

Institutional tools for the promotion of Conservation Agriculture in Lao PDR

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Abstract: The National Agroecology Programme (PRONAE) and the Southern Xayabury Application Point (PASS) of the Capitalization and Rural Development Support Programme (PCADR) have developed an approach in the provinces of Xayabury and Xieng Khouang that relies on direct-sowing mulch-based cropping systems (DMC). This approach has provided relevant alternatives to traditional agricultural practices which can no longer ensure the foundations of sustainable agriculture.

In view of the results obtained, be they socio-economic or environmental, the Council of Ministers asked the Ministry of Agriculture and Forestry (MAF) to promote these techniques throughout the country, and called for this approach to be included in university and school courses. It is in that context that the Sector-based Agroecology Programme (PROSA), whose main aim is to define and implement a national strategy for the dissemination of Conservation Agriculture based on agroecological techniques (DMC), operates.

This strategy is based on implementing an Agroecology Action Plan relying on the necessary incorporation of natural capital in rural development policies. The plan involves programming activities, setting in place decision-making and operational processes and bringing into play financial, material and human resources on both a central and local level (province, district and sub-district). The finest level of intervention comprises groups of farmers linked to service centres set up by the government within the districts (Kum Ban Pattana).

On each level, the agroecology action plan is to arise from an integrated and concerted approach, in which each category of rural development stakeholders is committed to a process in which their needs and skills are acknowledged by all. Likewise, on each level, it is necessary to define, in a concerted manner, the initiatives that have to be taken (diagnosis, planning, implementation, monitoring-appraisal), the tools required (training of the different stakeholders, organization and structuring of the State sector and of the private sector, contractualization between stakeholders) and the fields of involvement (extension, local development funding arrangements, management of natural resources, equipment management, organization of supply and marketing chains, etc.).

Each of the two pilot provinces, Xayabury and Xieng Khouang, is in the process of defining its Provincial Action Plan in Agroecology. An initial diagnosis of farming systems and their environmental impacts, along with the needs and contributions of each category of stakeholders, has been completed. The provinces then gave priority to defining decision-making and operational processes, and setting in place financial

arrangements for the Provincial Action Plans. Initially, two funding tools are under consideration: constitution of a development fund, and agricultural credit.

On a central level, the decision-making and operational processes are directly attached to the Ministry of Agriculture and Forestry, notably via the Planning Department. The creation of a Research and Service Provider Centre in support of local and national development is envisaged. Likewise, on a central level, it is a matter of facilitating the implementation of training plans for the different stakeholders. Lastly, the inclusion of agroecology in university and school courses is under way. Also for the educational sector, it is necessary to define a training plan to strengthen the skills and abilities of teachers. The creation of a national, or even regional network associating agricultural faculties and agricultural schools would enable an economy of scale by more effectively taking advantage of complementarities and decentralization to a more functional local level.

1. Context

The National Agroecology Programme (PRONAE) and the Southern Xayabury Application Point (PASS) of the Capitalization and Rural Development Support Programme (PCADR), have developed an approach in the provinces of Xayabury and Xieng Khouang that relies on direct-sowing mulch-based cropping systems (DMC). This approach has provided relevant alternatives to traditional agricultural practices which can no longer ensure the foundations of sustainable agriculture.

In view of the socio-economic or environmental results obtained, the Council of Ministers asked the Ministry of Agriculture and Forestry (MAF) to promote these techniques throughout the country, and called for this approach to be included in university and school courses. It is in that context that the Sector-based Agroecology Programme (PROSA), whose main aim is to define and implement a national strategy for the dissemination of Conservation Agriculture based on agroecological techniques (DMC), operates.

The operational experience acquired by PRONAE and PASS enable us to adopt the following action principles.

2. Definition of a national strategy based on three principles

2.1. Integration of natural capital

This strategy is based on implementing an Agroecology Action Plan relying on the necessary incorporation of natural capital in rural development policies. Development must be regarded not simply as dependent on technical (infrastructure) and human (health and education) capital with environmental and social constraints, but rather as relying on the effective management of capital with four components: physical - human - natural - social.

Five types of action need to be initiated. They are presented below from the most conceptual to the most political:

1. Give natural capital its rightful place within development concepts
Better understand and model the variations in natural capital and their effects on growth, poverty and inequality.

