinary department (LBVD) is also represented at the township level, however, with a lower (but increasing) number of staff than DoA, a smaller budget and a more limited range of tasks and duties. The LBVD’s focus is animal health, providing vaccinations for livestock and poultry and to a lesser extent even diagnostics and treatments.

On the regulatory side, the department is in charge of disease surveillance; it supervises the licensing process for slaughter and is supposed to oversee the implementation of legislation that regulates the movement of livestock at the regional and national level. Law enforcement in this regard is rather weak, pointing to a high incidence of illegal exports of large livestock to neighbouring countries.

On the animal health side, the department traditionally trained village people, assisting mainly with vaccination campaigns and other preventive measures. The colloquial term for this system is “Blue Cross”, derived from the name of animal welfare organisations in Anglophone countries. A number of IPs have taken up this approach and cooperate with the department in training “community/village animal health workers”, issuing certificates to trainees and engaging in follow-up measures and support.

On the animal husbandry side, the department pursues some marginal activities in animal breeding and provides artificial insemination services for cattle in selected areas. It assists in the procurement of breeding stock for “exotic breeds” of pigs and small ruminants, but the impact on smallholder farms is insignificant. The majority of farmers is

aware that better breeds also require better feeding, and livestock is mostly kept as a “savings account” with a focus on quantity of stock rather than quality.

Most LBVD township managers are aware that animal nutrition is far more important for the smallholder livestock sector than (cross)-breeding, but the efforts of the department are limited to providing cuttings of Napier grass to a very small number of farmers who are interested in growing it. In some villages of the dry zone, sorghum is being grown as a fodder crop.

The division of the agricultural sector between crops and livestock is rather old-fashioned and somewhat outdated. One of several negative consequences of this divide is that fodder cultivation is seen as the responsibility of the respective other party, with neither side taking proper care of it.

Attaching animal husbandry to the veterinary sector has the disadvantage that veterinarians normally have some knowledge of breeding, but are often not sufficiently competent in fodder cultivation and animal nutrition, as shown by the following example:

In the dry zone, where livestock has the highest economic importance, and crop residues are fed to ruminants in large amounts, a relatively simple and cost-effective innovation would imply urea treatment of crop residues, thereby improving the digestibility of the fodder while increasing the “non-protein-nitrogen (NPN)” intake of the animals. Urea is readily available at reasonable cost.

On poultry, the overall estimate of respondents is that out of ten chicks/ducklings hatched, about seven survive, with some seasonal variation. This rate is acceptable under village conditions.

Fertility in cattle and buffaloes is on average close to two calves per cow in three years, indicating low nutritional status of the animals. Since most cattle, except a pair of bullocks kept for transport and field preparation, serve as a savings account, it will be a long-term process to convince farmers to keep a lower number of well-fed cattle rather than a larger number of undernourished stock.

The provision of livestock-related EAS by LBVD is very limited, and its focus is mainly on veterinary issues. Most livestock activities are not yet market oriented (with the exceptions of piglet production and the production of duck eggs in the delta region). Intensive livestock farming is either concentrated around urban consumer centres (dairy) or undertaken on the basis of contract farming (like “CP chicken”).

In the dry zone, it was reported that LBVD also implements a small support scheme financed by the regional government: Landless people can get the funds to buy a small flock of young goats, having to return the same number of goats in the following year, which are then passed on to another beneficiary.

As long as the department of rural development (DRD) remains to be fully established, in some townships, LBVD is also in charge of the “Evergreen project” (see below), since both LBVD and DRD belong to the same ministry at the Union level.

LBVD has not experienced as many structural reforms as DoA. The performance of LBVD seems to be acceptable in the context of the prevailing livestock production systems. However, the economic importance of the livestock sector lags the role of the crop sector.

4.1.3 Department of rural development (DRD)

Until 2013, the Department of rural development formed part of the Ministry of Progress of Border Areas and National Races and Development Affairs” and was mainly in charge of infrastructure, such as electrification, water supply and sanitation, bridges, roads and school buildings.

In 2013, the department became part of the Ministry of Livestock, Fisheries and Rural Development (MoLFRD), and the official name of the ministry changed accordingly. The DRD is responsible for two of the ministry’s areas of responsibility (MoLFRD, 2014):

- Development of rural infrastructure, including rural roads and bridges, water supply and sanitation, rural electrification and housing, and
- Enhancing rural livelihood and income generation through community-driven development.

In March 2014, the ministry published a comprehensive and ambitious strategic framework for rural development. It is obvious that the ministry is being modernised to become the main institution to coordinate rural development. Recently, the “Myanmar International Cooperation Agency (MICA)” was established under the ministry in order to “promote international and national investment and trade”, mainly in the areas of livestock and fishery, farming and trading sectors, cold storage facilities and the above mentioned infrastructure sectors.

The implementation of three similar “sister projects” has had a significant impact on rural development (with the exception of traditional infrastructure activities):

- Community Driven Development Project (financed by the World Bank (WB)); implemented in all villages in 15 townships; the equivalent of \$ 30,000 is provided to the village for community-identified rural infrastructure investments and income generating activities;
- Rural Livelihood Enhancement Project (financed by the Asian Development Bank (ADB)), only for village infrastructure; and
- Evergreen Village Development Project (EVDP, financed by GoM), piloted in 1,150 villages of 130 townships in the 2014-2015 fiscal year.

In the six townships of the survey, only the EVDP is being implemented in a few villages already, and additional villages have been selected for implementation in 2015. The underlying principle is that the equivalent of \$ US 30,000 is provided to the village as a revolving fund administered by an elected committee consisting of 7 – 11 members, which decides on loan applications submitted by village households.

During the survey, the team visited one village in Yenanchaung township, where the EVDP had just started. The elected committee members had received training by DRD/LBVD, and the chairman of the committee was available as respondent.

Within a given framework, the loan committee has the flexibility to decide on the volume of the loan, the interest rate (between 0.5 and 1.5 percent per month) and other modalities. In this particular village, it had been decided to set a limit of one loan application per family and to categorize the loans into a 1st class loan of about 1 lakh and a 2nd class loan of kyats 30,000. Only landowners are eligible for a 1st class loan. The monthly interest rate had not yet been agreed.

The township administration is by and large free to select the villages according to its own criteria. In SSS, ethnic composition is a selection criterion; in most townships poverty indicators play a role, but the social conduct of the villagers is also important, as for instance demonstrated by the absence of gambling halls and distilleries. In one township, an additional selection criterion is that other donor-funded projects should not be active in the village.

According to information from DRD, in Nay Pyi Taw, results from an interim evaluation of EVDP for the first eight months of implementation show that 68 percent of the aggregate loan portfolio were used for agricultural activities, 30 percent for livestock and 2 percent for other purposes. The repayment rate at the time of evaluation approached 100 percent. The distribution of loans in the delta and in SSS townships was similar to the one found in the evaluation; in the dry zone, loan volumes for livestock were much higher than for agriculture.

All DRD branches in the townships remained busy establishing proper offices and recruiting a considerable number of new staff; once all vacancies are filled, DRD will have a higher number of staff than DoA. Almost all current staff of DRD were taken over from the department under the previous ministry as well as from the city development department. For this reason, most staff members of DRD have a professional background as engineers etc., with limited professional exposure to community development activities to date. This also holds true for the vast majority of DoA staff, and even graduates from YAU have had little exposure to agricultural/rural development issues in either theory or practice. Most national project staff encountered in the context of the survey acquired their know-how mainly “on-the-job” or through training and studies abroad. Relevant formal studies on development issues will need some time to evolve in Myanmar.

It seems that the position of township manager of DRD usually is one rank above the comparable position in DoA, triggering a significant amount of discussions.

Whether MoLFRD will succeed in developing into an active “focal ministry for rural development, which provides new opportunities to work with the government” (LIFT Strategy 2014) remains to be seen. So far, DRD is heavily engaged in a restructuring process, and its activities at the grass root level are limited to its traditional infrastructure

work and the establishment of new village-based revolving funds in the context of the “three sister projects”. Setting up VDC-administered revolving funds has proven to be a strong entry point to activate VDCs. Several IPs have followed this approach, which needs to be complemented by other activities.

4.1.4 Cooperatives

All cooperatives in the survey areas are saving and credit cooperatives only, and most of them were established in the recent past (from 2013 onwards). Beyond the provision of credit, once per season, to their members through the cooperative umbrella organisation, the cooperatives pursue the medium-term objective of establishing a coop-based revolving credit fund at the village level: 10 percent of every seasonal credit to the individual members of the village coop are retained by the higher-level coop organisation; i.e. in case a member applies for a credit of MMK 100,000, he/she receives MMK 90,000 only, while the balance of MMK 10,000 is kept for a future village-based coop revolving fund.

Common input supply and/or common marketing has so far not been an issue for the cooperatives, which by and large still operate along top-down lines. Only in Hsi Hseng attempts have been made to broaden the range of activities to input supply on a credit basis, but this change has also been initiated at the top.

The overall perception of cooperatives among farmers is that of another instrument of the government. The credit provided by the coop is readily accepted, but there is no deeper feeling of ownership, in the absence of attempts or ideas to develop the village coop beyond credit and savings activities.

In principle, traders/merchants and wholesalers as well as agro-industrial processors should be interested in well-organised marketing cooperatives, to meet their needs of larger quantities of a wide range of produce at standard quality over an extended period of time, in order to compete on the national and world markets. Nevertheless, the current situation offers prospects of high margins, since many farmers are indebted or at least lack liquidity and/or proper storage facilities and therefore have to sell at least part of their produce at harvest time, when prices are the lowest. Farmers are well aware that prices are lowest at harvest time, increasing in the following months, but the vast majority does not see any alternative to the dilemma.

Experiences of Mercy Corps to establish “real” cooperatives on a voluntary basis in Labutta and with CAEDPs of WHH/GRET clearly show, that “true” cooperatives can and should be promoted. This is certainly a difficult task in an environment where the term “cooperative” has been discredited in the past, like in most countries in transition. Under these unfavourable circumstances, it might be necessary to take a detour under different names to avoid the negative connotation of the term “cooperative”. Essential conditions to establish viable cooperatives include a level of trust within the membership, common objectives and the readiness of some people to perform additional tasks in the common interest of the coop without immediate financial benefits. This process may take a considerable period of time.

4.1.5 Farmers associations

The absence of any formal or significant informal farmers’ associations and groups in all the villages surveyed reflects the overall environment for such organisations. There are supposedly two national farmers organisations, one of them, Myanmar Farmers Association (MFA) being part of the Myanmar rice federation and not yet formally recognised, the other one the Agriculture and Farmers’ Federation (AFFM) set up by the trade union movement from 2011 onwards (Agriterra 2015). According to general opinion, the government does not encourage the formation of farmers associations or similar organisations. This means that there is no competent and representative body to consult with as far as reforms in the agricultural sector are concerned.

In the context of EAS, particularly at the grass-root/village level, strong and viable farmers groups offer a wider range for many activities: IPs in the delta region plan to establish and support an association of rice seed farmers; TdH in Yenanchaung envisages the establishment of a farmers’ association of their beneficiaries, which could eventually act as a multiplier for hydroponic and drip irrigation technologies.

4.2 Private sector

4.2.1 Input-supply companies/shops

The main EAS providers in the private sector are input-supply/agro shops, which mostly deal with at least two of the three product groups fertiliser, agro-chemicals and seeds. Some of them also purchase produce from the farmers. As a rule of thumb, it has been observed that in more dynamic township centres with a higher demand of inputs, the shops/traders are normally specialised in two ways: They do not offer all three product groups any more but focus on seeds and chemicals or chemicals and fertiliser or fertiliser only.

