Sustainable Management of Natural Resources in Central Vietnam

SMNR-CV

# Mission Report

## Participatory Agricultural Extension Methodology (PAEM)

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**TABLE OF CONTENTS**

## LIST OF ANNEXES

## ABBREVIATIONS

| | |
|---|---|
| ADB | Asian Development Bank |
| CBFM | Commune-based Forest Management |
| CDP | Commune Development Planning |
| CEW | Commune Extension Worker |
| DAES | District Agriculture Extension Station |
| DPC | District People's Committee |
| EC | Extension Clubs |
| FLA | Forest Land Allocation |
| FS | Farming Systems |
| GTZ | German Technical Cooperation |
| IG | Interest Group |
| IPM | Integrated Pest Management |
| NAEC | National Agricultural Extension Center |
| OP | Plan of Operations |
| PAEM | Participatory Agricultural Extension Methodology |
| PAFEC | Provincial Agriculture Extension Center |
| PPC | Provincial People's Committee |
| PPM | Project Planning Matrix |
| SALT | Slopy Agricultural Land Technology |
| SMNR-CV | Sustainable Management of Natural Resources Project in Central Vietnam |
| TNA | Training Needs Assessment |
| ToT | Training of Trainers |
| VDP | Village Development Planning |

# SUMMARY

This paper outlines the project intervention strategy of the project "Sustainable Management of Natural Resources in Central Vietnam" (SMNR-CV) in order to strengthen the participatory approach in agricultural extension in Quang Binh province in general and to four target communes in the districts of Minh Hoa and Tuyen Hoa in particular. This suggested strategy to Output No.2 of the project is consistent with the other project activities which promote the overall project objectives of encouraging participatory planning and implementation procedures which enable community and Government organizations to identify and thereafter support sustainable natural resource management processes.

The focus of Output No.2 of the project planning matrix (PPM) is to "support partner organizations and target groups in the development, dissemination and application of more productive and ecologically sustainable farming systems". The farming systems in the target areas are based on four different agro-ecological zones (up-land, mid-land, low-land and riverside). The intensive survey for identifying the prevailing farming systems resulted in two complex systems for each of the four agro-ecological zones (out of more than 170 distinct systems). Also implemented in different zones the farming systems resemble each other, including more or less the same crops and crop rotations, and livestock husbandry. The choice of the households is primarily an economic choice; ecological and sustainability considerations are hardly taken into account.

Against this background the identified training needs cover technical aspects of agricultural production, as well as basic agro-economics for monitoring farmers' own decision-making process in agricultural production.

Therefore, the Project starts with a series of cascading trainings with the staff of technical departments, extension services and private service providers which has led to a changing mindset of key stakeholders with respect to economically and ecologically optimizing resource management. Real impacts on living conditions are to be expected from further extending these trainings to farming households.

The general approach proposed in the project intervention strategy is a two fold one through an alliance with the Government agriculture extension staff and through partnership with the farmers. The Provincial Agriculture and Forestry Extension Center (PAFEC) has the mandate to assist in raising livelihoods and contribute to sustainable development of natural resources, and has the benefit of a network stretching down to commune and sometimes village level.

The Project will support the provincial (PAFEC), district (District Extension Station- DAES) and commune level (Commune Extension Workers – CEW) and other stakeholders in building-up capacities for participatory extension making use of the **Participatory Agricultural Extension Methodology (PAEM)**:

1. Through the Project training program build the capacity of PAFEC, DAES and CEW to manage and deliver participatory agriculture extension services to the rural community, especially to the farmers.

2. Farmers will gain better access to those improved farming technologies, practices and teaching aids for improving their farming practices.
3. Identification of farming problems of the individual farmers through PAEM application. Design and implement appropriate farm based agriculture experiments aimed at finding solutions to their farming problems. Support dissemination of the new practices as appropriate and exchange of farming experiences among farmers.

This PAEM process is a progression of activities which follows the Commune Development Planning process which starts with Village Development Planning (VDP) at village level, identifying amongst other things their general agriculture related problems. The follow-up PAEM process then gives an opportunity for the village farmers to more clearly define their particular farming problems and to pursue their own solutions within a partnership with the PAFEC/DAES/CEW.

The final step in the process would be the transfer and replication of successful technologies to other communities with similar farming practices.

At the same time farmers' interest groups (IG) with the role of assisting the farmers in planning for and achieving sustainable farming techniques would have the opportunity to be trained in those disciplines and topics identified through specific training needs assessment and the PAEM process.

The Project initially seeks endorsement of the Project approach from its obvious collaborator in this initiative, namely the Province Agriculture Extension Center. Through this liaison the Project seeks to maximize its impact and strives to assist in the development of participatory agriculture extension services to service the rural population.

# INTRODUCTION

The project on Sustainable Management of Natural Resources in Central Vietnam (SMNR-CV) is being implemented by the Provincial People's Committee (PPC) of Quang Binh Province with support from the German Agency for Technical Cooperation (GTZ). The Project started in April 2004 and the first phase will run until March 2007 with probable extension through one more phase until March 2010, which results in a possible total of 6 years.

## 1.1 Rationale for Project Intervention

In order to improve the livelihoods of the population in the mountainous regions of Central Vietnam, the project develops and disseminates models in the fields of participatory village development planning, the ecologically sustainable increase of agricultural and forestry production and the increase of off-farm household incomes.

### Background

A pilot program on food security was implemented from 1996 to 2002 in the mountainous districts of one of the poorest provinces in Central Vietnam. As a direct impact, the program has cut the rate of children malnutrition into half. Overall, a significant increase in the availability and accessibility of food was achieved for all rural households.

To consolidate these achievements, and to develop, implement and disseminate further models beyond the key project area, GTZ supports – since April 2004 – the follow-up project SMNR-CV.

### Objective and planned outputs

The project aims at contributing to significantly improved livelihoods of the population in the mountainous regions of the project area, in accordance with a stabilization of the ecology. This impact is to be achieved by enabling the stakeholders in the region - the poor rural population as well as public and private service providers - to manage the natural resources of the region in a sustainable way.

Output 1: Community-based village development planning (VDP), including sustainable natural resources management, is implemented and monitored by the stakeholders and officially recognized as a planning method.

**Output 2: Partner organizations and target groups are supported in the development, application and dissemination of more productive and ecologically sustainable farming systems.**

Output 3: Participatory allocation of barren and forestland as well as the development and application of sustainable, community-based forestry are supported.

Output 4: Income opportunities from the processing and marketing of agricultural and non-timber forest products are supported, providing equal opportunities for men and women.

The overall project planning matrix of SMNR-CV is attached in Annex 3.

**Procedure**

The intervention levels of the project activities integrate the target groups and other stakeholders at village and commune levels into a process of *grass-roots* democracy, which leads to a self-determined elaboration and implementation of development plans on these levels (Village and Commune Development Plans“ – VDP-CDP). The plans are aggregated on higher administrative levels and used as inputs to the provincial socio-economic developments plans, and thus serve as a basis for needs-based budget allocations of the province as well of donor-financed investments.

