



LAO PEOPLE'S DEMOCRATIC REPUBLIC
Peace Independence Democracy Unity Prosperity

Ministry of Agriculture and Forestry

Strategy for reform in the Agriculture and Forestry Colleges towards 2020

Vientiane, January 2008

Executive Summary

Why reform in agriculture and forestry colleges is needed

Modernizing the agriculture and forestry sector is a top priority of the Lao Government in achieving food security and better livelihoods for all Lao people. The main objectives in the agriculture and forestry sector are to enhance market-based farming, reduce disparities between lowland and sloping land and enforcement of sustainable forest and watershed management practices.

Agricultural extension is a key strategy of the Lao Government to achieve these objectives. The vision of the Ministry is to have a new type of extension worker, who can work with farmers in the style of participatory technology development. Skilled agricultural technicians will also be needed by the private sector, who is investing rapidly in the agricultural sector.

This sets the scene for the future role of the agriculture and forestry colleges as the engine of agricultural extension in Laos. There are five agricultural colleges, maintained by the Ministry of Agriculture and Forestry, who are the main providers of qualified trained staff for the agricultural sector:

- 1) Luang Prabang Agriculture and Forestry College, Pak Seuang, Luang Prabang Province
- 2) Thangone Irrigation College, Thangone, Vientiane Capital City
- 3) Bolikhamxay Agriculture and Forestry College, Meuang Mai, Bolikhamxay Province
- 4) Savannakhet Agriculture and Forestry College, Na Kae, Savannakhet Province
- 5) Champasak Agriculture and Forestry College, KM7 Pakse, Champasak Province

Graduates need social, economic, finance, marketing and micro-enterprise development skills to support farmers effectively in linking to markets. Teaching needs to evolve from rote learning to skills-based learning, higher rates of enrollment of women and ethnic minorities are needed, colleges need to be better linked to the private sector and to the agricultural extension system.

How the strategy was developed: stakeholder consultation process

In 2006, the Ministry hired a consultant to assess key issues and draft strategic solutions for reform in the agriculture and forestry colleges through consultation with a range of stakeholders. In 2007, the Ministry assigned an internal taskforce to develop a strategy towards the year 2020 for reform of the agriculture and forestry colleges. This taskforce organized a series of consultation workshops to get more inputs from stakeholders, using the 2006 consultancy report as a basis for further discussion.

These workshops were held in Vientiane, Luang Prabang, Bolikhamxay, Savannakhet and Champasak. A total of 131 participants from 9 provinces participated in these workshops. They consisted of college staff, representatives from various Government agencies, agricultural companies and private sector organizations, as well as donor-funded and NGO-supported projects and other potential employers in the agricultural sector. The taskforce then summarized the outcomes of these workshops in a report, which served as the basis for drafting a strategy document. The taskforce also added considerations on how the strategy could best be implemented. The draft strategy was reviewed by policy-makers from various departments in the Ministry. The result is the present strategy document.

Key issues in technical agricultural education

A *Student issues*

The number of students grows rapidly, how to cope? Students are poor, they spend 40 hours per week to feed and wash, this is negative for learning as well as for student health and well-being. Tracer studies show that only 20-30% of annual graduates can find a paid job in the year after graduating. Only in the second year after graduating some 80 % may have found employment. Students do not have the skills and means to start their own business to reduce these long periods of unemployment. Training is too theoretical, not linked to farmer or extension practice, there is no chance to develop skills/experience through learning by doing. Practical skills needed in future jobs are not defined, no attempts are made to identify training needs among future employers, the curriculum is not based on skills training. Students are all hoping to get a job with a foreign aid project for good salary, or with the Government for influence and power, there is little interest apply skills learned to join a company or to set up one's own business or become a farmer?

B *Teacher issues*

The curriculum is seen as a series of books, not to be changed easily. There are very few mechanisms for teacher training. There are insufficient incentives for teachers to improve their farming skills for income and training. There are no mechanisms to link teachers to best farmer practices. Teachers hope to get a scholarship abroad, as savings accrued from living allowances are big enough to buy a house, there are few other incentives for self-improvement.