Moreover, buying produce from farmers and selling inputs to farmers is a combination in less dynamic townships only; in the more dynamic areas the two different businesses are separated from each other. The obvious reason is that in an economically more developed environment there is also a tendency to specialize. The higher volume of business favours such specialisation.

The input sector is a very dynamic sector with a steadily increasing turnover. The main players on the market are Myanmar AWBA Group, ARMO/Capital Diamond Star Group and Golden Lion. All three companies import fertiliser and agro-chemicals, but they also import inputs and manufacture both products in the country.

During a visit to AWBA head office, the team was told, that the company employs about 600 agronomists all over the country. It has a network of 32 company-owned shops, 1,400 dealers and approximately 6,000 sub-dealers. In 2014, AWBA organised approximately 8,000 extension meetings/field days country-wide with an average attendance of about 70 farmers. At this stage, the agro-chemical sector earns the biggest share of the company's turnover, but fertiliser sales are growing fast and will soon account for the largest share. AWBA has started to expand its business into the farm machinery sector with an emphasis on rice harvesters, which are partially sold on credit. It is company policy to sell a considerable share of products on credit basis, implying that all official dealers also have to conduct some credit sales. Most likely, this policy is in place for two main reasons:

- High demand by clients
- Potential long-term attachment of clients to the company.

During the survey period, the team had the chance to also interview a regional sales manager of Golden Lion. He is responsible for several townships in the dry zone, and in each of these townships at least two agronomists tour the villages by motorcycles provided by the company. They arrange farmer meetings/field days, mostly addressing fertiliser use and plant protection. These agronomists are not directly involved in selling the company's products, instead keeping a low profile as far as their company background is concerned. They receive a fixed monthly salary (ranging somewhere between salaries paid by the government and by NGOs), and in case the company's annual sales targets in the respective township are being met, they also receive a significant bonus payment.

It is obvious that the private sector concentrates its efforts on areas with the highest business potential. In the seven townships around Aungban, where the new LIFT/Mercy Corps project started recently, AWBA employs 35 agronomists (an average five per township), whereas in other townships there are only one or two.

The professional competence and qualification of the shop-owners of most agro-input shops is critical: In most cases, they have no formal agricultural education background, but have attended some crash-courses or have a qualified person (very often "retired" DoA staff) at hand, who is part-time available for professional advice to the customers/farmers.

With the official AWBA dealers, the picture looks different; here the company seems to place a premium on qualified staff (graduated agronomists), who in some cases also have previous professional experience with DoA.

4.2.2 Trade sector including processors

Merchants/brokers/retailers provide information mainly on market issues like varieties, quality and prices, but in most cases on an ad-hoc-basis and not systematically. A typical example was a trader in Aungban wholesale market who was sorting a huge basket of bell pepper into the two grades "good enough to be sent to Yangon" and "low quality for the local market". Farmers deliver unsorted produce to him, and following the grading, they are paid accordingly.

With the exception of rice and oil mills, there are hardly any agro-processors who maintain direct contact with farmers, since the processing sector in the country is at a rudimentary stage only. In the rice sector, they also interact with farmers on issues of variety and quality. This is less pronounced in the edible oil sector; it is quite clear that the red sesame varieties are mostly produced for the domestic market, and as for groundnuts, the oil extraction rate does not differ significantly.

The lowest level in the marketing chain, the “village collectors”, who were previously traveling through the villages to attract and buy produce on behalf of bigger merchants or mills, has almost disappeared, since overall mobility has increased; i.e. one layer of the marketing chain has largely been abolished.

With the exception of the one example of a rice miller in Bogale, a tobacco company in Hsi Hseng and the “Big M” company (a Thai-owned company based near Aungban, selling seeds and seedlings and buying a selection of fruit and vegetables) the team did not find any evidence of contract farming. The picture remained unclear as far as the concept for Diamond Star potato is concerned (cold store in Aungban).

4.3 Implementing partners (IPs) of LIFT- funded projects

During the survey, eight IPs (four in the delta region, and two each in the dry zone and SSS) were contacted, and 12 of the villages visited were “LIFT” villages (see Annex 2).

Two of the IPs are national NGOs, five are international NGOs and one is an international social enterprise. Most IPs have a long working history in Myanmar and are pioneers of development work in the country.

As far as livelihood and food security are concerned, both issues remain (and will be over the medium term) closely connected to agricultural development, since other income-generating activities at the village level are rather limited. The team came across only two examples: soap making in the delta and sewing of hats/caps in Mahlaing township.

Concerning their EAS approach, the IPs concerned can be categorized broadly into two groups:

- The first group focuses on one or several agricultural topics in order to improve rural livelihood and food security. This approach is geared more towards “technological improvements”. IPs of this group are Metta, Radanar Ayar, Proximity Designs and Terre des Hommes Italia.
- The second group has a broader approach, targeting “technological improvements” in addition to a range of “organisational improvements”, mainly aimed at community-based structures. The consortia WHH/GRET and the one led by HelpAge belong to this group.

The newly started project in the Aungban area of SSS pursues an innovative and new approach: Mercy Corps is the IP and contractual partner of LIFT, but in the course of the project, a job-sharing arrangement between MC and the private sector is being envisaged (so far East West seed company). MC will be the facilitator and organiser of farmers/farmers groups. While East-West will provide the technical content and training.

Generally, the wider approach including community development issues is much more intensive and requires more personnel and financing resources, as well as more internal coordination within the project. An example of this staff-intensive approach is the REVEAL project implemented by the consortium led by HelpAge in two townships in the central dry zone: Taking into account supplementary staff, there are 13 staff for the implementation of this project in 15 villages in Mahlaing Township.

Consequently, area coverage will be more limited. The community development approach certainly makes an irreversible, long-term impact, strengthening the self-help capacities of the villages and improving social cohesion. This became obvious during the survey: A larger number of farmers participated in group discussions, participation was livelier and more evenly distributed, and the role of women was more active.

The CBO-based wider approach also has a significant impact on **gender aspects**:

- There is a range of topics addressed in the wider CBO-based approach, which are typically the domain of women, such as home gardening, poultry and livestock, other income generating activities and household cash management.

- Attendance by women in meetings and training sessions in “LIFT-villages” was considerably higher than in “Non-LIFT villages”.
- In the Pa-O villages, women do most of the regular field work (except land preparation and harvesting), and women’s attendance of agricultural training workshops and FFSs was higher.
- Overall, living conditions improved through house repair, a closer tube well, better education of children, small-scale mechanisation, higher rice yields and improved food security, some elements being of particular importance to women.
- The status of women in the families improved, and women were more open to express their opinions.
- Most men were satisfied to get more support from their wives.
- Women were represented among the professional staff of all IPs and some governmental departments; this fact encouraged many village women to participate more actively in meetings and training.
- In many CBOs, the accounts were kept by women.
- **BUT** wages for female labourers were lower than those for men in all villages.

Sustainability within the “project villages” seems to be secured, as far as capabilities and competences within the CBOs and social cohesion in general are concerned. However, to expect, that this community development will also spread to other villages without additional outside support in the foreseeable future is somewhat optimistic.

The second issue concerning the more broad-based approach is the question of continuity. Should it be the future role of the department of rural development to take this approach further?

Concentrating on agricultural (technological) issues only allows a higher area coverage, and the focus on a comparatively small number of project interventions requires less internal coordination, facilitating due diligence of the limited number of interventions. In case the interventions are “smart, but simple” (in line with the slogan on the Proximity Designs website), they are widely accepted and adopted. A typical example is the “salt water seed selection (SWSS)” method, which is known and practiced in the delta region. A typical example for this approach are the operations of Proximity Designs in the delta: interventions have wide coverage, but focus on a limited number of technological issues, which are mostly propagated in a solid way. (The adoption rate of growing *Sesbania* to enforce the embankments and serve as green manure is lower, because it is very innovative and requires considerable labour input.) This example shows that a relatively simple and cost-effective EAS approach like the “Farm advisory service (FAS)” of PD achieves wide area coverage, but reaches its limits when the introduction of an innovation requires a more pronounced change in mentality than is the case with SWSS.

Therefore, the degree of complexity of the technical and/or organisational innovations has to match the EAS approach. The simpler the content, the more straightforward the extension approach can be².

The IPs certainly enjoy the highest level of trust and acceptance by the village communities concerned, mainly as a result of two factors:

- The high level of commitment, the intensity of contacts and the participatory approach.
- The material benefits supplied by the IPs in various forms.

This second issue, though not openly discussed in-depth, is undoubtedly important. Especially in the delta region, “help-dependency” and related topics are being discussed. All in all, the shift from emergency relief after cyclone Nargis in 2008 to a more sustainable development approach has been mastered successfully. All villages nowadays have a village development committee, but it is mainly in the “LIFT-villages” that the VDCs are actively involved in rural development. Especially in the remote villages in all three regions, the IPs are the only significant providers of EAS.

² The extension theory defines 5 characteristics to appreciate the potential of adoption for a specific innovation: these are its complexity, compatibility, trialability, observability and relative advantage. (see Rogers, E. M. (2003). Diffusion of innovations (5th ed.). New York: Free Press. or <http://www.ioe.org/joe/2007october/a1.php>)

Farmer field schools

This EAS approach has been used and is presently used by a number of IPs and –if properly implemented– has proven to be an effective tool in the provision of EAS.

FFSs not only facilitate the adoption of new practices, but also strengthen farmers’ abilities to make their own decisions based on their observations, by exchanging experiences among participants and by enhanced collaboration.

After a number of years, successful FFSs ideally develop into autonomous schools, which need only minimal external back-up and very limited external support, but so far, none of the IPs working with the FFS approach has reached that stage.

It also provides ample opportunities for a dialogue between farmers and the extension workers/facilitators and can provide a useful feed-back mechanism for applied research. FFS also encourages participants to design and implement their own “field research”, including basic economic considerations.

In recent years, LIFT has accumulated significant experience from the various IPs using FFSs (see training material for the LIFT internal seminar, 2014).

Considering any scaling-up/mainstreaming of the approach, one has to keep the following points in mind:

- FFS requires considerable training for the facilitators
- It is **certainly not** suitable as a “one fits all” approach, but needs thorough knowledge of the local conditions, not only limited to prevailing agricultural practices
- It is not a “low-cost” approach; especially during the set-up phase and during the initial operating seasons, qualified and continuous external support is essential.

5

Linkages between EAS providers

As described above, providers of EAS are to be found in the public (the main provider being DoA), private (mainly agro-input supply shops and the major input supply companies) and technical assistance project sectors (in the study, only a sample of LIFT-funded projects is being considered).

Public-private sector

There are strong, though mainly informal, linkages between DoA and agro-input supply shops. A large number of shop-owners make use of “retired” DoA staff, since the shop owners themselves very often lack the necessary educational qualification to provide qualified advice to farmers (exception: official AWBA dealers). Official AWBA dealers comprise a relatively high share of former DoA staff who resigned from government service, but still have strong links to former colleagues and their previous employer.

Strong linkages are beneficial to both parties: DoA retains considerable influence in the farming community as a source of information, and motivated DoA staff command thorough knowledge of “their” villages and farmers, and their technical advice, if competent, still carries some weight.

In one case, a DoA contact farmer also operates as AWBA sub-dealer. Apart from this single case, there were few indications of significant formal/open linkages between the two sectors.

The idea that the government should withdraw from plant breeding and fulfil its sovereign responsibilities only, leaving the actual breeding work to the private sector, is still beyond the comprehension of the overwhelming majority of the Myanmar people.