The project contributes directly to the implementation of these plans in selected fields of intervention. In the agricultural sector, outputs and productivity are aimed to be increased in an ecologically sustainable way by optimizing existing farming systems. In forestry, the allocation of state-owned land to private households and user groups as well as the participatory elaboration of forest protection and forest management plans are supported. In order to mobilize additional sources of income downstream of agriculture and forestry, the project’s approach to local economic development is focused on value chains, such as the further processing and marketing of local raw products.

The Project Planning Matrix (PPM) also states that the Project should focus on strengthening the capacity of people, organizations and institutions which have the role of providing rural services and which contribute to participatory natural resource planning and development. In summary those services include:

1. Facilitation of active participation of villagers in development planning and implementation of respective measures at village and commune level by government and private organizations
2. Facilitation of participatory identification and introduction of sustainable farming options by agriculture extension services
3. Facilitation of participatory PLUP/FLA and CBFM planning by government and relevant social organizations
4. Marketing of agriculture and non-timber forest products and skills development for rural households and local entrepreneurs in support of income earning activities.

Particularly in the context of the formulation of this Concept, Output No. 2 in the PPM states that farming systems are developed and improved.

The related activities are:

1. Draft a concept for farming systems, reconciled through a participatory approach and drawing on relevant experiences from farmers and elsewhere.

2. Conduct field survey focusing on crop, animal husbandry, markets, existing farming technology of farmers, diversifications and economic returns to farm households; focusing on critical ethnic minority areas (poverty) and agro-forestry.
3. Select farming models, establish demonstration plots in relation to required inputs (seed, livestock, pesticides, tools, etc.) budget and manpower.
4. Improve capacities of farming households and relevant organizations in agriculture extension through training.
5. Facilitate access to farming inputs and services delivered by different partners.

## 1.2 Anticipated Outcomes for Output No. 2

In order to successfully implement these activities it is anticipated in the PPM that the Output No. 2 will have to be realized by the following four indicators.

Output 2: Partner organizations and target groups are supported in the development, application and dissemination of more productive and ecologically sustainable farming systems.

**Indicators for output 2:**

1. By 03/2006, at least 3 sustainable farming systems (flexible modules for upland and lowland conditions) have been successfully tested and are available for dissemination.
2. By 03/2007, at least 30% of the households in 50% of the project villages have started to apply sustainable farming systems.
3. Participating households, applying sustainable farming systems, have an increase of net income from farming of at least 5% per year.
4. The soil fertility of the agricultural land belonging to participating households is improved or at least maintained on the level before introducing new farming techniques.

Based on discussions with farmers in the target communes and with institutions and departmental sections associated with developing and proliferating sustainable farming systems in the agricultural community and responsible for agricultural extension services this report will present a conceptual framework and a revised implementation strategy for Output No. 2.

**Chapter 3** outlines the characteristics of the prevailing farming systems in Quang Binh. It also considers the achievements of the project activities in terms of training measures which have influenced the direction of the development of the project concept towards participatory agriculture extension.

**Chapter 4** describes the procedures and the main players in agriculture extension – a process which includes the farmer in the identification of his problems and the process of finding an appropriate solution.

**Chapter 5** sets out the approach of the project in supporting the participatory identification and development of sustainable farming practices within the existing farming systems through Participatory Agricultural Extension Methodology (PAEM).

# ASSESSMENT OF PREVAILING PROJECT APPROACH IN AGRICULTURAL EXTENSION

## 1.3 Farming Systems Analysis

The focus of Output No.2 is to "support partner organizations and target groups in the development, dissemination and application of more productive and ecologically sustainable farming systems". In accordance with the Plan of Operation the existing farming systems in the project area have been surveyed, described and analyzed[1]. While the approach of farming systems analysis was innovative and, in fact, practiced for the first time ever in such a systematic way in the project region, it also produced an unexpectedly complex variety of farming systems. Of the more than 170 distinct systems identified, most represented local micro-adaptations to different agro-ecological conditions.

The farming systems in the target areas are based on four different agro-ecological zones (up-land, mid-land, low-land and riverside). The intensive survey for identifying the most prevailing farming systems revealed two characteristic complex systems for each of the four agro-ecological zones.

| **agro-ecological zone** | **selected farming system** |
|---|---|
| up-land | 1. double rice crop, single spring maize crop, single spring peanut crop, pig and cattle raising |
| | 2. single spring maize crop, single spring peanut crop, cassava, pig and cattle raising |
| mid-land | 1. double rice crop, single spring peanut crop, crop rotation consisting of spring maize and summer/autumn green bean, pig and cattle raising |
| | 2. crop rotation consisting of spring peanut and up-land rice, cassava, winter maize, cattle raising |
| low-land | 1. double rice crop, pig and cattle raising |
| | 2. double rice crop, crop rotation of spring peanut and summer/autumn green bean, crop rotation of spring maize and summer/autumn green bean, pig raising |
| riverside | 1. double rice crop, single spring peanut crop, crop rotation of spring maize and summer/autumn peanut, cassava, pig and cattle |

[1] Report on farming systems analysis for the districts Tuyen Hoa and Minh Hoa, Quang Binh province, January 2005.

| | |
|---|---|
| | raising |
| | 2. single spring maize crop, single spring peanut crop, cassava, pig and cattle raising |

However, all these farming systems have in common the focus on self-sufficiency and local production rather than commodity production on a larger scale. Also implemented in different zones the farming systems resemble each other, including the use of more or less the same crops and crop rotations, and livestock husbandry. The differences have not been as big as thought before; in principle there is no outstanding farming system performance. The choice of the households is primarily an economic choice, ecological and sustainability considerations are hardly taken into account.

For practical purposes, none of the systems could be identified as a clear "champion" to be promoted by the project as a model of a sustainable farming system. Instead, based on the knowledge of the complexity of the farming systems and the diversified production channels of the farming households the project has implemented a training needs assessment for identification of specific training needs in farming the four agro-ecological zones[2].

With traditional farming practices that are not always environmentally sound and with reduced access to agricultural land, the poor subsistence farmer's situation becomes desperate as productivity falls and households might encounter food shortages. There are two main household level strategies that have the potential to improve these agriculture based family livelihoods. They are:

- Intensification of existing production patterns (improved varieties and breeds, better soil-management practices, IPM, animal husbandry and veterinarian care and better farm management based on basic-agro-economics)
- Diversification of production and processing (more alternatives and spreading risk) and increased off-farm income, both agricultural and non-agricultural.

Against this background the identified training needs cover technical aspects of agricultural production, as well as basic agro-economics for monitoring farmers own decision-making-process in agricultural production.

Based on the identified specific training needs of the rural households the project designed appropriate training modules on:

- Animal husbandry: pig and cattle raising, basic veterinary techniques
- Crop cultivation: rice, peanut, maize, (including improved varieties and breeds) integrated pest management (IPM)
- Important crosscutting subjects: slopy agricultural land technology (SALT), improved farm management and household economics.

[2] Description of farming systems and training needs assessment, February 2005.