C *Institutional issues*

Infrastructure is not sufficient (especially student accommodation), there are no funds to improve or maintain infrastructures. There is a general lack of funds, no incentives to earn revenue, complicated financial management and few mechanisms to raise more money. Only Savannakhet college seems to have a mechanism of funding students by farmer groups. This is a good development, how could it be replicated by poor upland farmer groups who have less or no surplus income? None of the colleges have any mechanisms to coordinate with and get direction from their clients in the labor market, e.g. farmers, districts, companies etc. There is a need for more accountability to civil society, through a variety of boards and networks.

D *Larger issues of agricultural technical training*

There is no strategic training needs analysis to give direction to the agricultural technical training colleges in the wider context of the education system. This makes it difficult to reconcile the numbers of colleges, students and teachers with the small number of employment opportunities on one hand and the huge social need for more basic agricultural skills training on the other. Training centers are not really being used, they do not provide training for which there is a demand. Is it really feasible to develop them into centers for recurrent training of farmers and extension workers? If teachers are asked to provide many short-term training/extension services, this could compete with their commitment to long term formal (student) training, how to avoid such negative interactions? Two schools (Savannakhet and Thangone) are focusing on lowland irrigated farming. The other three (Luang Prabang, Bolikhamxay and Champasak) have a general focus, but there is little focus on sustainable upland farming, which occupies most of the countries population, especially the poor. How can this gap be filled?

The main elements of the strategy

The overall objective of the reform strategy for technical agricultural education is:

“To develop skilled human resources for market-based development in the agricultural sector”

The main purpose of the strategy is to improve the quality of teaching and learning in technical education at the agriculture and forestry colleges. The reform strategy consists of six key components:

1. Linking training to the extension system and the labor market

a. Linking training to the extension system

- Link teachers and students to farms around colleges through extension systems
- Colleges could provide “refresher” courses for extension workers as long as it does not interfere with the formal teaching practice
- Colleges can provide extension staff to the “kum ban patana” village development clusters and sub-district information centers
- Shared production of extension and training materials by colleges together with NAFRI-NAFES
- Specific focus on developing extension staff and materials for disadvantaged groups: ethnic minorities and women, by students and teachers who belong to these groups
- Link agricultural training with the environment and conservation of agro-biodiversity, organic farming and sustainable use of uplands

b. Improving networking and social accountability

- Adjust agricultural education to the demand of the labor market through cooperation with private sector, entrepreneurial skills training etc.
- Build networks between colleges and other stakeholders (e.g. other education institutions) to develop best teaching and learning practices
- Make colleges more accountable to the society, through involving students and other stakeholders in various management committees (parent committee, steering committee)

2. Linking training to agro-enterprise development

a. Linking training to private sector employers

- Adjust training to private sector needs
- Partnerships with local business to hire students, invest in training

b. Linking training to micro-enterprise development

- Training program on Micro-enterprise development
- Small Business Incubation Centers
- Small grants fund for school leavers starting their own agri-business

3. Skills-based curriculum building (adding extension and business skills)

- Identifying skills needed in the labor market
- Understanding key professional profiles and their training needs
- Adding more skills to the curriculum (economic, social, management, extension and enterprise skills)
- Using the school farm as a training ground (to practice all skills)
- Make students work with farmers on their farms
- Link curriculum building in the colleges with other institutes of learning

- Maintaining and monitoring the quality of skills-based training

4. Training teachers

- Human Resource Development Plans, Personal Development Plans
- Exchange partnerships with Universities in surrounding countries
- Teacher training networks between agricultural colleges in Laos

5. Improve management, self reliance, accountability

- Identifying options for income generation within the schools
- Supportive mechanisms to start up small group enterprises by students and teachers
- Fair mechanisms of sharing benefits derived from selling products and services

6. Upgrade infrastructures

- First priority for improving water supply and sanitation, living quarters, canteen (need donor support)
- Class rooms, workshops, labs (to be better suited to skills based learning)
- School farms, fishponds (for skills based learning and income generation)
- Communications, electricity, internet (essential for knowledge development)
- Planning, maintenance and funding mechanisms for infrastructures (private sector, temple funds)