2. Improve knowledge of natural resources
Take more account of renewable resources such as soil, water and fish, and areas particularly rich in biodiversity; better appreciate the environmental services which are by nature common property, and more generally, the benefits of a healthy environment; establish sets of indicators that can be used to judge the effects of sustainable development and fix concrete

objectives; reinforce systems of environmental accountancy and statistical analysis bodies so that they can better track the degradation of natural resources.

3. Subject the results of past and current trial activities to thorough and comprehensive evaluation.

Draw from them all inferences that can help in scaling-up.

4. Accelerate North-South and South-South technology transfer.

This is particularly important for agriculture, for example in the field of Clean Development Mechanisms.

5. Mobilise the relevant decision-makers.

This involves the governments and political/civil society leaders of the countries and development agencies concerned. They must be persuaded that:

- Sustainable development depends on four and not three pillars,
- That nature is a sensitive pillar which must be handled with care, for it has a finite life and can be exhausted if too much is required of it,
- If this pillar of development is ignored, the other pillars are irredeemably weakened,
- Budgetary choices must reflect this priority, beginning with the elimination of tax incentives that increase the pressure on natural resources.

In the agricultural sphere, farmers could be encouraged to take up agro-environmental measures that restore and consolidate natural capital. They should then be compensated for providing non-commercial services which do not yet have a specific market price but which: 1) generate gains for other activities or directly benefit the well-being of the population; 2) have 'potential value' (e.g. bacteria or plant species yet to be discovered may provide a miracle cure for cancer); 3) have an 'intrinsic value' in the eyes of many (e.g. environmental management, preserving biodiversity etc.).

Policies must bear in mind the many functions of conservation agriculture. Good cultivation methods are based on agroecology and more specifically on the technique of direct seeding with plant cover, restarting natural ecosystem functions which should be further developed. By supporting the natural regulatory functions of biogeochemical cycles, conservation agriculture provides the following functions:

- Supply of goods to society: food, fresh water, wood, fuel, genetic resources and biochemical products.
- Regulation: regulation of climate, soil erosion and degradation, protection against flooding and disease, purification of water.
- Cultural: aesthetic landscaping, leisure and ecotourism, education, cultural heritage.

At present only goods supply functions are paid for. The other functions, which are neglected in their financial value, are unaccounted for even though they make a substantial contribution to the overall well-being of society. These agro-environmental measures should thus not be regarded simply as aid assistance, subsidies or donations - ideas that do not hold much value for farmers - but rather as payment for environmental services (PES) provided to society. Only agriculture based on the ecosystemic functions of biogeochemical cycle regulation can provide these services. The agroecological management of cultivated ecosystems by direct seeding and plant cover fully satisfies these objectives.

2.2. An iterative and integrative approach

In order to define and implement the national strategy, it is necessary for all stakeholders to be associated to varying degrees with all the activities undertaken. This involves farmers, agricultural development technicians (State services or projects), representatives from Research, the private sector, the banking sector, political decision-makers, donors, trainers and teachers. The processes concern diagnosis, analysis, the creation of cropping and farming systems, training, dissemination, creation of a technical, financial and material environment suitable for the supply of inputs and equipment (agricultural machinery), access to credit, access to markets, and structuring (farmer groups, etc.). And it is via an iterative approach devoting plenty of time to participatory processes, feedback, assessment, adjustment and validation that the initiative needs to be implemented.

2.3. Need to define decision-making and operational processes

Whether it be on a national or local level (province, district, villages), it is necessary to set in place the decision-making and operational processes making it possible to define:

- Priorities in terms of sizing and socio-economic and environmental challenges,
- How those priorities should be applied,
- Methods for strengthening capacities through training and teaching,
- Methods for funding the dissemination of conservation agriculture techniques,
- Methods for sharing information among all those involved in agricultural development.

2.4. Main biophysical and socio-economic challenges

The main challenges are:

- Agriculture for mountainous areas in the Northern provinces (Xieng kouang),
- Strongly market-oriented agriculture in the North-West Provinces (Xayabury),
- Rice terraces and plains with low water control,
- Hydromorphic terraces and plains (Southern provinces).