Public-project

Especially in the delta region, there are formal and informal linkages between DoA and technical assistance projects. As a result of the high number and relatively long history of LIFT projects, the “Bogale Agricultural Technical Working Group (BATWG)” was established, providing a forum for regular participation of projects, the Bogale DoA and rice millers.

All four IPs in Bogale and Mawlamyinegyun are involved in rice seed multiplication activities in various ways. Seed inspection is sometimes carried out by DoA staff, and the IPs provide free transport and catering to DoA staff. Radanar Ayar also established linkages with DAR, since seed farmers under the project are supplied with seed from DAR. For the future, it is envisaged that seed farmers implement the initial multiplication from breeders’ seed to registered seed.

In general, DoA is being informed on project activities and also invited to special events like field days, workshops etc.

TdH maintains close cooperation with the YAU outreach campus in Magwe on drip irrigation and hydroponic agriculture; the principal of the campus plans to incorporate these “new” technologies into the research work of the graduate students.

Regarding linkages between DoA and IP, Mahlaing is a special case: The previous DoA township manager is now one

of the two agronomists employed by the project for the Mahlaing township.

Despite the legitimate demand that GoM should be in the “driver’s seat” of the development process in the country, absorption capacity for successful project interventions by government institutions at the Union level remains rather low.. This impression is reinforced by the fact that projects supported by other donors did not cause a considerable sustainable impact on the national counterpart institutions either.

Private – project

By project design, the recently initiated project in SSS has firm linkages with the private sector. In the delta region, there were and are linkages between IPs and rice millers, as well as with suppliers/manufacturers of agricultural machinery. On the one hand, this approach has been institutionalised in the BATWG, on the other hand, IRRI cooperates with machinery dealers and –manufacturers on suitable low-cost equipment for cultivation and storage.

Attempts to involve the private input-supply sector in project activities like demonstration plots, field days etc. have been neglected to some extent AWBA as a company, as well as some of the shop owners of input supply shops expressed their readiness for and interest in such -sporadic or continuous- cooperation. One certainly has to be cautious and well aware of commercial interests, but such a cooperation should not be rejected in principle.

During the wrap-up session in the delta, this issue was raised by the study team, triggering an overall rather sceptical response. In a few “LIFT” villages, farmers noted that IP staff had warned them about the commercial interests of the private sector.

To a considerable extent, the private sector remains stigmatised as “profit-hungry” and “unscrupulous”, especially with respect to food and agriculture.

6

Public education and research in the agricultural sector

Expenditure on agricultural research in Myanmar is low compared to neighbouring countries in South-East Asia, and chronic underinvestment in agricultural research is considered to be one major explanation for the underperformance of the agricultural sector (MSU 2013).

It seems useful to differentiate between academic research, mainly intended to train students how to conduct research, and adapted/applied research meant to be disseminated into agricultural practice -- especially since this divide is exceptionally clear-cut in Myanmar. Therefore, agricultural education and academic research are dealt with as a common topic, whereas adapted/applied research is a separate issue.

6.1 Education and academic research

Although there are some high-schools, which offer basic courses in agriculture, agricultural education in principle only starts at one of the 12 existing “state agricultural institutes (SAI)” under DoA, with a three year diploma course. In 2015/2016, two new SAIs will be established in Rakhine and Chin states, resulting in one SAI in each of the 14 regions and states. During the third/final year of the diploma course, a fundamental and rudimentary course on extension (“Methods for educating farmers”) and basic farm management are included in the curriculum.

The total output of diploma holders per year will be about 1,500 students. Out of these, only a minority will be able to continue their agricultural education at Yezin Agricultural University (YAU). In the past, it was assumed that a significant number of diploma holders would return to their home villages and continue to practice and disseminate their newly acquired knowledge on the parental farm. Although reliable data are not available, it is generally acknowledged that only a small number of students actually returns to their home village for good. The vast majority either looks for a job elsewhere, while others continue with further education.

Yezin Agriculture University has recently increased its annual intake of students from 300 to 600 and also changed its B.Sc. programme from four to five years. Students are recruited either from the SAIs or among applicants with good marks at matriculation, who don't have to pass the SAIs' diploma courses. Applicants from both groups have to sit an entrance exam at YAU.

Besides the main campus at Yezin, YAU has opened seven outreach campuses over the past decade, at different locations and with various areas of specialisation (see YAU prospectus). At these campuses, the final year bachelor students undertake their graduation research. Most of the outreach campuses have been established close to seed/research farms (see below), and the land of these seed/research farms has been partly allocated to the YAU campuses.

The seven academic departments of YAU include the department of agricultural economics and a minor department of animal science. While both subjects are thus included, their significance lags behind the crop sciences.

In 1978, a master degree (M.Agr.Sc.) programme was launched, with a minimum duration of four and a maximum duration of ten semesters. A Ph.D. programme started in 2001.

The University of Veterinary Science (UVS) and the University of Forestry (UOF) are also situated in Yezin. All three universities have so far been aligned with their respective line ministries, but will soon fall under the responsibility of the Ministry of Education. The department of agricultural research (DAR) and the forest research institute (FRI) are also located in Yezin.

The team visited DAR, YAU and three of the outreach campuses (Hlegu, Magwe, Aungban). In the outreach campuses there was limited activity, since the B.Sc. programme had only recently been extended to five years; accordingly, there were no final year students undertaking graduation research at present.

Among the reasons for the establishment of the outreach campuses, the YAU prospectus mentions “effective area and technology development” and “better contact with local growers”.

Neither the SAIs nor YAU (including its outreach campuses) have a significant budget for extension activities at their disposal, and neither offer substantive EAS. Groups of farmers are sometimes invited to visit the institutions for demonstration of crops and field trials, however, there is no systematic outreach approach.

The same holds true for visits by SAI and YAU staff and students to identify practical farming problems in villages and on farmers’ fields.

The curricula place a strong emphasis on biology-related subjects. Farm economics, extension, animal husbandry and mechanisation remain at the development stage.

The articulated emphasis of the institutes of higher agricultural training is to educate technically competent agricultural specialists, focused on technical/biological subjects; research activities follow this path. As one principal at an outreach campus clearly stated: “Our first priority is education and training, the second priority is research, and only the third priority is extension”.

During diploma, bachelor and master programmes the same subjects are being taught and studied, but at different levels of detail, intensity and specialisation.

The focus of academic research, education and training is not fundamentally different from most agricultural universities in Western countries, where linkages between practical agriculture and academic training and research also show some weaknesses. However, at Western universities, the integration of farm economics is more pronounced, and crop and animal sciences as well as extension training and farm mechanisation are better integrated.

It is remarkable that students at the then “Institute of Agriculture” in Mandalay had a significantly broader exposure to practical agriculture until 1968: They spent at least one month on a family farm and also underwent practical training on government research farms. This practice was discontinued because the number of students increased, and supervision and organisation would have become more difficult (personal communication with San Thein, 2015). Given that YAU nowadays comprises seven outreach campuses, it should be possible to re-launch this practice without major difficulties.

6.2 Adapted/applied agricultural research

All public agricultural research activities outside the agricultural education sector are coordinated and implemented by the Department of Agricultural Research (DAR).

It was established in 1954 at Gyogon in Insein township of Yangon and was shifted to Yezin in 1971. In 2004, it was re-named and became a separate department of MoAI. The department’s main tasks are “the development and dissemination of regionally adapted crop varieties and crop production technologies.”

Table 3: Organisational Structure of the Department of Agricultural Research (DAR)

Division	Sections
Rice and other cereals/crops	- rice - other cereals
Oil seeds and food legumes	- oil seeds - food legumes
Industrial crops and horticulture	- industrial crops - horticultural crops
Soil, water utilisation and agricultural engineering	- soil science - water utilisation research - agricultural engineering

Agronomy, agricultural economics and statistics	- agronomy - agricultural economics - statistics
Biotechnology, plant genetics resources and plant protection	- biotechnology - plant genetics resources - entomology - plant pathology

DAR comprises seven crop research centres (previously called “central farms”) and 17 satellite farms (previously called “regional research farms”) in most parts of the country, spread over different agro-ecological zones. DAR has released an impressively high number of rice varieties (99 in total) and other cereals (32), oilseeds (19), food legumes (37), industrial crops (20) and horticultural crops (4).

The study team visited some of these farms during the survey (see itinerary in Annex 2). The general impression was that the farms struggle to survive with limited budgetary resources, and that they also lack orientation and direction. While it is being regretted that the seed farms are supposed to operate on a cost covering basis (which at present does not apply to the farms surveyed), a recent study shows that this would be possible once the system is properly organised and managed (van den Broek, J. et al. 2015).

DAR’s research activities focus on plant breeding with a special emphasis on rice; only limited resources are being assigned to research on production technologies, water utilisation and farm economics. In view of limited budgetary resources, these priorities seem appropriate.

The involvement of DAR in the development activities of the rice value chain in the delta region have already been mentioned in chapter 3.1.

Prior to the survey in the three regions, the team also paid a visit to the Central Agriculture Research and Training Centre (CARTC) and the Vegetable and Fruit Research and Development Centre (VFRDC), both located at Hlegu, where one of YAU’s outreach campuses is situated.

Both centres, which are part of DoA, were established in the 1980s with support from JICA. The buildings remain in exceptionally good condition, with modern training facilities.

CARTC provides a combination of theoretical and practical training to

- YAU students (4 weeks)³
- All new DoA staff (4 weeks)
- Junior staff officers (leadership training, 3 weeks)
- Deputy staff officers (high-level management, technical and accounting training, 4 weeks)
- Subject matter specialists (SMSs; specialised training, 2 weeks)

During fiscal year 2013/14, CARTC offered a total of 30 training courses and workshops for 1,618 participants, a substantial increase from 2012/13, when only 23 training sessions and workshops were offered, with a total of 642 participants. The highest number of trainees in 37 courses/workshops was recorded in the 2005/06 fiscal year, with a total of 2,003 attendants; the reasons for the significant variation in numbers could not be established.

Senior CARTC staff expressed a strong preference to be part of DAR, since their current research budget is very limited and they would prefer to conduct more research, which enjoys a considerably higher status than training and education

In the field of vegetable and horticulture, CARTC collaborates closely with VFRDC. VFRDC also engages in seed testing and certification for private companies, which takes one to two seasons.

³ The four-week training course for YAU students partly substitute for the four weeks of practical training on family farms, which was compulsory for all YAU students until 1968.

7

Linkages between education, research and extension

The linkages between research and extension are generally weak. The education and academic research sections have got only limited resources to develop formal and systematic linkages to the EAS. Moreover, they do not consider extension activities to be an integral part of their mission. Some structural reforms were implemented in the recent past, such as the establishment of YAU's outreach campuses and the inclusion of some basic courses of extension and farm economics. These were certainly steps in the right direction, however, to date, without significant impact. For 2015, an institutional move of all three universities in Yezin (YAU, UoF, and UVS) from their respective line ministries to the Ministry of Education is envisaged. Stakeholders hope that the universities will enjoy a higher level of autonomy under this ministry, enabling them to pursue further their internal reforms and the review of the curricula.

The relationship between academic research and applied research is to some extent affected by structural competitions between YAU's outreach campuses and nearby research stations/farms: The land used by the outreach campuses has been reassigned from the stations/farms, and new buildings were established on the campuses.

The exposure of staff and students to agricultural practice is very limited, although outreach campuses offer ample opportunities to strengthen and deepen the practical component of studies.