Annex 4 provides an overview of the key activities of Output No. 2 conducted by the project.

## 1.4 Focus on training and participatory approach in agricultural extension

It is the responsibility of the project and the PPC to help the farmers develop and adapt to required agricultural technologies and techniques. The project is confident that the technical solutions provided with the different training packages will address the individual problems farmers are facing in all of the various farming systems described above. There is a growing recognition that including the participation of communities and individual farmers in the search for new technologies often leads to a better outcome. Solutions to farming problems are usually more appropriate and more likely to be accepted if the farmer has a leading contribution in the diagnosis of the problem and his opinions and experiences are included in the process of finding a satisfactory alternative. The experience is that a farmer will not change his habits unless he has a sense of ownership in the development of new farming practices, and participates in all steps of technology development including the identification of his needs and appraisal of any outcomes.

Specifically the project will introduce a participatory approach to identifying and supporting the development of improved farming practices that will assist towards sustainable crop production and animal husbandry the poor farmers in the project area to improve their household incomes from farming. This participatory approach is based on the detailed know-how of the identified farming systems in the project areas, but goes beyond into capacity building of the target groups. Therefore the project is developing a process for a participatory approach by farmers, extension workers and specialists towards the development of sustainable agricultural practices applicable in the identified farming systems.

Such a process is the Participatory Agricultural Extension Methodology (PAEM) in which farmers, extension workers and specialists work together in a partnership to find solutions to farming problems identified by the farmer in his farming system. With PAEM the agricultural production and productivity can be increased concentrating on the specific training need identified by farmers, and improved though the application of practical demonstrations and exchange of experiences.

The Government at the various levels supports these strategies by funding research and extension organizations to develop, introduce, test and disseminate new and more productive varieties of crops and livestock. However, little success has been achieved to date with attempts to change inefficient traditional farming methods.

Based on the comprehensive farming systems analysis and training needs assessment the project's support in the agricultural component (Output No.2) now focuses on:

- Strengthening the agricultural extension system in Quang Binh through capacity building with a comprehensive training program,

- Introducing participatory elements into training curricula of the extension agents,
- Supporting farmers through exchange of experience and organizational strengthening.

The general approach proposed in the project intervention strategy for Output No.2 is now two-fold, firstly through an alliance with the Province Agriculture and Forestry Extension Center (PAFEC) and secondly through partnerships with the farmers. The PAFEC already has a mandate to assist in raising livelihoods and contribute to sustainable development of natural resources, and has the benefit of an extension network stretching down to district, commune and village level.

# ASSESSMENT OF THE AGRICULTURAL EXTENSION SYSTEM AND PARTICIPATORY METHODS IN QUANG BINH PROVINCE

This chapter is mainly based on the findings of the report of the local consultant - Mrs Nguyen Thi Lan - and highlights the major conclusions for a successful cooperation between the project and the extension services in Quang Binh Province[3].

## 1.5 Summary of organizational structure and assessment of the capacity of the extension services

The organizational network for agricultural extension in Quang Binh is quite well established and stretches from the provincial to the village level. Under the leadership of the National Agricultural Extension Center (NAEC), the Provincial Agricultural and Forestry Extension Center (PAFEC) is the responsible entity for public agriculture extension services, and therefore the direct counterpart of the project in terms of Output No.2. From provincial level to the village the project is dealing with the District Agricultural Extension Stations (DAES), the commune extension workers (CEW) and with agricultural extension clubs or farmers interest groups, which are not always established in the villages[4]. In most of the villages key-farmers have been identified for collaboration with the CEWs and DAES.

However some major weaknesses are observed in the organizational set-up of agricultural extension services:

- No unified organization in Quang Binh: DAES is not always under direct management of PAFEC; PAFEC provides technical advice while District Peoples Committee (DPC) is responsible for administration, finance and management. This splitting causes low work effectiveness and supports the passive role of DAES staff.
- PAFEC and especially DAES are understaffed with technical personnel and specialists; no specialist available for training/communication.
- All agricultural extension agents are still lacking professionalism and capacities in agricultural extension, especially in participatory approaches.
- The focus on agricultural extension service delivery is laid on “setting up models and transfer of advanced technologies”. This implies a too low consideration of technical training and exchange of experiences for

3 Assessment on Participatory Agriculture Extension Methodology (PAEM) in agricultural and forestry extension system of Quang Binh Province, September 2005.
Annex 5: Presentation of Mrs Nguyen Thi Lan.

4 Tuyen Hoa District: all 20 communes have CEWs; Minh Hoa District: only 9 of 16 communes have CEWs.

farmers. Training on participatory approaches as such as PAEM is not strongly considered.

- The concept of advanced technology models and technical training is focusing mainly on technical knowledge while farm management, household economics and marketing skills are disregarded. Models are always implemented top-down (PAFEC – DAES – CEW – key farmers), therefore do not derive from farmers' needs assessment and do not address farmers' participation in planning and evaluation of the models.
- Poor farmers and ethnic minority households in remote areas are not involved in models or demonstrations, neither in the implementation, nor in the information transfer through training or study tours.

Taking into account the strengths and weaknesses of the agricultural extension system, and looking at the project's mission in Output No. 2 to support productive farming systems, the project has the capacity and the mandate to provide adequate support to the agricultural extension agents on all levels in terms of capacity building and strengthening of communication skills in agricultural extension delivery. Limits of influence through project activities are set by the organizational structure; the project can pin-point the given restrictions, but is not mandated to interfere into policy issues on agricultural extension.

## 1.6 Assessment of training activities and participatory approaches in agricultural extension

The necessity of training for agricultural extension staff on one hand and for farmers on the other hand is not denied. However, the development of an overall training program for the agricultural extension agents of the different levels is not yet taken into account by PAFEC. There are training sessions and training material available but not tailored to the training needs of the different categories of extension agents. The same technical training material is either used for DAES staff or for CEWs and sometimes for farmers without any adaptation to the knowledge level of the addressees. In most cases at provincial, district and commune level, training programs are designed according to the budget allocated for the implementation of the technical models. Therefore, training does not derive from training needs of the trainees. The consequences are as follows: Linked to the model implementation, farmers (mostly poor households) who are not involved have no opportunity to participate in any training, while training sessions for the extension workers are rather limited and also connected to the preferred subject of the prevailing model implementation.

Besides the identification of proper subjects for the trainees it is of the same importance to observe the quality of training material and training methodology.

The training material produced and provided by the Natinal Agriculltural Extension Center (NAEC) is mainly addressing agricultural techniques and gives theoretical advice on their application. None of the manuals is using practical exercises or case studies, a few show hand-drawn illustrations or photos, and teaching guidelines are always absent in the training manuals.

This material is of limited value if it is to be used for participatory approaches in agricultural extension.

The used training methodology – the so-called "one-way communication" - is also to be questioned. Most of the time trainings contain theoretical sessions only, without any practical exercises in the field or discussions among the trainees for exchange of experience. Training evaluations – if any are applied – focus on the technical knowledge transferred to the trainee and does not take into consideration the facilitation and communication skills of the trainees.