2.5. Conclusion: national and provincial action plans in agroecology

It is therefore necessary to define a national strategy. This strategy is based on implementing an Agroecology Action Plan constructed from the programming of activities, the introduction of decision-making and operational processes, and the mobilization of financial, material and human resources, be it on a central or local level (province, district and sub-district). The finest level of intervention consists of farmer groups associated with the service centres set up by the government in the sub-districts (Kum Ban Pattana).

3. Structuring on a national level

3.1. The decision-making process

The decision-making processes are ensured by the Ministry of Agriculture and Forestry via its Planning Department in consultation with:

- The Permanent Secretary of the Ministry of Agriculture and Forestry,
- The different MAF departments: Agriculture, Livestock, Forests, Irrigation, etc.,
- The Department of Human Resources,
- The Institutes and their corresponding Centres, National Agriculture and Forestry Institute (NAFRI), National Agriculture and Forestry Extension Service (NAFRI).

Priorities are fixed in accordance with ministerial and government decisions. This decision-making structure promotes and sustains exchanges with the national and international bodies involved (banking sector, Ministry of Education, communication, donors, etc.) and arbitrates between requests from the different provinces covered.

3.2. Operational processes

The operational processes are derived from:

- Different projects and programmes working in DMC-based conservation agriculture,
- Rural development projects,
- Service provider centres set up in the sub-districts (Kum Ban Pattana),
- And the different MAF technical departments.

The MAF provincial correspondents are in charge of monitoring the implementation of activities.

3.3. Creation of an Agroecology Centre

However, it has proved necessary to create an operational structure with the following functions:

- Provision of services in the form of technical support,
- Support for programming and implementation,
- Research for the creation, adaptation and validation of technical innovations,
- Training,
- And the promotion of a systemic integrated approach developed and implemented by projects working in agroecology.

These functions can be proposed to the private sector, if possible already structured (groups, association, etc.), to rural development projects, to local bodies, and to the national authorities and donors for decision support.

4. Structuring on a local level

On the provincial, district, sub-district, village and farmer levels, local planning:

- engages all local stakeholders in a mobilizing plan for the future enabling sustainable utilization of local human, natural and agricultural resources,
- allows them to translate the project into plans and action plans which they control,
- creates conditions so that local stakeholders can negotiate with each other and with the official and private sectors.

The Provincial Action Plan in Agroecology must include the short, medium and long terms defined from:

- a current local situation,
- a shared diagnosis,
- the implementation of a very short-term concrete programme,
- and the definition of a long-term local development plan (4 or 5 years).

It is necessary to effectively define:

- decision-making processes,
- procedures enabling decisions to be implemented

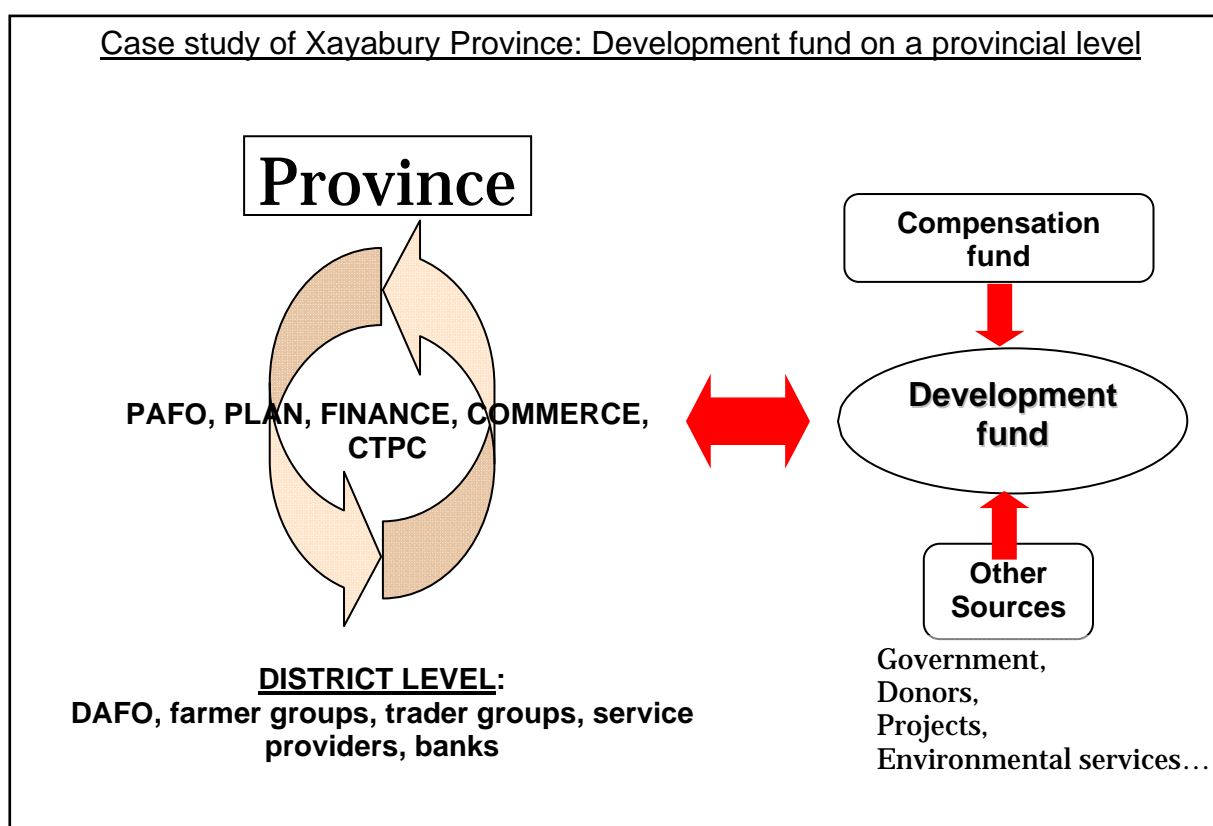
- methods for capacity building by training and teaching,
- methods for financing the extension of conservation agriculture,
- methods for sharing information among all the stakeholders, including the decision makers and donors.

Provincial workshops held in 2007 brought together 120 people in each of the two provinces. They were used to take stock of the contributions and needs of each group of rural development operators.

The following aspects were raised, as unifying, concrete and priority topics:

- Organizational, decision-making and legal structuring of the PAPAs,
- How to finance the Provincial Action Plans in Agroecology,
- Implementation of training programmes for all stakeholders,
- Professional structuring (farmer groups, trader associations etc.).

The main potential sources of funding for local rural development are development/compensation funds, individual and collective credit, savings, and subsidies.



The compensation fund is for massive environmental degradation due to conventional practices for corn production exported to the Thai market, earning \$ 1 per ton of exported corn at the border (a potential of more than 180,000 tons/year)

Possible uses of the development fund include:

- Complementary fund for DAFO and NAFRI for research and extension,
- Capacity building of the various stakeholders (technical support, awareness campaigns, training, study trips, etc.),
- Structuring of stakeholders (groups),
- Projects for submission to donors,
- Definition of specific credit lines and implication of the banking environment,
- Studies of environmental impacts, and defining Payments for Environmental Services.

5. Training

The target groups are farmers, DAFOs, technicians from provincial and sub-district centres, technicians from rural development projects, technicians from the service provider centres, trainers, the private sector, researchers, teachers and students. The main objective is training in agroecological practices, including the choice, setting up, management and fine-tuning of DMC. However, to extend conservation agriculture, training in the following aspects is also required:

- structuring of stakeholders (farmer groups, trader associations, decision-making and operational processes, etc.),
- economic domain: input supplies, credit management, product processing, etc.,
- decision-making capacity depending on rural development policies and the need to integrate natural capital,
- and the capacity for dialogue and negotiation with the other partners in the official sector and the private sector.

Particular skills are then necessary in order to reinforce the ability to:

- Analyse and diagnose agrarian realities to define the priorities of rural development,
- Identify and test adapted innovative alternative DMC,
- Define more powerful forms of organization and structuring,
- Acquire the instruments and methods of monitoring/appraisal.

The keys to success are:

- Training anchored in reality,
- Training that takes into account the knowledge of each stakeholder,
- Training that includes practical but also theoretical aspects that will be able to explain and justify new practices,
- Training that is organized in successive modules, each module having a particular significance in itself and preparing later acquisitions at the same time,
- The effectiveness of training is directly related to true dialogue and a horizontal training link between trainers and recipients,
- Follow-up is needed in order to check if training causes changes in practices and behaviour, and to see the difficulties encountered in their implementation.