MoAI consists of two main departments, the Department of Agriculture (DoA) with the Division of Agricultural extension and the Department of Agricultural Research (DAR), which are supposed to link research and extension. But even this linkage is not a strong one: In the seed supply chain, where a well-defined and technically sound system exists, it is not always followed in practice, and there is "no direct communication between the producers of certified seed and the producers of registered seed" (van den Broek, J., et al. 2015). DAR is responsible for genuine breeding work and the first multiplication from breeders/foundation seed to registered seed, whereas DoA is supposed to arrange the second multiplication from registered seed to certified seed. However, for major oilseed crops in the dry zone (sesame and groundnuts) the DAR oilseeds research centre (one of the seven "central farms") every now and then also conducts the second multiplication, since cooperation with DoA remains weak..

Conclusions

Unfortunately agricultural sector development in Myanmar is influenced to a considerable extent by a web of rumours and guesswork, traditions, beliefs and customs, political ambitions and recent and historic experiences. Facts and figures are of less importance only – the few data readily available are not always reliable or contradictory and consequently economic considerations do not play the role in education, research and extension they deserve.

There is a pronounced lack of orientation about the principle development pathways the agricultural sector should take. As stated earlier farmers do know –within the limitations of their environment- how to react to changes of this environment and they do that mainly in a rational way and with due consideration of economic factors. They are not – as it is frequently stated as one of the major problems of agricultural extension in Myanmar- a crowd of simple minded and ignorant country dwellers, who need to be taken by the hand and pulled or pushed in a certain direction. It is the main function of EAS to feed information into the farming communities in order to decrease the limitations and strengthen the self-help abilities of individual farmers as well as of the communities.

The present situation concerning the provision of EAS in the public, project and private sector is shown in the table below:

Table 4: EAS in the public, project and private sector

Name of organisation	Region	EAS approach	Remarks
<i>Public Sector</i>			
Department of Agriculture (DoA)	Countrywide	work with “contact farmers”, on-farm demos (mainly “show-case”), in CDZ still partly using “production camps, in new IFAD project “knowledge centres” will be established	Focus on rice, low presence at village level
Department of livestock breeding and veterinary (DLBV)	Countrywide	village animal health workers	Focus on disease prevention, treatment and surveillance, low activity on breeding and animal nutrition
Department of rural development (DRD)	Countrywide	so far training of credit committees and disbursement of funds to villages	Focus on physical infrastructure
Cooperatives	Countrywide	No EAS, all coops in the survey villages are credit & savings coops, only one is also active in input supply	All coops in the survey villages were established “top-down”, no “true” cooperatives

Name of organisation	Region	EAS approach	Remarks
<u>Projects</u>			
IRRI	Bogale, Mawlamyinegyun	Provides technical expertise to other IPs, DoA, for demos and other extension activities cooperates with other IPs, cooperates with DoA and DAR	Also active in CDZ, but no detailed analysis possible during survey due to the season (no rice vegetation period)
WHH	Bogale, delta	Modified FFS, participants from several villages, therefore cost-effective, on-farm demos	Also active in the support of coop structures (see below)
GRET	Mawlamyinegyun, delta	Learning platform (hybrid between FFS and on-farm demos), MAFF	Also active in the support of coop structures (see below)
Radanar Ayar	Bogale, delta	Working directly with a number of rice seed producers	Intends to establish seed producers association (in cooperation with other IPs)
Proximity	Mawlamyinegyun, delta	Farm advisory service plus on-call service	Reaches a large number of farmers
TdH	Yenanchaung, CDZ	No direct EAS	Intends to establish farmers organizations at a later stage of the project
HelpAge consortium	Mahlaing, CDZ	FFS, on-farm demos	No detailed analysis during the survey, (no season for pulses and oilseeds)
Metta	Hsi Hseng, SSS	FFS on upland rice	No detailed analysis during the survey, (no rice season)
Mercy Corps	Kalaw, SSS	IP is facilitator, private sector provides technical expertise	No detailed analysis during the survey, project was in the process of final selection of target villages, so far only one technical training
Cooperatives/cooperative structures	Six survey townships	WHH/GRET are supporting CAEDPs, a “pre-coop” structure, provision of input supply and machinery services,	In Labutta bottom-up coops have been established (not part of the survey)
Farmer groups	Six survey townships	IPs in the delta intend to establish seed farmers association, TdH intends to establish farmers associations in project townships	
<u>Private sector</u>			
Main agro-chemical companies and their official dealers/shops, seed companies	Six survey townships	Ad-hoc advice, on-farm demos	Network of agronomists travelling the villages, in official shops qualified staff, one company (AWBA) is developing tablet-based advisory application
Input-supply shops	Six township centres	Ad-hoc advice to customers on request	Qualification of staff in many shops basic/rudimentary

As shown at present the public sector is providing EAS to a very limited extent only. Reasons are not mainly budgetary constraints, but more important are the lack of a comprehensive development strategy as well as a management and administrative system, which is not conducive to focus on the problems and needs of the farming communities.

The linkages between agricultural education, academic and applied research, the public EAS providers and farmers are not properly institutionalized. In cases where they do exist, it is mainly due to informal personal relationships rather than established procedures. These personal relationships are very pronounced and strong in Myanmar, since all people holding an agricultural degree studied at the same university and between the community of graduates traditions and linkages are nourished and cultured, it is like a “big family”. The few established formal linkages between the various stakeholders (like in seed production between DAR and DoA) are complicated and therefore often not followed.

The same holds true for the three main groups of actors in the provision of EAS, i.e. the public, project and private sector:

- The public sector still claims to cover the whole country and all crop and livestock activities without taking sufficient note of the dynamic developments taking place in the project and private sectors.
- The project sector, i.e. the donor community as a whole is facing the imminent risk, that under the prevailing conditions – low absorption capacity of governmental institutions, frequent structural changes, but slow progress in strategic development- donor-funded projects will remain “development islands” without major influence on the political decisions and a limited chance of sustainability.
- The private sector has in the recent past emerged as the main EAS provider in several value chains like maize and vegetables, because here the private sector is very competent and competitive and expects good business opportunities in a fast growing market.

On the institutional level particularly in the public sector there is a pronounced tendency to regard the own institution/organization as a very special one and as a consequence there are many different universes existing side by side (“silo mentality”). The endeavour to join forces for a common objective, though very often stressed in official statements and publications, in practice is not very pronounced. The same holds true for other countries in the sometimes painful transition process causing a high level of insecurity at individual and at organizational/institutional level, but nevertheless this mentality has to change.

On the personal/individual level the most effective single factor causing behavioural change is economic pressure. This partly leads to the somewhat paradox situation, that larger landowners, who have the financial resources necessary to adopt innovations and to shoulder the risks involved with this adoption process, prefer to improve/optimize their present farming system. Land-poor farmers however, who feel the economic pressure for change much more, do not have the resources to invest into innovations nor can they afford the risk of failure.

The ongoing process of mechanization is likely to aggravate the unequal distribution of wealth within the villages, since larger landowners are the first replacing draft animals by farm machinery. This facilitates a more timely land preparation and other operations especially in periods of peak labour demand, but they also have the opportunity to provide machinery services against payment to other farmers. This calls for an increased support of cooperatively organized machinery service systems.

The overall economic development offering more employment opportunities outside the villages will contribute to an accelerated out-migration from the villages and will lead in the medium-term future to a lower number of farms, but an increase of the average farm size.

As far as EAS is concerned, farmers will over time become more professional, more integrated in the market and will specialize in certain crops or livestock activities. EAS providers have to work with a lower number of farmers, but the more professional farmers will also be more demanding in both ways, the technical know-how as well as the approach.

The simple and basic, but most important question to be answered in the context of EAS is:

Where do young people in a village learn to become competent and successful farmers?

At present they learn it mainly from their parents and other villagers. There is a very limited influx of advice and information from outside the village, though with an increasing trend mainly by informal channels. The main providers of innovations reaching the grass-root/village level at present are donor-funded projects though in limited areas only, with different approaches and varying topics.

It is general consensus that a carpenter, a plumber or a mechanic ideally should have some formal and continuous training provided by a public institution like a “vocational education training (VET)” institution. But an equivalent training need for farmers is not recognized nor does an equivalent training concept or institution exist for agriculture. The perception, that farming is not only a way of life, but also a profession like others and that a farmer with increasing market integration is more and more becoming an entrepreneur and consequently needs entrepreneurial skills is taking root very slowly only.

Many people in the villages said during the survey, that parents invest much more in the education of their children than in the past. The basic underlying motive is that “our children should lead a better life than we have”. But this implies as well, that the better educated young people will leave the village as soon as they have a job opportunity outside either in a town or through migration to foreign countries. Migration is already an important feature of Myanmar rural dynamics. Most farmers also stated that they have several children and at least one of them would continue farming the land of their ancestors. This assumption most likely is true, but these young people also need more support to make practical farming a more attractive option than it is at present. As in most countries all over the world practical farming in Myanmar is not a profession with a very high social status and reputation. This low status will change only in the long-term and such a change is mainly connected to a better income and economic success in general. This is one more reason for stepping up the EAS and training efforts aimed directly at the villages.

Recommendations

Practicable and realistic recommendations have to take the existing constraints into account. Some of the important constraints do not necessarily require a considerable financial investment and can be implemented in a short period of time, whereas structural reforms connected with strategic developments need a longer preparation and planning phase, a proper implementation and often also more resources.

9.1 Potential options for public EAS providers

Decentralization

The closer the decision makers are to the problems they have to decide upon, the more are their decisions influenced by an intimate knowledge of these problems and their sometimes complex interrelationships. This simple wisdom holds true for all organizational structures, but is of particular importance with EAS, since the farming communities are in the focus of agricultural and rural development. Decentralization will also contribute considerably to a change in the management style. If this does not change, it will lead to a further erosion of the already low motivation and working morale of DoA staff.

First of all the decision making process has to be decentralized: If the majority of farmers in a particular region grow a particular crop the efforts of DoA should also be directed to this particular crop and the problems farmers are experiencing with this crop. Farmers' representatives should be involved in this decision-making process.

Secondly the budget needs to be decentralized: As mentioned above there is the possibility that a DoA township manager applies for an extra budget for some additional extension at the divisional/state level. But since this requires additional administrative work and is hardly relevant for his professional standing and reputation a high level of intrinsic motivation is required to do that. Decentralization might lead to an improved management system in which the work performance of staff has a higher relevance. This implies as well revising the budget allocation between various departments and between national and regional levels according to more transparent procedures.

Last but not least decentralization is also better suited to choose a suitable method to approach a certain problem. A pest or disease outbreak needs a different approach than marketing problems for a particular crop and if this disease or pest outbreak is in a certain limited area only it needs a quick and effective measure to cope with.

Revision of training of new DoA staff

CARTC in Hlegu provides the necessary physical infrastructure for training of new staff but also for older generation staff who need to be exposed to new methods and approaches. Extension methodology as well as farm economics need to be included increasingly in the curricula of training courses. Ideally there should be a TA-component attached to CARTC assisting the centre in this revision and to make sure, that experiences gained so far by donor-funded projects are duly considered. This may include the mobilisation of resource persons from NGOs and private companies as trainers to bring in new perspective, a different understanding of the client farmers and technical competence.

Improvement in CARTC should be linked to revised curricula in YAU especially foreextension education and agricultural economics.