In summary the training assessment revealed that the following points have to be followed-up and supported:

- Design of appropriate training program in PAFEC for extension workers,
- Application of participatory agricultural extension methodology,
- Improvement of quality of training in terms of training contents and trainees' needs, as well as supervision and assessment of training quality,
- Training needs of trainees must be addressed, especially communication and facilitation skills of the extension agents,
- Making better use of successful models for training purpose in the field through field visits and refresher courses,
- Revision of training manuals.

# PROJECT IMPLEMENTATION STRATEGY ON PARTICIPATORY AGRICULTURE EXTENSION

## 1.7 Vision and mission: the farmers-centered-demand driven approach

The present approach in agricultural extension applied in Quang Binh Province can be described as a top-down, bureaucratic approach that makes extension appear unresponsive to the needs of its clients, the farmers. The following chart portrays in simplified terms the ongoing situation:

PAFEC:

provides guidelines, specialists and technical material

⇓

DAES:

gives technical instructions, selects sites for models/demonstrations

⇓

CEW:

organizes farmers/IGs, data collection, supervision of models

⇓

Farmers / Interest Groups

execute instructions on model implementation

In order to overcome the shortcomings and weaknesses of the top-down, bureaucratic behavior extension leaders, technical specialists and the extension field staff must increase farmers' participation in assessing needs, setting production priorities, and implementing extension programs.

Participation of farmers also means:

- Sensitizing farmers to make them more responsive to technology development and to encourage local initiatives and self-help (i.e. in form of IGs and extension clubs).
- Involving farmers as much as possible actively in the decision-making process which regards their own farming development.
- Organizing group action to give control over resources and access to services to disadvantaged households.

- Promoting the involvement of farmers in the planning and implementation of development efforts as well as the sharing of their benefits.

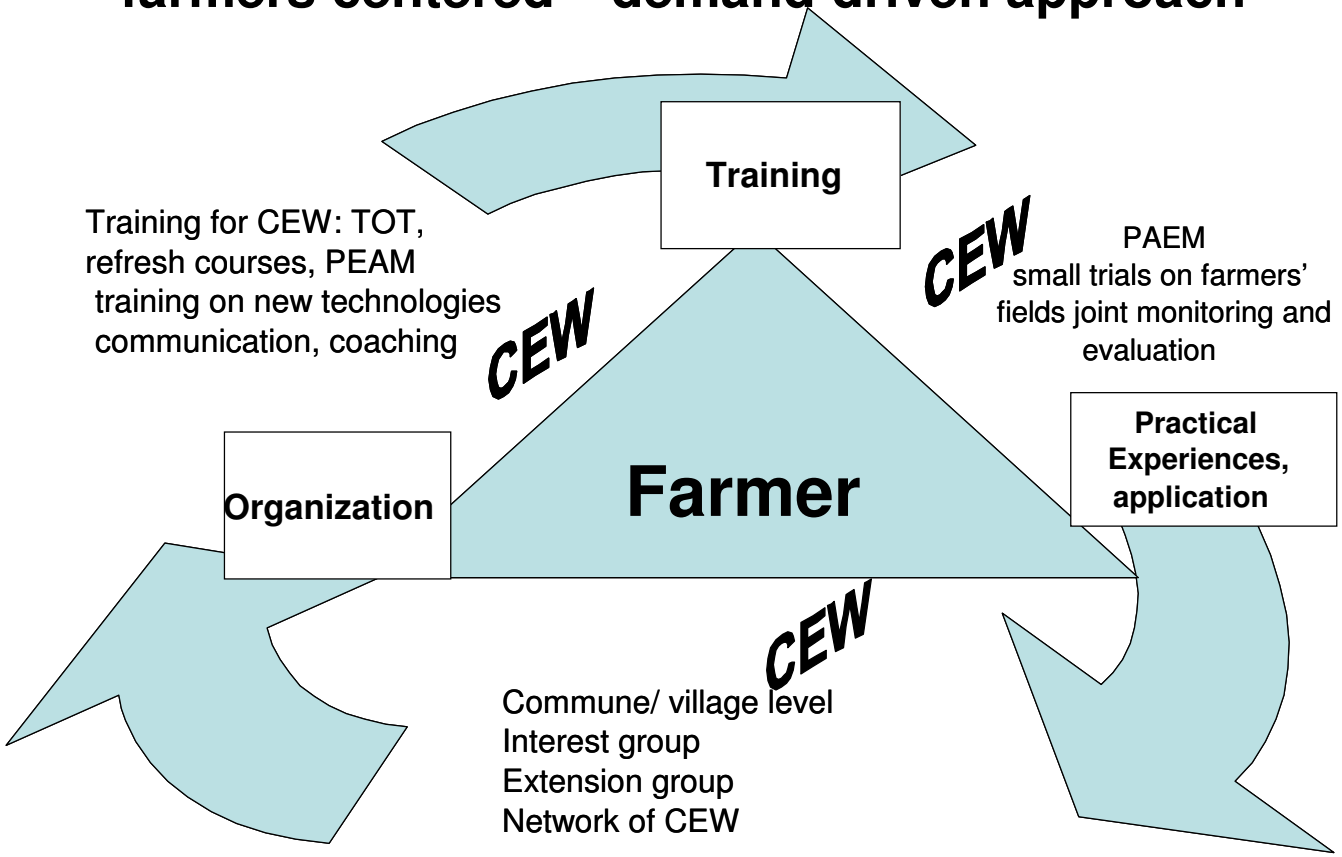
The escalating pressure for increased accountability for measurable results in agriculture extension urges the extension leaders to decentralize decisions for improving the efficiency and effectiveness of extension operations while shifting more responsibility to farmers and their organizations.

Therefore, extension should play a more active role in helping farmers to get organized into functional commodity groups or farmers organizations. Such Farmers' Interest Groups (IG) can increase the extension's efficiency in disseminating messages, production management technologies that are specific for the different crop and livestock systems identified within the farming systems in the project area. In addition, representatives of these different IGs should serve on local, district and provincial extension advisory meetings to provide formal feedback to the different levels in the extension system. In short, getting farmers organized and directly involved in shaping extension activities in the field and setting extension priorities is an essential element in creating a demand-driven extension approach that will gain the publics confidence and support.

Therefore, the project intervention in terms of a project extension strategy should focus on a **farmers-centered and demand-driven approach**.

In the following Chart No. 1 the vision for a farmers-centered-demand driven approach is explained.

## Chart 1:
## farmers-centered – demand-driven approach



The rationale of the farmers-centered-demand driven approach can be described in one phrase only:
Following a participatory approach in which farmers, CEWs and specialists (staff of PAFEC and DAES) work together in a partnership to find solutions to farming problems identified by the farmers in their farming system.

The purpose behind is twofold:

1. Empower small-scale farmers to become skilful and better informed decision-makers in managing their farming production system.
2. Capacity building of extension agents and farmers. Capacity building is needed at all levels in order to equip people with the new skills necessary to develop and manage their own tasks in agriculture extension and/or agriculture production.