Implementing arrangements

The Organization and Personnel Department of the Ministry of Agriculture and Forestry will be responsible for supporting agricultural colleges in implementing the reform strategy. A steering committee, consisting of representatives from relevant departments within the Ministries of Agriculture, Education and Industry and Commerce will be set up to guide and monitor the implementation of the reform strategy. At the level of the colleges, at least five new working units need to be established at to implement the reform strategy:

1. Outreach Unit (linking to outside organizations and farming practice)
2. Enterprise Development Unit (adding enterprise skills to the curriculum)
3. Communications and Extension Skills Unit (adding extension skills to curriculum)
4. Skills based learning and teacher training Unit (based on existing teacher councils)
5. Resource Management Unit (based on existing administration unit)

The strategy provides a detailed range of targets for each of the components of the strategy. The implementation of the strategy is expected to take place in three phases: (1) pilot phase, 2008-20210, (2) expansion phase, 2011-2015, (3) consolidation phase, 2016-2020. The strategy also sketches a strategy for resource mobilization, aimed at boosting short term improvement of the quality of teaching mainly through donor contributions in terms of technical advice and basic infrastructural improvements. For the long term, increasing revenues from private sector contributions and from income generated from selling services and products are expected to top up the Government's contributions to ensure continued improvement of teaching and maintenance of infrastructures.

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1 Introduction

1.1 Policy framework

Modernizing the agriculture and forestry sector is a top priority of the Lao Government in achieving food security and better livelihoods for all Lao people¹. The main objectives in the agriculture and forestry sector are to enhance market-based farming, reduce disparities between lowland and sloping land and enforcement of sustainable forest and watershed management practices.

The agriculture and forestry sector provides the economic, social and cultural base for more than 80 per cent of the population, and accounts for more than 50 per cent of GDP. Subsistence farming is still widespread, characterized by low inputs (little use of fertilizers or quality seeds) and low outputs (yields), with the result that farming incomes are very low, especially in the poorest districts. The Government is firmly of the view that more progress in modernizing the sector can and must be made, while respecting the traditions of the Lao way of life and the rich diversity of its ethnic minorities.

The Government's Strategic Vision for the Agricultural and Forestry Sector, which has guided progress in recent years, includes seven key themes²:

1. *Participatory Planning*, so as to ensure sensitivity to local needs and circumstances, and to support preparation of district plans for lowland areas and the preparation of integrated watershed plans for upland areas; village and district level action is the main catalyst for growth of the agricultural sector.
2. *Lowland Transformation*, whereby the strengths of lowland farmers (market access, more modern farming techniques) help expand exports of commodities
3. *Sustainable Development of Sloping Lands and Environmental Management*, including protection of National Bio-Conservation Areas (NBCAs), regulation of harvesting of NTFPs, and a multi-sector and community-based approach to land allocation and management.
4. *Stabilization of Shifting Cultivation*, the Government aims to stabilize shifting cultivation by 2015, through the promotion of on-farm and off-farm activities, facilitated by district extension workers knowledgeable in alternative rural livelihoods.
5. *Expansion of Irrigation*, projects are being managed more effectively and new projects are expanding the area under irrigation.
6. *Human Resource Development*, emphasis is being given to upgrading agricultural staff, especially at the district level, to improve participatory planning, extension techniques and understanding of the market system and role of the private sector.
7. *An Enabling Environment for Business Development*, this is central to promoting economic growth with equity, as stated in the National Socio-Economic Development Plan.

Education is seen as a catalyst for human resources management. The Ministry of Agriculture and Forestry maintains five agriculture and forestry colleges where middle-level agricultural technicians are formed.

¹ National Growth and Poverty Eradication Strategy, 2004.

² The Government's Strategic Vision for the Agricultural Sector, 1999.

This strategy is aimed at reforming the technical agricultural education at these colleges and training centers, in order to deliver skilled technicians needed in extension and in the private sector of a modern market-based agricultural sector.

1.2 Strategic vision of the role of technical agricultural education

The Ministry's agricultural extension strategy envisions a new type of extension officers who work with farmers in the style of participatory technology development. They need social skills to assist upland communities to organize themselves better. They need basic finance, marketing and micro-enterprise development skills to link farmers to markets. They need to learn how to produce practical proposals and work plans, to contribute to the bottom-up planning process pursued by the Ministry. With rapidly changing challenges in the agricultural sector, extension workers need to have access to annual refresher courses where new methodologies can be introduced.