Setting priorities, mainstreaming and increasing the absorption capacity

MoAI needs to set priorities for the further development of the agricultural sector in a consultative process with its development partners. There seems to be a certain focus on structural changes (like the present amalgamation of DoA and DICD), but there is also an urgent need to redefine the mission, the methodologies and the management procedures. Moreover, the roles of the various actors in the public sector need to be defined more clearly to achieve synergies rather than duplicating/overlapping of tasks and responsibilities

Mainstreaming is one of the genuine tasks of MoAI, but a precondition for mainstreaming is that the major development pathways are clearly defined. In particular, the following issues or questions need to be explored: does MoAI still claim to have a publicly financed agricultural extension service covering the whole country and the entire range of crops? What segments of the farming communities are the main target groups of the public extension service? Is DoA serving all farmers, starting from the land-poor subsistence farmer to the large commercial farmer? How is the public extension service going to work in future?

At present it looks like there are elements of various systems used in different ways and in different regions: The contact/demo farmers from the T&V system, the production camps in the CDZ from the SCS/WTRP and the new IFAD-financed project around Nay Pyi Taw is building and supporting "Knowledge centres". The booklet "Myanmar agriculture in brief (2014)" mentions three main functions of DoA; two of them concern seed production and the remaining one concerning extension says "organize training on advanced agricultural technologies and cultural practices...".

During the mainstreaming process it needs to be observed, that decentralization and mainstreaming are properly balanced; mainstreaming does not mean, that DoA has to work exactly the same way all over the country.

Besides setting-up a clear and consistent regulatory framework for the private sector it is as well a genuine task of GoM to pay more attention to law enforcement. There is, for example, already since a long time the regulation that agro-chemicals must have a label in Myanmar language, but there is a wide range of imported products on the market without it.

A short-term measure to increase the absorption capacity of governmental institution is the establishment of information exchange platforms/fora similar to the BATWG in the delta, most likely on regional/state level.

Provide incentive for farmers to set up their own independent organisations

Centralization tends to orientate the policies towards the institutional interests. To become more client focussed, the administration need to engage with the farming and business communities organised along value chains. This calls for stronger farmer organisations able to dialogue with the government and support their members. Genuine farmer organisations have been suppressed until recently and the country needs to shift its focus from controlling them to supporting and providing incentives for the farmers to join independent farmer organisations and/or cooperatives. This is a key missing linkage in the extension systems between the government and most farming communities.

9.2. Potential options for LIFT and IPs, the donor community

The new LIFT strategy 2014 has rightfully again a strong pro-poor approach. It also is a comprehensive strategy considering a wide range of issues like policy dialogue, climate change, migration, increased market integration, health and nutrition aspects etc. It therefore provides the opportunity and flexibility to fund a diversity of projects focusing on different issues and implemented in various regions.

LIFT should continue on its "internal mainstreaming", although the very nature of its tendering methodology ("call for proposals" with only a skeleton of prescriptive elements) does not favour a mainstreaming process. Information exchange and trainings like the internal seminar on FFSs should be continued. A due consideration of agro-economic standards in the planning and implementation and an increased consideration of aspects of sustainability of LIFT-funded projects should be continued and followed-up.

There is the natural tendency of IPs to contrast with each other, which leads to a good range of various approaches and facilitates innovations. Proven and successful instruments of agricultural development however, should also not be neglected.

Promotion and institutional strengthening of “true” cooperatives and farmers self-help organisations

Despite the still unfavourable overall political climate concerning farmers associations IPs should continue to pay due attention to the institutionalization of project interventions by encouraging and supporting the establishment of self-help organizations among their beneficiaries.

Farmers groups, associations and “true” cooperatives have a number of advantages in the rural development process; they can over time develop into lobbying organizations and influence policy decisions on local, regional and national level. They can provide a wide range of services to their membership and they are facilitating the provision of EAS to a larger audience, but can also develop into EAS providers to their members.

Since it seems not very likely that in the near future MoAI will dramatically increase its conceptual capacities to design a comprehensive strategy for the development of the main public EAS provider DoA it seems desirable that the donor community agrees on some basic principles:

Since costs and sustainability are closely interlinked, special emphasis should be paid on EAS approaches which are cost-effective and at the same time reach a large number of potential beneficiaries.

In an agricultural development project the extension approach should

- enclose the entire production process of one or several crops
- entail a thorough economic analysis
- support and facilitate the supply of inputs and marketing
- develop and support cost-effective ways for machinery services
- focus on the development of the entire farm as an economic entity
- and introduce and support organizational innovations as necessary in conjunction with the elements above.

Farm management handbook

In international development assistance in the agricultural sector in transition countries in other regions good experiences were made with a “farm management handbook”, which is explaining the method of gross margin calculation and its objectives and in the main part giving sample gross margins for the major crop and livestock activities, if necessary in different agro-ecological zones. The imminent risk of such a handbook is, that in the perception of the national side it is just another “bible” replacing the former ones edited by the central authorities. After a period of getting used to it, it proved to be a very useful tool to rationalize the very often confusing debates about the crops, export opportunities, farmers preferences and alike.

Taking into account that basic training of record keeping for farmers should be one of the innovations being introduced by all IPs on the one hand and data collection for M&E purposes at the other hand, it should not be so difficult and costly to systematically include some data for a limited set of crops in the three regions for the purpose of editing a booklet with gross margins. A fair compromise has to be made between practicability and perfection.

Radio and TV

Unfortunately the team was not able to assess the frequency, the popularity and the content of radio and TV programmes focusing around agriculture, livelihood and rural development. The superficial impression was that these programmes have a considerable audience. Since they can reach a vast number, they can be a very efficient tool at comparatively low cost. The content is limited however, to clear technical or information topics or rising of awareness.

However, the team was informed that two IPs are already using these media; further opportunities should be explored.

Setting-up of three regional training centres for project extension staff

The development of a consistent and comprehensive strategy for the public EAS providers will take a considerable time, as experiences from other countries in transition clearly show. During this transition period public EAS providers will not sufficiently reach the farming community; existing “innovations” like the ox-drawn groundnut seeder or drip irrigation are spreading very slowly, in limited areas only or not at all.

On the other hand donor-funded projects will play a significant role in the agricultural and rural development process. In order to streamline the EAS approaches, coordinate the donor activities in the sector and to be an attractive and strong partner for the dialogue with relevant governmental institutions it is a reasonable step to promote the development of EAS by concentrated efforts of the donor community.

Most IPs – and other donor-funded projects- provide considerable training for their national staff on agricultural topics including extension methodology and farm economics. IRRI states clearly that one of the tasks is to provide up-to-date technical know-how on rice production. In vegetable and maize production the technical know-how is increasingly provided by the private sector.

Sending project staff to CARTC is at present not a viable option. On the other hand considering “economy of scale” the considerable training efforts of the various IPs most likely would be more cost-effective and efficient in case this training would be “regionalized” in these regional training centres in the delta (mainly for lowland rice), the CDZ for oilseeds and pulses and the hilly area for fruits, vegetable (and upland rice ?).

Next to the mainly technical training for the main crops the various extension approaches and methodologies could be presented and trained there and these centres at the same time would serve as a platform for an intensive exchange of information and experiences. Moreover best practices on both, the technical as well as the organizational innovations could be explained here.

Ideally demonstration fields should be in the vicinity of these three centres, preferably in the surrounding villages with private farmers.

The training centre of Metta in Naung Kham in Hsi Hseng township for example could be upgraded to such a regional training centre for the hilly area without too big an investment.

Experiences in the Kyrgyz Republic in Osh in the Fergana valley have shown that a well-managed training centre run by a local NGO can attract a growing number of trainees from a broad range of development projects.

These training centres should be open to serve trainees from the private sector as well from the public sector. A proper scheme for sustainable financing has to be elaborated at the beginning.

The private sector could contribute by providing inputs and machinery for demonstration and training purposes.

Intensified regional cooperation and exchange of information and experience

The neighbouring countries in South-East Asia have not only similar agro-ecological conditions and consequently a similar cropping pattern and consumer habits, but Vietnam, Cambodia and Laos are also countries in transition. Moreover the farm structure is similar as well. Thailand on the contrary always had a market economy with its specific characteristic. Therefore all these countries are predestined for an intensified cooperation and information exchange. Myanmar has a very pronounced tendency to stew in its own juice, and an intensified cooperation with its South-East Asian neighbours offers an ideal opportunity to open up and widen the horizon.

Extension staff from these neighbouring countries could also contribute significantly in the training of the three regional training centres mentioned above.

9.3. Potential options for further development of EAS

In a continuous policy dialogue and based upon the experiences of the recent past as well as the respective developments in neighbouring countries the future of public EAS provision needs to be discussed. There are two main critical issues:

- Taking the diversity of the country into account as far as agro-ecology, but also agricultural development and other factors are concerned, it seems to be advisable to try different EAS approaches on a pilot basis in different parts of the country. This diversified approach should go hand in hand with a decentralization process.
- The concept, that a fully government-funded public EAS will work at a satisfactory level with full national coverage is rather unrealistic, because it is financially not affordable. Therefore the setting-up of priorities is essential and a better use of the limited resources available needs to be achieved.

One of the numerous rumours floating in the country says, that in due course the number of ministries will be drastically reduced and MoAI and MoLFRD will be combined into one ministry⁴. This structural reform will however, not solve the problems of demarcation of tasks and duties which exists now already, nor will it solve the problems related to administrative procedures, management style and (lack of) communication (“silo mentality”).

Below a number of different approaches, which should be taken into account for piloting, are briefly described.

Call-on service (mobile phone based applications)

The call-on service developed and propagated by Proximity Designs in the delta region has a wide acceptance in the region. It has two main functions:

- To provide information on technical issues supported by photos, so that farmers might be able to identify a certain problem in their crop and find the appropriate solution to the problem.
- Linking farmers to each other (networking) and linking farmers with advisory staff.

A mobile-based information/advisory system has the advantage of being relatively low-cost at a high-outreach capacity. It needs however, to be kept update and a variety of area-specific versions should be available. It could be an option in conjunction with the strengthening of DoA township offices, which could keep it updated and supplement it. As stated earlier, such a service can cover the basic topics in crop technology like fertilizer and seed rates, some market information and basic information on plant protection. But in the identification of pests and diseases the system reaches its limits; it can raise the awareness and cover problems easy to identify because of particular and specific symptoms, but it is not a full substitute for advice by qualified and experienced staff.

AWBA is in the process of developing a similar, but more sophisticated application.

Production/extension camps and Knowledge centres

In the DoA extension set-up production- or extension camps do still play a limited role. This is some physical infrastructure to be used as training facility for farmers training. During the survey these camps were mentioned especially in the dry zone, Mahlaing township.

The recently started IFAD “Fostering Agricultural Revitalization in Myanmar (FARM)” project foresees the gradual establishment of 55 “Knowledge centres” in the five townships around Nay Pyi Taw “governed by an elected, gender-balanced board representing all socio-economic categories of the rural population (as well as MoAI representation)”

The project will support “the creation of a pluralistic, participatory extension service platform which provides support to farming households and services to landless entrepreneurs to start and develop rural micro-businesses.”(IFAD, final project design report, December 2013).

This approach in the IFAD FARM project resembles to some extent the concept of the production-/extension camps. It can be assumed that the concept has been designed with participation of MoAI and met its approval. It is not clear

⁴ Before 1988, the Ministry of Agriculture and Forestry included four major divisions: agriculture, forestry, animal husbandry and fisheries. Cooperation between these sectors seem to have declined when managed through different ministries.

however, whether this approach is going to be limited to the FARM project area only or should serve as a model/pilot for the whole country.

A second IFAD-financed project (Eastern States Agri-Business project, “ESAB”, in selected areas of Kayin and Shan states) is in the planning stage. It would be interesting to know whether the same EAS approach is planned in this project.