This farmers-centered-demand driven approach is based on three interlinked elements:

- Organization
- Training
- Practical experiences/application

As outlined before farmers must be organized on village and commune level in interest groups or extension clubs for identifying the information they need in order to realize the potential of their farming operations.

On the other hand the CEWs need as well to be organized in a network for exchange of experiences in their extension activities with the individual farmers and IGs.

It is of common recognition that deficiencies in knowledge, communication skills and ability among extension personnel are remarkable[5]. The poor education background of CEWs requires regular training and supervision of day-to-day activities. This in-service training will broadly focus on the training needs of the CEWs and will cover subject-matter knowledge, communication abilities, and practical requirements for proper PAEM application.

With regard to PAEM the CEW will learn to properly address farmers for asking for their participation. One of the most important elements in PAEM is to support farmers in setting up trails and facilitate the monitoring and evaluation of these trails in the farmers' fields.

5 See Annex 6: result of a brief brain storming session with CEWs in Minh Hoa.

## 1.8 Implementation strategy for participatory agriculture extension

Based on the identified farming systems the further project activities will apply the so-called **Participatory Agricultural Extension Methodology** (PAEM). The success of this bottom-up approach or methodology[6] is measured both by the number of farmers (or farm households) actively participating and benefiting and, by the continuity of a capable local extension organization as well.

**PAEM activities** can be described as follows[7]:

1. Farmers' experiments/trails:
   Trials or experiments are considered as a new practice in comparison to the common technique. CEW should support farmers in setting up trails on a small scale and facilitate the monitoring and evaluation of these trials with the farmer – in accordance with the seven steps proposed/considered in the PAEM approach.
   Involve farmers, IG and communities at the decision-making level owing all stages from design to maintenance and evaluation of the trials.
2. Participatory diagnosis:
   Prioritize problems that need to be solved, take reference based on information of the VDP exercise.
3. Training:
   Training of farmers on technical issues should always be according to farmers' demand, and always contain practical parts or exercises so that farmers can learn from experience and not only from lectures.
4. Interest groups or extension clubs:
   Purpose of IG/EC is to support each other in one group with similar production interests. The CEW facilitates these groups.
5. Cross visits:
   Cross visits can be organized either between villages of the same commune or between villages of two different communes not too far from each other.
6. Study tour:
   The purpose of a study tour is to convince farmers about new technologies and may open up minds and broaden experiences of farmers. Successful models and demonstration of technologies can be used for an ideal destination of a study tour. Farmers will only adopt new technologies and modern packages of production technologies with considerable adjustments. They will only take one or two components of a package into consideration and application

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6 The terms "approach" and "methodology" when referring to extension are often used interchangeably, and it would be pedantic to try to separate them.

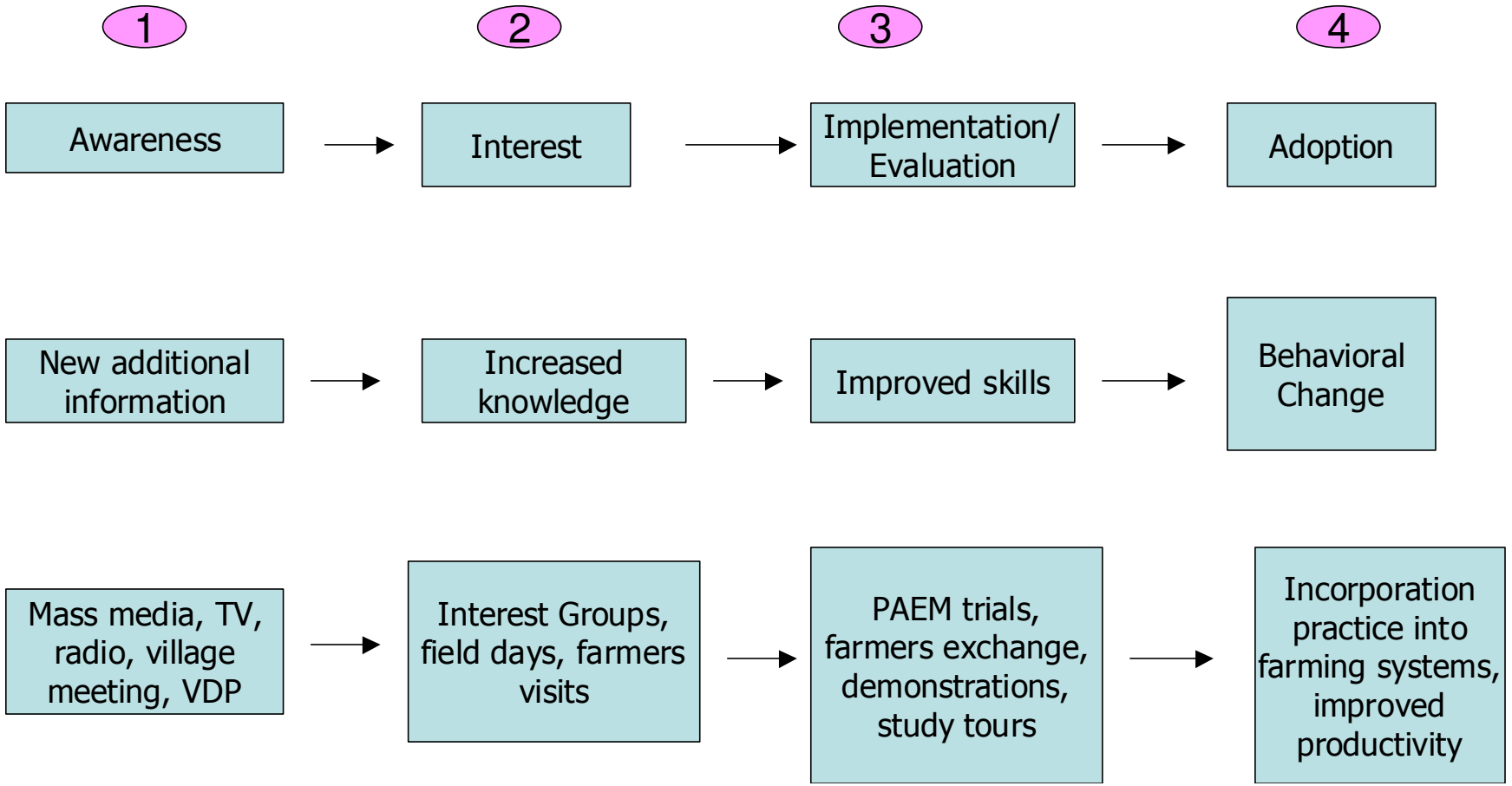
7 For more details on PAEM, consult: SFDP/MARD/GTZ/EU/SNV (November, 2004) PAEM Training Package, PAEM field guide for extension workers.
And Annex 7: SFDP experience with PAEM

in their field. Farmers clearly make their own adaptations according to their own needs.

The PAEM methodology is based on the important consideration in selecting appropriate activities for the delivery of appropriate contents to the farmers towards a joint understanding of the learning and adoption process. The learning and adoption process consists of four distinct stages described in the **extension impact chain** in Chart no. 2.