This sets the scene for the future role of agriculture and forestry colleges as the engine of agricultural extension in Laos. Many more skilled persons are needed to work in agriculture, not only at district level but also at sub-district level, which will become the future focus of intervention, where clusters of villages will operate as producers groups.

To arrive there, a revolutionary change is needed in the way the colleges work, where teachers learn to teach skills that fit the real needs of upland farmers. This involves changes in the curriculum and changes in the way in which teachers teach, e.g. linking students and teachers to the practice of farmers in the area through processes of participatory curriculum development. More women and ethnic minorities should enter into the schools. Outreach to ethnic minorities could be boosted by having such students produce local language radio programs. The colleges could develop new mechanisms to become financially more self-supporting, e.g. by developing income generating activities such as production and selling of high quality seed materials, delivery of training and consultancy services, etc.

1.3 Linking agricultural education to the agricultural extension strategy

The National Agriculture and Forestry Extension Service has adopted the Lao Extension Approach as the leading mechanism for reforming the extension system³. This approach consists of linking the Government Extension system (Province and District Extension Workers) to a Village extension system (Village extension workers, producer groups). Government extension agents take on a role as facilitators helping farmers to analyze and solve their problems through a cycle of training needs assessments, implementing learning projects, monitoring and evaluation, revision of learning projects and extension to larger groups of farmers. This requires district extension officers to be skilled in socio-economic and facilitation competencies, rather than agricultural technical skills.

Furthermore the Government promotes the establishment of village cluster groups, "kumban pattana". Organizing producer groups makes it easier to reach economies of

³ Consolidating Extension in the Lao PDR, 2005.

scale in supplying inputs and extension services to farmers. More socially skilled extension staff will be needed to support these groups to make use of market opportunities successfully.

Last but not least, the Government plans to set up local Information Service Centers at zonal level (sub-district level) to support village cluster groups. These centers will also need skilled extension workers to provide information services to farmers. The agriculture and forestry colleges remain the key education institution where skilled extension workers are formed.

1.4 Consultative Strategy Development Process

Realizing the need for reform of the agriculture and forestry colleges, the Ministry of Agriculture and Forestry launched a short consultancy mission with support from SDC, the Swiss Development Cooperation, in 2006. The mission's task was to make an assessment of the present situation, to identify key issues and to provide strategic options for tackling these issues. Through numerous meetings with a range of stakeholders, the mission arrived at a comprehensive overview of a range of key issues. It also provided a range of strategy options, based on recommendations from stakeholders.

The mission report provided sufficient ground for the Ministry to launch a consultative strategy development process in 2007. A taskforce was formed, existing of the directors of the agriculture and forestry colleges as well as representatives from various departments within the Ministry, e.g. the department of personnel and organization, the department of planning, the international cooperation department, the national agriculture and forestry research institute and the national agriculture and forestry extension service.

This taskforce organized a series of consultation workshops in Vientiane, Luang Prabang, Bolikhamxay, Savannakhet and Champasak Provinces from May to August 2007. In these meetings a range of stakeholders, ranging from college teachers, representatives from various Government agencies, agricultural companies, as well as donor-funded and NGO-supported projects and other potential employers in the agricultural sector discussed the key issues and provided suggestions on how to improve.

This strategy document is based on the outcomes of these consultative workshops. It presents an overview of the Government's strategic vision on the role of agriculture and forestry colleges as provides of skilled extension workers in the introductory chapter.

Chapter 2 provides an analysis of the key stakeholders and the issues, based on the findings of the 2006 consultancy mission and the outcomes of the stakeholder workshops in 2007.

Chapter 3 provides the actual strategy, based on the recommendations of all stakeholders who were involved in the consultative process. The strategy is aimed at reaching the Government's vision of providing skilled human resources to develop market-based production for income generation and food security in the agricultural sector.