The EAS approach of the FARM project should be closely monitored and evaluated and the possibility to extend this approach to other regions needs to be examined. At first sight it looks very ambitious and expensive. It would already be a big step forward if in each township of the country at least one such a centre would exist (as it looks in the FARM project a “Knowledge centre” is envisaged for several village tracts of one township).

Financial participation of clients/farmers

A financial participation of clients/farmers serves in general two main purposes:

- It decreases public spending on EAS, normally at an increasing rate, since farmers’ contribution after successful implementation will increase and public spending decrease.
- If properly designed (no flat rate to all farmers, but based upon services rendered by the service) it can be a powerful tool to constantly increase the competencies and the performance of the extension service provider. If the service is not of sufficient quality, there is no demand and no financial contribution from clients/farmers.

In general such a proposal at its initial stage tends to meet stiff resistance from all parties concerned, the public extension service, the farming community and for sure also the advisory staff.

Nevertheless it is an approach worth trying also in the more dynamic areas in Myanmar like in parts of SSS and most likely as well in townships around the urban consumer centres like Yangon and Mandalay. Experiences in other transition (and Western) countries have shown, that a commercial EAS will start sooner or later anyhow in the very dynamic, commercial and market oriented agricultural areas. If this concept is not taken up by public EAS, it will start entirely on a private and fully commercial basis.

Furthermore some IPs like WHH especially in the delta expect that recipients over time refund the equivalent value of inputs received free of charge to the respective village revolving fund, which is a very appropriate practice. A financial contribution for the provision of EAS right from the start of a development project is essential, even if it is at the initial stage only symbolic.

In this context it is remarkable that also in the IFAD FARM project a very small financial contribution from the farming community in the project area is foreseen.

Voucher/coupon system/government subsidies to private EAS providers

The system is based upon a continuous governmental financial support to EAS, but without a public institution delivering this service. The system is based upon two major principles:

- As the government is committed to support the farming community by the provision of EAS, it issues vouchers to farmers or farmers groups, which entitle these clients to a clearly defined extension/advisory work like a 3 hour farm visit addressing a specific problem as required by the farmer/client.
- The farmer/client looks for a competent free-lance advisor (it can be also a part-time advisor having a part-time permanent job or a consultant-/advisory company/private firm etc.) and –after the service rendered– “pays” him with a voucher/coupon. The advisor later on exchanges this voucher for the equivalent amount of money at a governmental institution.

The advantage for the government is, that it is a relatively inexpensive way to provide public-financed EAS, since no extensive government structure is needed. The farmer/client has the choice to select an advisor, who according to the farmers experience is providing the service at an acceptable level, which he needs. Over time a network of

competent advisers will develop, since the less competent ones will drop out of the system.

Another option is the direct payment of subsidies to private institutions, which in turn provide EAS to farmers at a scale and in a region agreed upon between both parties beforehand.

9.4. Improved, intensified and continuous farmers' education and training

At present there is no formalized way of (young) farmers vocational educational training in the country. This problem needs to be addressed in the medium-term future for the following reasons:

- As market orientation and integration proceeds, a successful farmer needs to know much more than the basics of crop technology. First and foremost his managerial capabilities have to be strengthened in order to improve farm planning taking into consideration "new crops", new irrigation techniques etc. and the commercial activities like procurement of proper inputs and marketing at the right time at a favourable price.
- A better formal educational support to farmers will at the same time contribute to the improvement of the social status and reputation of the profession of "practical farmer", which in turn will make this profession more attractive and will contribute to the decrease of rural-urban migration, will create more employment opportunities in rural areas etc.

As a first step to increased formal farmers education and training "high schools", i.e. courses of 3 – 6 months for young farmers have been recommended (Kohn, G., and Huttemeier, 2013) following the FFS terminology. ADRA at present is in the planning stage of a new project with a similar approach offering training courses of several months for young farmers.

The introduction of VET in the field of agriculture is major reform measure, which needs a lot of consideration, but the benefits are manifold.

Annex 1: Desk Review

The range of articles about EAS in Myanmar is rather limited, this especially holds true for the period before the present government came into office.

In most cases agricultural education, research and extension are dealt with in a wider context of agriculture, agricultural reform and reviews of the agricultural sector as a whole.

ACIAR (2001), Final report, project: Increasing food security and farmer livelihoods through enhanced cultivation in the central dry zone of Burma (Myanmar)

The project report outlines the major project interventions like seed banks, training of MAS staff (partly in collaboration with ICRISAT).

AERES GROUP, Houterman, J., (2014) Reform of the Agricultural Knowledge System in Myanmar, Opportunities for Myanmar-Netherlands cooperation

The quick scan addresses mainly the agricultural education sector and only to a lesser extent research and extension.

It advocates a higher spending on the relatively small agricultural sector given the importance of the agricultural sector in the economy of Myanmar and a better linkage of the education sector to the rural development process.

The absence of any formal and continuous agricultural training for the rural population is also noted as well as the weak linkages between research-education and extension. Education is considered the key factor in human resource development in the agricultural sector, too.

This report is part of a series of quick scans done end of 2014/beginning of 2015 called “Myanmar-NL Agri Programme & Business Opportunities”

Asian Development Bank (ADB), (2012), Support for Myanmar’s Reforms for Inclusive Growth Program

In the agricultural sector assessment a broad analysis of the sector is given, a “poorly developed research and extension system” and the inadequate budget and lack of technical expertise in MoAI are mentioned as constraints. Moreover it is stated that “practice has not always matched stated objectives and priorities in the sector.”

Baig, M.B., Aldosari, F. (2013), Agricultural Extension in ASIA: Constraints and Options for Improvement in : Journal of Animal & Plant Science 23(2)

A broad comparative analysis of the challenges for EAS in the Asian region. Pluralism, privatization, market liberation and decentralization are among these challenges, which have been accommodated for at various degrees in different countries of the region.

Cho, K.M. Boland, H. (2001 ?), Participatory Learning for Agricultural Extension and Future Development in Myanmar

The authors discuss the need for a change in agricultural extension from a teaching and education process to a more participatory learning process.

Moreover a short overview is given on the few foreign-funded projects involved in agriculture and their EAS approaches.

Cho, K.M., (2002), Agricultural Extension in Myanmar, in: BeraterInnen News 1/2002

A short overview of the public EAS (MAS) is given and the main constraints limiting the efficiency of MAS are highlighted. A more participatory and community-based approach is being suggested as well as an inclusion of new extension approaches in the curricula of YAU and the SAIs.

Cho, K.M., Boland,H., (2003), Searching Institutional Linkages for Implementation of a Participatory Extension Approach in Myanmar, in : Proceedings of the 19th Annula Conference of AIAEE, Raleigh, North Carolina, USA

The paper describes briefly the set-up of the public EAS (MAS), agricultural education and research. Based upon the same survey as above the main problems encountered by village extension staff are described.

Cho, K.M., (2013), Background Paper No.5, Current Situation and Future Opportunities in Agricultural Education, Research and Extension in Myanmar, as part of a Strategic Agricultural Sector and Food Security Diagnostic for Myanmar, led by Michigan State University (MSU) and in partnership with the Myanmar Development Resource Institute-Centre for Economic and Social Development (MDRI-CESD)

The report describes the system of agricultural education, research and public (DoA) EAS. It also gives a short overview of the historic development of EAS in the country and describes in very general terms the extension approaches and the need for reforms to a more farmer-centered approach. The absence of any significant farmer organizations is pointed out. Some budgetary figures as well as general recommendations for reform measures are given. The problems perceived by extension workers are based upon the same survey as in the 2002 paper. Although" a pluralistic extension network" is recommended, the EAS activities of the private and project sectors are unfortunately not mentioned.

Denning, G., et al. (2013), Background Paper No.2, Rice productivity Improvement in Myanmar, Michigan State University (MSU) and in partnership with the Myanmar Development Resource Institute-Centre for Economic and Social Development (MDRI-CESD)

As part of the "short game" the production of a comprehensive, multi-media "Myanmar Rice Manual as a resource for research, extension and education is recommended. For the "long game" the transformation of the extension service into a service-oriented institution is required.

Van Dorsten, F. et al. (2015), Farmers' organisations and cooperatives in Myanmar

This report is part of the series of "Myanmar-NL Agri Programme & Business Opportunities". The main apex organizations are not really independent, but linked with governmental institutions and the main activities are focusing around provision of loans. Membership and organizational penetration on grass-root level as well as representation of small-holder farmers is weak.

FAO/UNDP (2003/04), Myanmar Agricultural Sector Review and Investment Strategy, Vol. 2: Agricultural Sector Investment Strategy

After describing some elementary strategies like the transition from central planning to locally determined priorities and social and community development the report outlines sub-sector investment strategies including one for agricultural research extension and education. The present situation is said to lack a clear objective and training based upon farmer needs and constraints, agro-ecological and socio-economic conditions and realities of research and extension organizations do not exist

A new, multi-disciplinary agricultural service institution with a strong participative approach in extension and applied field research is recommended.

Fujita, K., Okamoto, I., (2006), Discussion Paper No.63, Agricultural Policies and Development of Myanmar's Agricultural Sector: An Overview, Institute of Developing Economies

The avoidance of social unrest and the maintenance of control by the government are identified as the two main factors determining the agricultural policy. A policy of low food prices and low wages in the socialist period has been maintained in order to finance industrialization. After 1988 the rice price has been depressed considerably, whereby the input prices were gradually liberalized.

The paper provides a comprehensive summary of agricultural policies and their effects during the period from the socialist period until the early 2000's.

Haggblade, S., et al., (2013) A Strategic Agricultural Sector and Food Security Diagnostic for Myanmar, led by Michigan State University (MSU) and in partnership with the Myanmar Development Resource Institute-Centre for Economic and Social Development (MDRI-CESD)

This main report of the diagnostic gives an overview on the main factors affecting the (low) performance of Myanmar's agricultural sector. As far as recommendations for the future are concerned the report differentiates between

- "The short game", options for improving agricultural performance without further institutional or policy reforms and
- "The long game"; a series of key institutional and policy reforms are needed in order to match the performance of Myanmar's neighbouring countries
- "Business as usual", the country will continue with its low-productivity agriculture.

Under the "long game" scenario the following institutional reform measures are clearly spelled out:

- Changing agricultural research into a market-oriented, farmer-centered system (with a higher budget)
- Modernization and reform of the public extension system
- Reform of agricultural education.
- Support to farmer-based organizations
- Long-range reengineering of education, health and nutrition institutions that promote long-term human capital formation among rural children.

For both, the long and the short game a mix of interventions should be designed and implemented as fast as possible and simultaneously. The weak links between farmers-extension-research are mentioned as one major problem.

ICRISAT (2011), Myanmar and ICRISAT

Brief description of the cooperation between ICRISAT and DAR, the establishment of seedbanks and mother and bay trials for various legumes in the central dry zone

IRRI (2015), Myanmar and IRRI and Myanmar and IRRI (2000 ?)

Brief description of the history of IRRI in Myanmar and the ongoing collaborations with various partners

JICA (2013), Assessment Survey on Agriculture

The report covers the entire agricultural sector and therefore is not very specific. It provides, however, useful information of MoAI budgetary figures for the 2010-11 fiscal year, according to which DoA had not even half the budget of department of industrial crop development (9 % and 19 %) and only slightly more than the agricultural mechanization department (8%).

The report mentions the "extension camps", but states that most of the camps are not functional anymore.

Kohn, G., and Huttemeier, C., (2013): Myanmar Comprehensive Education Sector Review (CESR) Phase 1: Rapid Assessment; Technical Annex on TVET Subsector Analysis.