- Creation of awareness by information flow through mass media;
- Creation of interest by increased knowledge through exchange of experiences allowing farmers to see what they have been hearing before;
- Implementation and Evaluation by improved skills through small-scale on-farm trials and demonstrations allowing farmers to assure that what they heard and saw are indeed workable in their own field;
- Adoption on a larger scale by behavioral change through incorporation of (new) technologies into the farming system and production cycle. Once the farmer starts adopting, extension should continue to support his/her efforts.

# Chart 2: Extension impact chain



The sequence for extension impact on farmers can be summarized as follows:

Raise farmers' awareness ⇒ improve farmers' knowledge through testing and experimenting ⇒ influence farmers' adoption (or adaptation) of technology and practice ⇒ changes in farmers' productivity.

Based on the PAEM methodology and the extension impact chain the implementation strategy for Output No.2 will focus on the following areas of intervention for **capacity-building of agricultural extension staff of PAFEC / DAES, CEW and local farmers**:

1. **Training and Training Material**:
   Building a cadre of experienced extension workers by ToT sessions displaying good facilitation skills and high commitment to cooperation with farmers.
   Implementing participatory training curricula with focus on practical elements.
   *Indicator*: *As of 3/2007 the Training program has covered 100% of the extension agents (for Quang Binh on provincial level, for Tuyen Hoa and Minh Hoa on district level, commune and village levels) on technical subjects and communication skills.*
2. **PAEM application**:
   Supporting CEW in organizing farmers and IGs for practicing PAEM application including the implementation of small-scale trials.
   *Indicator: 80% of the trained CEWs apply the PAEM approach and monitor and evaluate at least one trial jointly with IGs or key-farmers.*
3. **Coaching and supervision**:
   Support DAES in coaching of CEW in implementing PAEM through regular exchange fora (interactive discussions related to field activities).
   *Indicator: Two to three times per year exchange workshops for CEW organized in the field.*
4. **Exchange of experience:**
   Organizing study tours for CEW and key-framers for exchange of experiences.
   *Indicator: One study tour per technical subject per year.*
   Organizing farmers field visits (farmer-to-farmer exchange visits, field days).
   *Indicator: Regular field visits initiated on request by IG or farmers to models/demonstrations or other IGs.*

### 5.2.1 Training of extension staff and training material

The overall objective for the project training measures is to build up the necessary capacities in Quang Binh province to apply participatory agriculture extension on commune and village level. More specifically, the training measures need to address the different levels:

- Provide Training of Trainer (ToT) courses to have sufficient numbers of competent trainers at province and district level to meet the demand for high quality training of PAEM.
- Provide training courses for CEWs to have qualified and motivated field staff with good facilitation skills and capacities to apply PAEM in the field.
- Supervise the field implementation with the farmers. The objective is to facilitate farmers in continuously building up new technical knowledge and to increase their capacity for solving problems.

Training for the extension workers has to start with the identification of training needs through job analysis and performance appraisal. Once the individual training needs of the extension staff have been identified the next step is to tackle the most relevant shortcomings in a tailored training program. While implementing the training program methods such as games, role plays, case studies etc. enhance good working atmosphere and create learning situations based on experiences of the trainees. Training methods can be improved through a balanced mixture of instructor presentations, group discussions, demonstrations, exercises, case study, role play, field visit and study tours. Training based on actual field experience of the trainees should be emphasized. Emerging new farm technologies call for actual field experience. Extension workers need training not only in the technological aspects but also in human relations, problem solving, sensitivity towards disadvantaged groups and ethnic minority groups; and the basic concept of management.

Taking all these issues into consideration, the following steps need to be implemented with support of the project:

1) Training Needs Assessment among all extension workers at all levels in the project area:
   one-day workshop for verifying the most important training needs in terms of technical subjects and communication skills according to the training needs assessment on the identified farming systems implemented in 02/2005. In a brain-storming session the on-going training needs should be identified, the training sessions so-far implemented by the project should be evaluated, and the training content for the next training cycle should be jointly worked out and agreed upon.
2) In a second step the Terms of reference of the CEWs (as part of a job analysis) need to be checked and adapted to the needs of participatory methodologies. The different steps for PAEM application must be raised.
   It is recommended to implement a performance appraisal of the CEWs, or at least to consult the respective CPCs – responsible for

administrative and human resource management – on their observations to learn about individual job performance of each CEW.

3) Training Program tailored to training needs:
Based on the results of the above mentioned analysis the training program for 2006 until March 2007 can be established. Besides the common technical training subjects such as animal husbandry and crop production the project will concentrate on other farm management issues and PAEM, as already started with a first training on household economics or communication skills. Refresher or advanced training is offered to up-date and maintain the subject-matter knowledge and enabled them to apply the knowledge and skills they have already. Usually this training deals with new information and new methods - alike PAEM – as well as review of old subjects.

4) Curriculum development is the most important part in a training program after the needs for training have been identified. The curriculum specifies what will be taught and how it will be taught. It provides the training content and defines the training method.
With regard to PAEM application the extension workers need to learn about their relationship to the farmers.
Extension workers and farmers are jointly involved in the verification and adaptation of new technologies, and thus the extension worker must respect a farmer as an experimenter, developer, and adapter of technology and must devote more energy on communication with the farmer in his/her local area. The extension worker has to concentrate on tasks and services where human action is essential – i.e. in helping farmers individually and in small groups (IG) to diagnose problems, to interpret data of trials and demonstrations, and to apply these results in their own farming system. They are no longer simply transmitters of technical knowledge; they will practice participatory methods, recognize and respect gender issues, identify indigenous needs and problem solutions, and will serve as a link to the world outside the village and community. Therefore the future is calling for more able, more independent, more client-oriented extension workers.
These aspects have to be reflected in the curriculum and CEWs must learn about the elements of a good relationship with farmers.

**Features for a good relationship of farmers and extension workers:**

| Features | Farmers (client) | CEW (extension worker) |
|---|---|---|
| Know-how transfer | Own knowledge – individual or collective of the IG/EC – are recognized as a major source | The CEW is no longer seen as the expert who has all the useful information and technical solutions in hand. CEW and farmers should be jointly involved in the verification and adaptation of new technologies. Helping farmers individually and in small groups to diagnose problems, to interpret data, and to apply their meanings. |
| Problem solving process | Solutions to local problems are to be developed in partnership between farmers and CEW | CEWs respect farmers as developers, experimenters, and adapters of technologies and devote more energy on communication within their local area. |
| Personnel demands | Key-farmers: well respected farmers but not always the traditional leaders at the same time. | Participatory concepts call for more able, more independent, more client-oriented CEW. |
| Decision making process | Empowering rural people for a dialogue with extension workers. | The emphasis will be on the quality of interaction between CEW and farmer rather than on the movement of messages through a hierarchical system. |

Once the training contents are identified the selection of the appropriate training method is perhaps the most important step in providing training. To achieve the training objective, the trainer should select the most appropriate training method for the content to involve the trainees in the learning process. The use of practical exercises is a key-element in providing the CEWs with an opportunity to practice and to repeat when needed. At the same time they are motivated to improve their own performance. Using the PAEM methodology the CEWs learn about the proper involvement of farmers establishing trails and demonstrations, organizing farmers interest groups and field visits (see also chapter 5.2.2).