Training is organized in theoretical and practical short and long-duration modules: short-duration thematic training modules, short-duration practical training modules, and long-duration practical training modules.

The short-duration thematic and practical training modules concern all users of the same technique (examples: management of direct seeders, use of pesticides, etc.). This training is provided in real situations (fields, cattle, respecting farming calendars, etc.). It is provided in the form of practical demonstrations, and field visits organized on a precise topic. An important place is granted to justifications of the techniques suggested and constraints to their adoption. It is accompanied by theoretical training sessions.

The long-duration practical training modules (one cropping season) concern the training of “specialists” who through their positions (DAFOs, service providers) are destined to have a technical function. The objective is to train some “multi” qualified specialists to be as autonomous as possible, who use their knowledge and know-how for the collective interest.

Training is a requirement for stakeholders in rural development to control technical, economic, social, environmental and cultural changes.

The effectiveness of training is related to several factors:

- Training must be planned and belong to a coherent strategy (Local and National Action Plan),
- Training is inseparable from action,
- Effective training requires substantial human resources, along with material, teaching and financial means.

Training would be a public service mission which it is necessary to take into account in rural development policies and in transfer processes.

6. Teaching

The main objective is to build a national network of schools and faculties of agriculture to teach agroecology. The first priorities, objectives and expected outputs are:

- To study the relevance and feasibility of a national network for the teaching of conservation agriculture,
- Gradually, to integrate schools and other faculties in a national network for teaching conservation agriculture,
- To exchange views on the courses, in order to highlight shortfalls in the teaching of the basic principles of conservation agriculture and the complementarities existing between the various teaching structures (faculties and schools),
- To identify requirements in teaching documents, capacity building and human resources,
- Nomination of the representatives of each institution in the national network,
- Programming of activities.

7. Communication tools

We note the importance of information flow between stakeholders and the quality of multimedia documents for the communication and awareness strategy. This is why the various programmes and components working on conservation agriculture, PRONAE, PASS, PROSA, PCADR Central Unit, have attempted to work out a joint communication activity with the production of capitalization and training documents.

Products	Expected results	Broadcasting and targets
DATABASE	Exemplary practices in CA	Website and VCD, CD-Rom policy-makers, agronomists, educational institutions and international community
AUDIOVISUAL	Documentary to be broadcast on international network	TV + DVD + website, wide audience
	Thematic issues (6 to 8) to be broadcast on national network	TV + VCD + website, wide audience
	Technical issues	Lao Extension system (VCD) + website, smallholders, extension officers, educational institutions, agronomists
FIELD GUIDE	Detailed technical issues in CA	Books, Website and CD
TRAINING MATERIALS	Field guides for trainers, agronomists and educational institutions	Books, Website and CD
SYNTHETIC AND SCIENTIFIC ARTICLES	Scientific information in CA (characterization of no-till systems ; adoption processes and methodology)	Articles, scientific community + website

8. Conclusion

To ensure a sustainable agroecology development strategy in Laos, it is necessary:

- To proceed in an integrative and participatory way, since only the direct and voluntary involvement of each stakeholder will make it possible to ensure that the objectives and the means mobilized to achieve these goals are fairly shared and accepted by all concerned,
- To jointly approach the socio-economic conditions conducive to the adoption, dissemination and sustainability of the ongoing initiative, and in close interaction with technical aspects.

In particular, it will be necessary to take into account:

- Legal and legislative aspects: concluding contracts between stakeholders, land allocation policies, landscape and territorial management, etc.
- Aspects relating to funding of the Action Plan in Conservation Agriculture: development funds, compensation funds, credit, savings, subsidies, individual and collective credit, etc.
- Human resources management, capacity building, etc.,
- The process of planning: diagnosis, concerted analyses, objectives and priorities, programming, implementation, monitoring/appraisal, etc.,
- Decision-making and operational processes,
- Processes for the transfer of skills and responsibilities, in particular associated with communication and training in technical matters but also in organizational and decision-making aspects.