Chapter 4 provides an overview of implementing mechanisms that would need to be put in place to implement this strategy. This chapter was developed by the taskforce, taking into account many suggestions put forward by stakeholders during the consultation process. It also suggests a number of targets and indicators to measure progress towards reaching these targets, over the period 2008-2020.

2 Situation analysis

2.1 The agriculture and forestry colleges

There are five agricultural colleges, maintained by the Ministry of Agriculture and Forestry, who are the main providers of qualified trained staff (see also table 1 below):

- 6) Luang Prabang Agriculture and Forestry College, Pak Souang, Luang Prabang
- 7) Thangone Irrigation College, Thangone, Vientiane Capital City
- 8) Bolikhamxay Agriculture and Forestry College, Meuang Mai, Paksane
- 9) Savannakhet Agriculture and Forestry College, Na Kae, Savannakhet
- 10) Champasak Agriculture and Forestry College, KM 7, Pakse, Champasak Province

Table 1: Summary characteristics of 5 agricultural technical colleges in Laos

Characteristics	Luang Prabang Agriculture and Forestry College	Irrigation College Tangone, Vientiane	Bolikhamxay Agriculture and Forestry College	Savannakhet Agriculture and Forestry College	Champasak Agriculture and Forestry College
Region	North	Central	Central	South	South
No. students '05	636	323	333	333	757
No. female students	216 (34%)	91 (28%)	99 (30%)	122 (37%)	190 (25%)
No teachers '05	47	33	25	28	52
Students/teacher	13	10	14	3	14
Students/class	108	80	88	28	54
Main specializations	Agriculture Livestock Forestry	Irrigation techniques	Lowland Agriculture	Agriculture Livestock Forestry	Agriculture Livestock Forestry
Graduate employment	Tracer study 20% get job, mostly as district staff	No study, 20% work in irrigation construction	No study, perhaps 10% to districts, 20% others	All graduates go back to their farmer group	30% of graduates could get a job?
Course duration	3 years	3 years	3 years	3 years	3 years

The colleges harbored 2,383 students in 2005, of which 718 women (30%), there were 185 teachers, the students/teacher ratio varied from 54-108. The agricultural colleges educated face many obstacles in making their education more skills-based and oriented to the labor market.

2.2 Problem Analysis

The following issues were identified during stakeholder consultation meetings:

A Student issues

- The number of students grows rapidly, how to cope?
- Students are poor, they spend 40 hrs/week to feed and wash, this is negative for learning as well as for student health and well-being
- Tracer studies show that only 20-30% of annual graduates can find a paid job in the year after graduating, only in the second year after graduating some 80 % has

found employment. Students do not have the skills and means to start their own business the reduce these long periods of unemployment

- Training is too theoretical, not linked to extension practices, there is no chance to develop skills/experience through learning by doing
- Practical skills needed in future jobs are not defined, no attempts are made to identify training needs among future employers, the curriculum is not based on skills training
- Students are hoping to get a job with a foreign aid project for good salaries, or with Government for influence and power. There is little interest apply skills to join a company or to set up one's own business or become a farmer.

B *Teacher issues*

- The curriculum is seen as a series of books, not to be changed easily
- There are very few mechanisms for teacher training
- There are insufficient incentives for teachers to improve their farming skills for income and training
- There are no mechanisms to link teachers to best farmer practices
- Teachers hope to get a scholarship abroad, as savings accrued from living allowances are big enough to buy a house, there are few other incentives for self-improvement.

C *Institutional issues*

- Infrastructure is not sufficient (especially student accommodation), there are no funds to improve or maintain infrastructures.
- There is a general lack of funds, no incentives to earn revenue, complicated financial management and few mechanisms to raise more money.
- Only Na Kae college in Savannakhet seems to have a mechanism of funding students by farmer groups. This is a good development, which should be replicated by all colleges. Specific support packages could be developed for poor upland farmer groups who cannot easily generate surplus income.
- None of the schools have any mechanisms to coordinate with and get direction from their clients in the labor market, e.g. farmers, districts, companies etc. There is a need for more accountability to civil society, through a variety of boards and networks.