5) Trainers and training material:

Capacity building in PAEM is not an easy task because a number of different competencies are required, such as technical knowledge, management capacities, adult learning principles, and facilitation skills. A number of training materials are needed for performing a comprehensive PAEM training program tailored to the different needs of provincial and district staff and CEWs. It is recommended to make use of the existing PAEM training material "Training Package on PAEM" developed by different projects and partners in Vietnam.[8]

Revise existing project training material in order to meet the three elements:

- Theoretical background information on the technical subjects,
- Practical experience with case studies and exercises in the field, and
- Facilitation skills tailored to the specific subject with role plays and the organization of own practical exercises in the field (i.e. organization of a field day, farmer visit, implementation of small-scale trials with farmers, etc.)

Select appropriate trainers with relevant experience in PAEM application: One selection criteria is the training material which should be used – is it appropriate for PAEM training and does it contain the necessary practical exercises in the field with the farmers? It is recommended to contact the Mai Son Agro-forestry Vocational School and Thai Nguyen Agro-forestry College at Thai Nguyen University who have experienced PAEM master trainers for providing training courses on all levels[9].

Against this demanding background training in PAEM for extension workers on all levels is of utmost demand and importance.

### 5.2.2 PAEM application

It is the responsibility of the agricultural extension system and the role of the project to help the farmer develop and apply improved agricultural farm management practices. There is a growing recognition among the Government organizations that including the participation of communities, farmers interest groups and individual farmers in the development of new improved technologies often leads to a better dissemination and adoption. Solutions to farming problems are usually more appropriate and more likely to be accepted if the farmer has a leading contribution in the diagnosis of the problem and his opinions and experiences are included in the process of finding a satisfactory alternative. The experience is that a farmer will not change his farming habits unless he has a sense of ownership in the development of new farming practices, and participates in all steps of

8 Training Package on PAEM published in November 2004 in Vietnamese and English language, compiled by GTZ- SFDP/MARD/SNV/EU-SLLCRDP. PAEM material: ToT Manual for ToT training, Coaching Guide, ToT Book, Training Logbook, Provincial Guidelines for PAEM, PAEM Field Guide, Training Modules for Commune Extension Workers.

9 Recommended PAEM Master Trainers: Mr. Bui Le Inh (Mai Son), Mr. Nguyen Huu Tho (Thai Nguyen)

technology development including the identification of his needs and the appraisal of any outcome. If he contributes the opportunity cost of his land and his labor he becomes an active stakeholder in the process.

Therefore, the project supports PAFEC and DAES in developing a process and exemplarily testing some small-scale trails in the target communes for a participatory approach by farmers, CEWs and specialists towards a successful PAEM application. In short, PAEM is a participatory approach in which farmers, extension workers and specialists work together in a partnership to find solutions to farming problems identified by the farmer in his farming system. The PAEM approach has already been developed and tested in several provinces by various projects and sponsored by several international donors.

In the overall project context of community – based natural resource development, PAEM complements the planning process of participatory rural development. Village development planning (VDP) is recognized as a corner stone for community – based natural resource development (see project Output No.1). As a necessary process for future district and provincial planning procedures, VDP highlights through a participatory process problems in agriculture production generally. PAEM application which can follow then provides a process where the CEWs can help the farmer identify specific farming problems and work together towards finding appropriate solutions. Thus the PAEM process is easier and more effective if it can follow and be linked with the VDP process.

The **leading stakeholders in PAEM application** are:

- The PAFEC for overall policy direction on the participatory approach, and to provide specialists if required.
- The DAES and CEWs for facilitation of PAEM activities, design of small-scale trails, field implementation, supervision and monitoring.
- The individual farmer (key-farmer) and farmers interest groups (IG) as the client/owner, the joint trail designer, the implementer of the trail and the evaluator.
- The project is the short-term supporter to coach procedures and to provide training.

In order to keep pace with all PAEM activities CEWs should facilitate farmers interest groups (IG). It is very suitable for farmers to support each other within one group with similar production interests. With IGs , better communication between farmers and extension workers leads to more adoption. The main **functions and tasks of IGs** are the following:

- Identifying and resolve relevant farming problems,
- Act upon own initiative,
- Analyze farming problems,
- Conduct own trials in PAEM,
- Strengthen local farmers decision-making process,

- Enhance influence on agricultural subjects in VDP,
- Employ problem solving and decision-making processes that are open to all interested farmers,
- Create opportunities for all farmers in their community to develop themselves,
- Promote adapted technologies developed through PAEM.

Well-functioning IGs lead to farmer empowerment by putting farmers in control of the process of planning and implementation of their own development activities.

### 5.2.3 Coaching and supervision of CEWs

One of the major tasks of the DAES is to supervise and coach the work of the CEWs and to provide to them on-the-job-training.

**Coaching of CEWs means:**

- To improve the CEWs' training and facilitation competences,
- To assess CEWs' own strengths and weaknesses for identifying the individual training needs and aims of the trainee,
- To organize additional training activities for the CEWs which are "learner-centered",
- It is a process in which the coach (district extension staff) and the learner (CEW) have to build up mutual trust.

**Supervision of CEWs means:**

- Direction and organization of activities,
- Motivation of extension workers,
- Management of work groups of CEWs,
- Use of collaborative, realistic and result-oriented target setting with activity plans (work plans) for CEWs,
- Use of work groups in problem solving because they can provide many creative solutions.

The targets of **on-the-job-training** can be described as follows:

- Ad-hoc or scheduled training for CEWs,
- Provided by the officers/specialists of the DAES to the subordinated field staff, the CEWs,
- This training is generally problem oriented or technology oriented,
- Addresses specific problems of day-to-day activities of the CEWs (e.g. in the PAEM application, etc.)

The extension officers of the DAES are - so to speak - the “extension managers” for the CEWs. If “extension managers” are to be effective, they have to give supportive evaluation by way of enhancing staff motivation. The work is most effective when done directly on the job of the CEW.

The project can support the DAES by providing specific training on subjects such as coaching, supervision and on-the-job training for CEWs. The extension officers of DAES should improve their ability to motivate and lead the CEWs so that they perform more than routine jobs.

The DAES staff will also learn to monitor the performance of the CEWs. **Performance appraisal** aims at facilitating individual development and to guide and develop the potentials of the CEWs by:

- Providing feedback on work performance and guidance,
- Setting performance goals for CEWs,
- Identifying individual training needs of CEWs,
- Providing information inputs to CPC – responsible for the human resource development of CEWs – to pay rewards or consider job promotion.

### 5.2.4 Exchange of experience

There is a growing need of exchanging information among farmers and encouraging farmers to express their expectation and suggesting them solutions for felt farming problems.