The review covers the entire education sector, the annex is focusing on technical vocational educational training (TVET) also covering the agricultural sector.

Michigan State University et al. (2013), Strategic choices for the Future of Agriculture in Myanmar: A Summary Paper

This is a summary of the main report and the background papers of the diagnostic of February 2003, again stressing the weak links between farmers-extension-research.

As in the main report and the background papers the unreliable statistical data base as well as the low degree of enforcement of proper regulations issued several years back are mentioned as problem areas to be addressed.

Myanmar Agricultural Service, official website

San Thein, Ban Shein, Tin Cho Cho Myat, (2007), Integration of Farmer-Led Extension Approach for the Technology Diffusion in Food-cum-Cash Crop Production in Myanmar, Paper submitted for the National Symposium on Farmer-Led Agricultural Extension Approaches in Myanmar, 28 – 30 May 2007, Yangon

As early as 2001 the authors conducted a survey on the work of extension staff for sugarcane production with the results that extension staff were very much “boss-oriented” and not so much focused on their clients. Also the reasons for adoption and non-adoption in new sugarcane technologies were examined.

San Thein (2010), Preliminary Review on Extension Program Planning and Scope of Activities in Myanmar Agricultural Service and Related Departments in Agriculture Sector of Myanmar and Identification of Possible Areas of Cooperation and Strengthening Opportunities for Sustainable Community Development Projects

The paper provides a comprehensive overview of the historic development of the public EAS, the various structural reforms and the approaches applied.

San Thein, (2011), Proposed Process for the Collaboration between UNDP-HDI Project and Government and Local Technical Partners

The paper proposes practical approaches for a smooth cooperation between various stakeholders of the project like additional training for extension (MAS) staff and the modalities for the set-up of seed banks.

San Thein, (2013), Development Strategy for Myanmar Agriculture Sector

The paper deals with a wide range of topics of the sector commenting on the changes of policies after the new government came in power. The author shows potential pathways for the further development. The paper also deals with the needs for reforms in the education, research and extension systems as well as the necessary improvements of their linkages.

Qamar, M.K./GFRAS

Basic information on public EAS in Myanmar, to some extent based upon the articles of Cho, K.M.

Wijnands, J.H.M., et al. (2014), Business opportunities and food safety of the Myanmar edible oil sector.

The report is part of the “Myanmar-NL Agri Programme & Business Opportunities” _series. It provides a comprehensive analysis of the edible oil sector and proposes the increased export of high-value sesame and increasing import of cheaper, but good quality palm oil to substitute the sesame oil, which would lead to high export earnings in the range of the present trade deficit of Myanmar.

Wong, L.C.Y. and Wai, E.M.A., (2013), Background Paper No.6, Rapid Value Chain Assessment: Structure and Dynamics of the Rice Value Chain in Myanmar, Michigan State University (MSU) and in partnership with the Myanmar Development Resource Institute-Centre for Economic and Social Development (MDRI-CESD)

The paper recommends again improving agri-support services for the “short game” and a farmer-centered and market oriented research system, support to farmers organizations.

Zaw, K. et al (2011), Agricultural Transformation, Institutional Changes and Rural Development in Ayeyarwaddy Delta, Myanmar

The article give a lot of historic and factual information, mainly on physical infrastructure project, but hardly any recommendations on institutional changes except for a certain degree of decentralization.

Documents on Farmer Field Schools

ACF (2014), Peer Review, Farmer Field Schools, Kayah State

AVSI (2009)Farmer Field School Early Success in Myanmar

Eberhardt, K. (2006), Farmer Field School for Sustainable Development in Myanmar, Report of Mid-term Review

GRET (2009), GRET farmer Field School Experience in Northern Rakhine State of Myanmar

Heinze, S.R. (2007), Dharma and Development: Interdependencies between Religion and Development Policies

LIFT PPT Presentation, Internal Seminar February 2014

Lum, D., et.al. Metta Development Foundation, (2002), Farmer Field School for Sustainable Agricultural Development, International Symposium "Sustaining Food Security and Managing Natural Resources in Southeast Asia, January 8-11, 2002, Chiang Mai, Thailand

Metta Development Foundation (2003) Din, A.D., Morisson, M. Evaluation Report, farmer Field School for Sustainable Agriculture Development in Myanmar

Selected LIFT Publications

Delta 1 Evaluation Report

Myanmar Dry Zone Development Programme, Scoping Mission Report

Annual Reports 2011, 2012, 2013

Myanmar Agricultural Development Bank

Consultancy on Cooperative Systems in Myanmar

Reports of the implementing partners

From each implementing partners of the projects visited during the survey at least one report has been available, for some IPs there were several reports and/or an evaluation report.

- *Metta Annual Report 2013*
- *Terre des Hommes Narrative report February – April 2014, Monitoring visit June 2014, Monitoring visit November 2014*
- *IRRI Annual Report 2013, Mid-Year Report 2014 (Project: Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwady delta)*
- *IRRI Mid-Year Report 2014, Annual Narrative Report 2013 (Project: Reducing risks and improving livelihoods in the rice environments of Myanmar through better targeting of management options)*
- *HelpAge International Mid-Term Narrative Report 2013*
- *WHH/GRET Narrative Report January – June 2014, Project End Evaluation Report, Final Evaluation Report November 2014*
- *Proximity Designs Annual Report 2013*

For the new project of Mercy Corps in SSS a report was not yet available.

In addition to the reports mentioned above there were also the following reports of Mercy Corps and CESVI available, which did not cover any projects visited during the survey, but nevertheless provided useful information from other LIFT-funded projects.

- *CESVI, Annual Narrative Reports 2011 and 2013, Semi-annual Narrative Report January – June 2014*
- *Mercy Corps Semi- annual Narrative Report January – June 2014 (Project "Beyond Recovery: Promoting Market-led, Pro-Poor Economic Growth), Final Evaluation Report (Project: Building Community Resilience for Food Security Programme, Myanmar, 2011 - 2012*

These reports provided ample information about the “core data” like start and end of project, the objectives and outputs, target groups and project area etc.

Moreover the achievements during the reporting period are presented as well as – though at a moderate level- the main problems and difficulties encountered.

As far as EAS are concerned, the reports provide basic information on the approach(es) chosen by the various IPs, but explain only to a very limited extent, why a particular approach has been selected.

Annex 2: Itinerary and maps of the townships surveyed

Date	Place	Visit
16-12-2014	Yangon	Briefing LIFT
17-12	Yangon	Metta Foundation
18-12	Yangon	Myanmar Business Coalition on Aid (MBCA)
		Terres des Hommes Italia (TdH)
19-12	Yangon	CESVI (cooperazione e sviluppo)
		East-West seed company
21-12	Yangon	Proximity Designs (PD)
22-12	Yangon	Mercy Corps
		AWBA
15-01-2015	Nay Pyi Taw	IFAD FARM project
		Ministry of Cooperatives (MoCo)
		Ministry of Agriculture and Irrigation (MoAI), Department of Agriculture (DoA), Agricultural Extension Division
16-01	Nay Pyi Taw	Department of Agricultural Planning, MoAI
	Yezin	Yezin Agricultural University (YAU)
	Yezin	Department of Agricultural Research (DAR)
	Nay Pyi Taw	Ministry of Livestock, Fishery and Rural Development (MoLFRD), Department of Rural Development
19-01	Hlegu	Central Agriculture Research and Training Centre (CARTC)
		Hlegu outreach campus (YAU)
		Vegetable and Fruit Research and Development Centre (VFRDC)
21-01	Travel to Bogale	Meeting with LIFT implementing partners in Bogale and Mawlamyinegyun townships (GRET/WHH, Radanar Ayar, PD)
22-01	Bogale	Bogale Agricultural Technical Working Group (BATWG)
		Meeting with Rice millers
		Visit to DoA
23-01	Bogale	Gyat Chaung village, IP (Radanar Ayar), dynamic
24-01	Bogale	Ywar Thit village, non-LIFT, remote
25-01	Bogale	Thone Thut village, IP (WHH), remote
26-01	Bogale	Kamakalu village, non-LIFT, dynamic
27-01	Bogale	Input-supply shops, traders
28-01	Mawlamyinegyun	Kyaw Nu village, IP (PD), dynamic
29-01	Mawlamyinegyun	Ywar Ma village, non-LIFT, remote
30-01	Mawlamyinegyun	Ahnyarsu village, IP (GRET), remote
31-01	Mawlamyinegyun	Team meeting/discussions
01-02	Mawlamyinegyun	Input-supply shops, traders, farm machinery shop
02-02	Mawlamyinegyun	IRRI office, wrap-up with 4 IPs, SWOT discussions
03-02	Travel to Yangon	

04-02	Travel to Yenanchaung	First meeting with TdH field staff
05-02	Yenanchaung	Kyae Boat and Kan Lay Kone villages, IP (TdH) , dynamic
06-02	Yenanchaung	Buu Kyun village, non-LIFT, dynamic
07-02	Yenanchaung	Lan Pa Cho village, IP (TdH), remote
08-02	Yenanchaung	Input-supply shops, traders
09-02	Yenanchaung	Oil mills, SWOT- discussion
10-02	Magwe	Central Oilseed Research Centre (DAR), Magwe outreach campus (YAU)
11-02	Travel to Meiktila via Taungtha and Mahlaing	Meeting with the regional manager of Golden Lion in Taungtha Meeting the Help Age consortium project team
12-02	Meiktila	Public Holiday, Union Day
13-02	Mahlaing	Bwet Nge village, non-LIFT, remote, visit to Mahlaing Central Farm, Seed Division (DoA)
14-02	Mahlaing	Lae Gyi village, non-LIFT, dynamic
15-02	Mahlaing	Thae Kan village, IP (HA), dynamic
16-02	Mahlaing	Kyin Ywar village, IP (HA), remote, SWOT discussion
17-02	Mahlaing	Input-supply shops, cotton-mill, farm machinery shop
18-02	Travel to Naung Kham via Taunggyi	Meeting with Metta in Taunggyi, overnight in Metta guest house in Naung Kham, next morning travel to Hse Hsaing
19-02	Hse Hsaing	Pon Laung village, non-LIFT, dynamic
20-02	Hse Hsaing	Hte Nae village, non-LIFT, remote, visit to Ban Yin Seed Farm, Seed Division (DoA)
21-02	Hse Hsaing	Hte Man village, IP (Metta), dynamic
22-02	Hse Hsaing	Mee Rae village, IP (Metta), remote
23-02	Hse Hsaing	Input-supply shops at Sigh Kaung
24-02	Travel to Kalaw via Taunggyi and Aungban	Meeting with Metta in Taunggyi, SWOT discussion Meeting with Mercy Corps in Aungban Visit of cold store of Diamond Star in Aungban
25-02	Kalaw	State Agricultural Institute (SAI) in Heho, Aungban Hilly Region Research Station (DAR)
26-02	Kalaw	Bodigone village, IP (Mercy Corps), dynamic
27-02	Kalaw	Taung Chai village, non-LIFT, dynamic
28-02	Kalaw	Inn Wun village, non-LIFT, remote
01-03	Kalaw	Mee Thway Chaung village, IP (Mercy Corps), remote
02-03	Kalaw	Aungban wholesale market, input-supply shops, traders
03-03	Travel to Yangon	
04-03	Yangon	Debriefing at LIFT
30-03	Yangon	Workshop "EAS in Myanmar"
01-04	Nay Pyi Taw	Presentation of main findings in MoAI, Agricultural Extension Division