D *Larger issues of agricultural technical training*

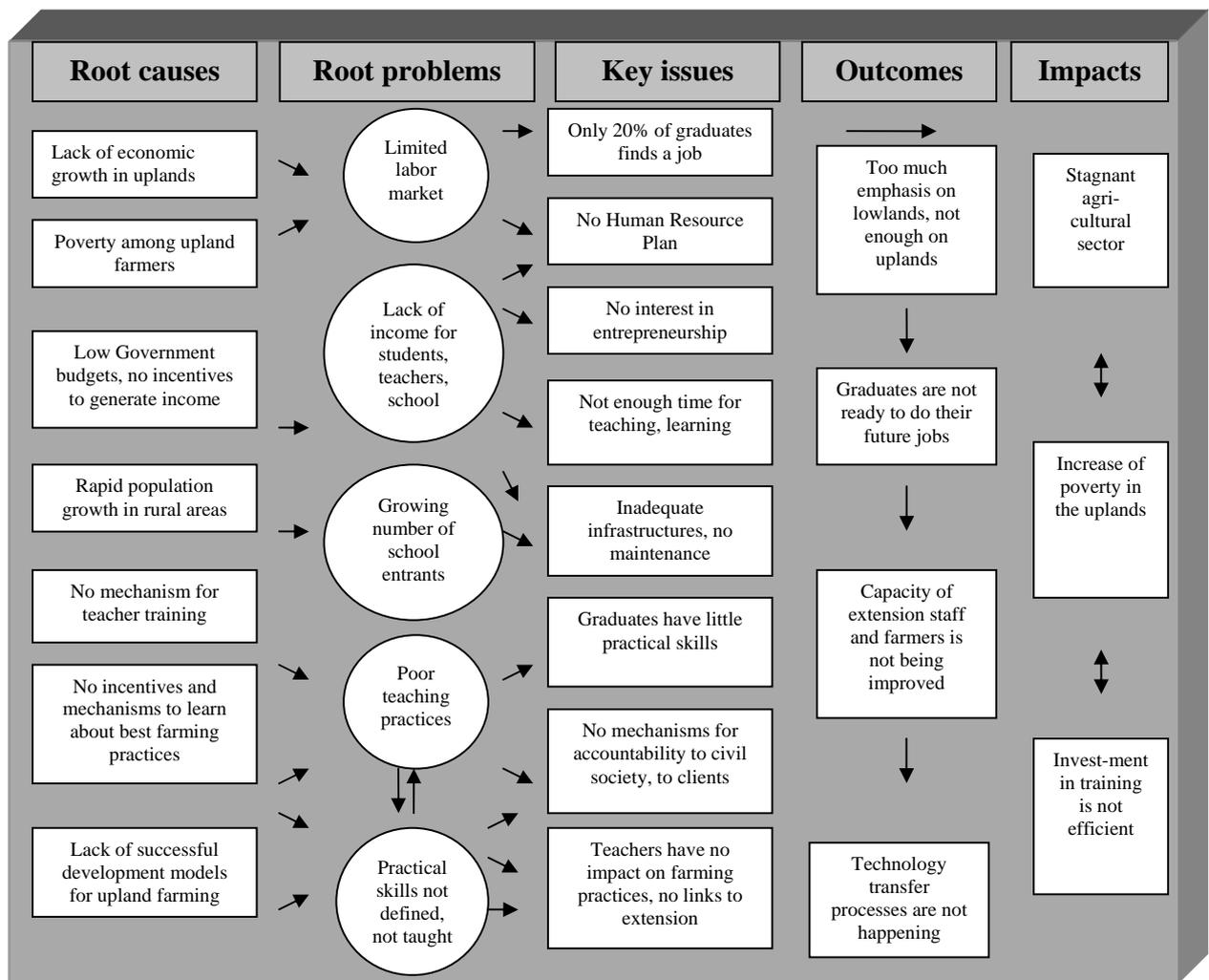
- There is no strategic training needs analysis to give direction to the agricultural technical training colleges in the wider context of the education system. This makes it difficult to reconcile the numbers of colleges, students and teachers with the small number of employment opportunities on one hand and the huge social need for more basic agricultural skills training on the other. More cooperation is needed with the Ministry of Education to develop consistent Human Resources Strategies for the agricultural sector.
- Most other education institutions in Lao PDR fall under the Ministry of Education. The main justification for keeping the agricultural colleges under the Ministry of Agriculture is to support the agricultural extension strategy, which is

seen as key to the countries poverty alleviation strategy. The relation with the Ministry of Education needs to be clarified, in terms of quality control of teaching and upgrading of students from one institution to another.