By means of **farmer exchange visits** either between villages or communes on specific farming issues or improved technical farming options farmers will have the opportunity of exchanging experiences. It is to ensure regular field contacts with other farmers in order to broaden the individual farmers’ knowledge.

Farmers exchange visits can be organized through a field day, a study-tour or by individual farmer-to-farmer visits.

Farmers exchange visits facilitate communication with other farmers and/or IGs, encourage problem-oriented discussions in the field, create awareness for improved technologies, pass information of farming experiences on to fellow farmers with similar farming problems.

Participants of field-days, study tours or farmer-to-farmer exchange visits are given the opportunity to observe and interact with a specific problem or subject which needs to be solved or some skills which need to be learned.

It is recommended to make best use of the existing models and demonstrations installed by the DAES in Quang Binh province and outside in other adjacent provinces. Only those models should be selected which reflect farming activities of the participants and which are proved to be successful.

It is of utmost importance to evaluate the results of such farmers exchange visits for example in a workshop by the end of the visit or during the next IG meeting. By means of a SWOT analysis farmers will learn to reflect on the new information gathered during the exchange visit and to draw their individual conclusions for improving their farming practices.

**Consider ethnic minority groups:**

The training needs assessment (TNA) implemented in the project area did not address the specific situation of ethnic minority groups. There are three communes – one in Tuyen Hoa and two in Minh Hoa – characterized by a poverty rate of 80% of ethnic minority groups. It is recommended to implement a second round of TNA in this project area.

**Networking:**

It is more useful to promote information sharing between local institutions and extension staff than to bring in new information or technologies from outside which have not yet proved to be successful under prevailing farming conditions. To promote local content it is important that the different extension agents exchange their experience on a regular basis.

Therefore, networking provides enormous opportunities to build knowledge partnerships that cross districts and commune boundaries, and that bring together the different stakeholders. For effective operation of agricultural extension the different relevant Government agencies should share experience. A joint workshop of the different players such as PAFEC, Plant Protection Department, and Veterinary Department etc. can be organized by the project. The topic of the one-day workshop program should tackle the different extension activities of the players in order to outline similarities and differences in their approach and how to overcome the identified weaknesses in the application of PAEM in Quang Binh province. The workshop might carry the challenging title “Harmonization of Extension Strategy in Quang Bing province”.

## 1.9 Proposal for a revised Project Planning Matrix and Plan of Operations for Output No. 2

With reference to the project intervention strategy for participatory agriculture extension outlined in chapter 5.2 the project planning matrix (PPM) and Plan of Operations (OP) need to be revised accordingly.

The following new formulations are proposed for Output No. 2:

| **PPM of July 2004** | **Revised formulation of September 2005** |
|---|---|
| Output No. 2:<br>Partner organizations and target groups are supported in the development, application and dissemination of more productive and ecologically sustainable farming systems. | Output No. 2:<br>Partner organizations and target groups are supported in the development, application and dissemination of more productive and ecologically sustainable farming systems *by the application of participatory methods of agricultural extension*. |
| Indicators for Output No. 2:<br>2.1 By 03/2006, at least 3 sustainable farming systems (flexible modules for upland and lowland conditions) are successfully tested and available for dissemination.<br>2.2 By 03/2007, at least 30% of the households in 50% of the project villages have started to apply sustainable farming systems.<br>2.3 Participating households, applying sustainable farming systems, have an increase of net income from farming of at least 5 % per year.<br>2.4 The soil fertility of the agricultural land belonging to participating households is improved or at least maintained on the level before introducing new farming techniques. | Indicators for Output No. 2:<br>2.1 *Based on an analysis of existing farming systems and training needs, appropriate training modules, based on the Participatory Agricultural Extension Methodology (PAEM), have been developed by 03/2005.*<br>*2.2 By 03/2006 relevant partners have been trained in PAEM and start to apply participatory training methods with farmer groups in selected pilot communes.*<br>2.3 By 03/2007 at least 30% of the households *in the selected pilot communes* have started to apply *sustainable farming techniques*.<br>2.4 Participating households, applying *sustainable farming techniques*, have an increase of net income from farming of at least 5 % per year.<br>2.5 The soil fertility of the agricultural land belonging to participating households is improved or at least maintained on the level before introducing new farming techniques. |
| Major Activities, Output No. 2:<br>2.1 Assess and categorize existing farming systems, including gender-specific tasks and roles.<br>2.2 Develop, test and evaluate farming systems for sustainability | Major Activities, Output No. 2:<br>2.1 finalised in 2004<br>2.2 partly finalised until mid 2005; test of soil quality is ongoing; writing a farming systems manual is replaced by the new PAEM strategy. |

| | |
|---|---|
| together with target groups<br>2.3 Strengthen the capacities of relevant partner organizations in the dissemination of successful farming systems<br>2.4 Support relevant partner organizations in the training of target groups on improved farming systems<br>2.5 Facilitate the access to inputs required by target groups to apply improved farming systems (ADB credit, seeds, fertilizer and etc.) | 2.3 Strengthen capacities of relevant *extension organizations on provincial, district and commune level in the implementation of PAEM activities*.<br>2.4 *Support DAES and CEWs in training target groups in PAEM application*.<br>2.5 Facilitate the access to inputs required by target groups to apply improved farming practices (ADB credit, seeds, fertilizer and etc.) |

Proposed Sub-activities:

2.2 Sub-activities for test on soil-quality and reporting are ongoing

2.3 Sub-activities:

2.3.1 Revise and test training materials and specific training modules according to PAEM principles: (ToT material, material for CEWs)

2.3.2 Conduct ToT for staff of DAES and PAFEC on PAEM application with revised ToT material and by experienced PAEM trainers (subjects to be tackled: VET, household economics, SALT, training skills, coaching & supervision tasks, etc.).

2.3.3 Publish ToT material for dissemination in the province.

2.3.4 Conduct PAEM training for CEWs according to training needs assessment of CEWs.

2.3.5 Organize Workshop on Harmonization of Extension Activities in Quang Binh province.

2.4 Sub-activities:

2.4.1 Support conduction of training courses on PAEM which will be implemented by CEW with key-farmers of IGs (training-on-the job in PAEM application in the field with the farmers).

2.4.3 Support supervision and coaching of CEW in implementing PAEM activities in pilot communes:

* Organize interest groups/key farmers
* Support the implementation of small-scale trials based on farmers needs
* Support CEW in monitoring the trials together with the farmers
* Support CEW in organizing farmer-to-farmer exchange visits

2.4.4 Support district extension staff/CEW in organizing study tours to demonstration sites on specific technical subjects identified by farmers (i.e. demonstrations installed by IFSP, ADB, PAFEC, DAES, and others on fruit trees, agro-forestry, SALT, etc.).

2.4.5 Establish a network of CEW for exchange of experiences.

2.4.6 Implement Training Needs Assessment of ethnic minority groups in two pilot communes of Minh Hoa.

2.4.7 Based on training needs of ethnic minorities support specific training courses for ethnic minority farmers based on PAEM application.

2.5 Sub-activities remain the same.