Annex 3: SWOT Analyses

Organisation: Department of Agriculture (DoA)			
S	<ul style="list-style-type: none"> ● Nation-wide coverage ● High ratio of foreign-trained staff ● Close linkage to subject matter specialists ● „Family spirit“ because many extension workers come from YAU ● Experienced staff with good know-how of local conditions 	W	
O	<ul style="list-style-type: none"> ● Could participate in mobile phone based extension application ● Good personal relations with private sector can be a basis for formal cooperation ● Good contact to other agencies on township level can facilitate better coordination 	<ul style="list-style-type: none"> ● Continued strong focus on production targets, esp. rice ● Few visits to farmers, esp. in remote villages ● Still government- not farmer-focussed ● Contact farmers often better-off, not representative ● Management style not motivating ● Few incentives for farmer-centered extension activities ● Staff not sufficiently trained in extension methodologies ● High staff mobility ● Might lose influence to the private sector, esp. on plant protection ● Interference by top-management can reduce motivation 	T

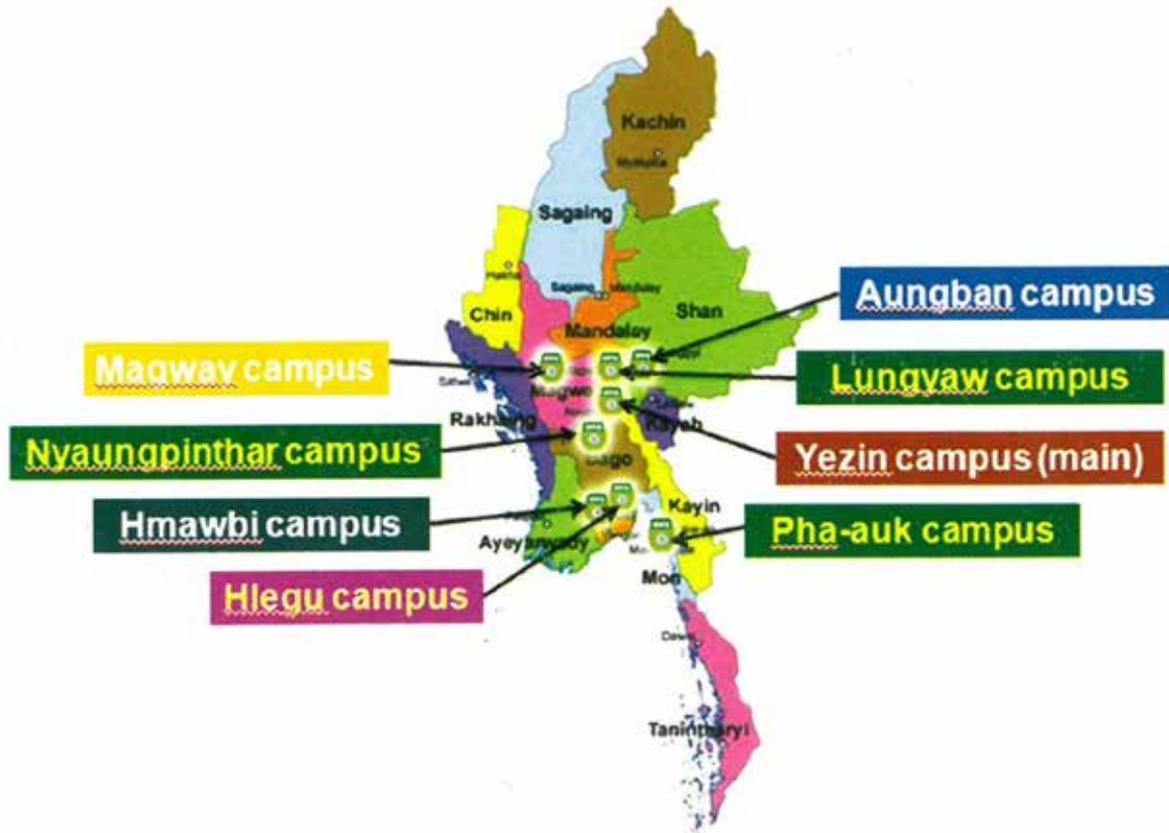
Organisation: Livestock Breeding and Veterinary Department

S	<ul style="list-style-type: none"> ● Tradition of training village people to assist in preventive animal health measures ● Provide vaccines free of charge ● Provide artificial insemination services in some areas ● Provide linkages for the procurement of “exotic” breeding stock on a limited scale ● Assist with fodder crop cultivation on a limited scale ● Are open to/welcome cooperation with donor projects 	<ul style="list-style-type: none"> ● Low integration of crop and animal husbandry, low level of cooperation with DoA ● Low number of staff ● No incentives for duty travel ● Head of department has to attend a large number of meetings, which leaves little time for his/her genuine tasks and duties 	W
O	<ul style="list-style-type: none"> ● Know-how of trained VAHWs will remain in the villages ● Livestock has potential as an income generating activity for poor and landless people. 	<ul style="list-style-type: none"> ● Mechanization reduces the number of large ruminants ● Investment in large-scale livestock production enterprises around urban consumer centers reduces opportunities for smallholders in the villages 	T

Organisation: Department of Rural Development (DRD)

S	<ul style="list-style-type: none"> ● “Modern” department with a rural development strategy based on community development ● Part of the focal Ministry for Livestock, Fishery and Rural Development (MoLFRD) ● In-charge of the three “sister” projects establishing revolving funds in a considerable number of villages ● Not burdened by negative image/high level of mistrust ● Recruitment of a large number of additional staff 	<ul style="list-style-type: none"> ● At present at township level still focusing on physical infrastructure 	W
O	<ul style="list-style-type: none"> ● Recruitment of a large number of new staff might facilitate broad-based rural development approach ● Might in future also take over staff from NGOs experienced in community-development-based approaches. 	<ul style="list-style-type: none"> ● Demarcation line between DoA and DRD not yet clear 	T

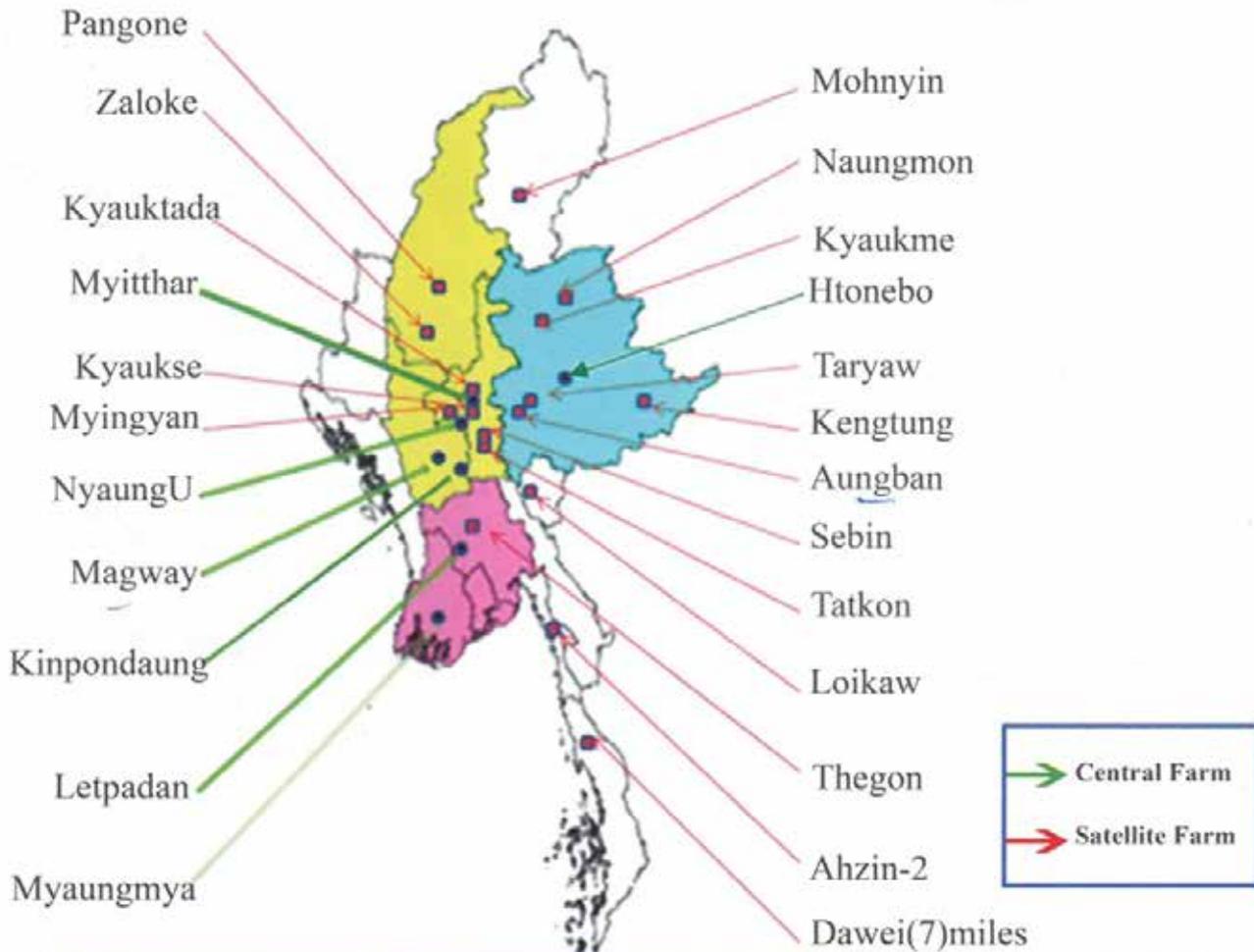
Annex 4: Maps of DAR farms and YAU campuses



No.	Campus	Specialization Area
1.	Yezin Campus (Main)	(a) Crop Breeding (b) Soil And Water Management (c) Agribusiness Management (d) Agricultural Biotechnology (e) Agronomy (f) Plant Pathology (g) Agricultural Entomology
2.	Hmawbi, Yangon Region	Rice
3.	Aungban, Shan State	Hillside Farming System
4.	Magway, Magway Region	Dryland Farming System
5.	Lungyaw, Nyaungpinthar, Pha-auk	Industrial Crops
6.	Hlegu, Yangon Region	Plant Protection

Source: Ministry of Agriculture and Irrigation (MOAI)

Central Farms and Satellite Farms (DAR)



Central Farms

Sr. Farms

1. Letpadan
3. NyaungU
5. Kinpontaung
7. Htonebo

Crop

- Rice
Central Dry Zone Crop
Sugarcane
Fruit and Vegetable

Sr. Farms

2. Magway
4. Myitthar
6. Myaungmya

Crop

- Oilseed crop
Cotton
Jute

Satellite Farms

Sr. Farms

1. Mohnyin
2. Pankone
3. Zaloke
4. Kyaukse
5. Kyauktada
6. Kengtung
7. Myingyan
8. Tatkon
9. Aungban

Crop

- Rice
Wheat, Chickpea
Wheat, Chickpea
Rice
Rice
Rice
Pigeonpea
Corn, Sunflower
Corn, Wheat, Soybean, Rice

Sr. Farms

10. Kyaukme
11. Loikaw
12. Thegon
13. Taryaw
14. Naungmon
15. Sebin
16. Dawei(7)mile
17. Ahzin-2

Crop

- Corn, Rice
Rice
Rice
Rice
Corn, Wheat, Buck wheat
Sunflower, Corn, Greengram
Fruit & vegetable
Fruit & vegetable

Source: Ministry of Agriculture and Irrigation (MOAI)