- Training centers are not being used well, they do not provide training for which there is a demand. Training centers should be reformed to provide training courses that fit to the needs of extension and agri-business development programs.
- If teachers are asked to provide many short-term training/extension services, this could compete with their commitment to long term formal (student) training. A balance has to be found to avoid such negative interactions.
- Two colleges (Thangone and Savannakhet) are focusing on lowland irrigated farming. The other three (Luang Pabang, Bolikhamxay and Champasak) have a general focus, but nobody focuses on sustainable upland farming, which occupies most of the countries population, especially the poor. More focus on specific solutions for the uplands is needed.

These issues are summarized in a problem tree in table 2 below.

Table 2: “Problem Tree” of issues identified in the impact of technical agricultural education on the agricultural sector



2.3 Stakeholder analysis

Besides students and teachers, typical other stakeholders in agricultural technical education include:

1) Province and District Agricultural Extension Offices

District officers have a clear view on how agricultural colleges could improve their teaching methods to provide better skilled extension workers (see box 1 below).

Box 1: District Extension Officers Views on Agricultural Education

An interview with staff from the Xieng Ngeun District Agriculture Extension Office illustrates the needs for practical skills teaching at the Luang Prabang Agricultural College. Almost all district agriculture officers here have graduated from that college. They all experienced difficulties arriving at their new jobs, as they had to learn many skills from scratch. The most important challenge was to learn how to work with farmers, as extension skills were not taught at the college. Practical skills as vaccinating buffaloes had to be learned on the job, as there was never an opportunity to practice this skill at the college. District staff would like to see the following skills taught at the college:

- Extension methods, learning how to work with farmers
- Basic animal health care techniques
- Basic soil survey and diagnosis, simple laboratory techniques
- Basic marketing survey and analysis
- Small enterprise development and product processing skills
- English and Chinese language skills
- Computer, e-mail and report writing skills
- Learning how to analyze data
- Financial budgeting and accounting skills
- Organic farming principles and techniques
- Schools should not only offer text books but also TV shows, like in Thailand

The district cannot hire new staff, as it has reached the maximum number of permanent extension staff allowed by Government. It is only possible to add staff on temporary hired basis. If more budget would be available, nine additional extension officers would be required to cover all the work they plan to do. Options for generating funds to pay for this are limited, at present some young staff are paid a modest living allowance by a foreign aid project for a period of one year. The aim is to let young staff gain experience, hoping that districts find a way to employ these people on the long run.

The extension officers remember very well how tough it was to live at the school. When they were students, they were very poor and often had to gather or hunt their dinner from the wild. They propose that the livelihood of students could easily be improved by allowing them to grow their own food on school land. District officers are aware that most graduates do not succeed in finding paid employment. Graduates could be given small credit funds to start their own business. One officer suggested the school could be more selective in the intake of students. He mentions the example of Vietnam, where there is a big competition to enter into agricultural colleges. Such procedures might help to reduce the pressure on the school and improve the motivation and quality of students.

Province and District Extension Offices are the traditional clients of the agricultural colleges. However the number of graduates that can be employed by extension offices has become very limited due to limitations in Government budgets. At the same time, the Government is planning to expand the number of extension officers to sub-district levels and would like to employ more graduates in the future. At present, Government extension offices are able to absorb perhaps 10% of the graduates of agricultural colleges each year. By the year 2020, the Government expects to absorb 50% of the graduates. More effort is needed to develop funding mechanisms to reach this target.

2) Agricultural Companies, Private Sector Organizations

In a market-based agricultural sector, the private sector will be the main employer of skilled agricultural technicians. At present agricultural companies are able to employ perhaps 10% of the graduates. At the same time there is a rapid increase of investment in agricultural plantations all over the country. The private sector could be expected to absorb up to 30% of graduates by 2020.

The private sector is also a promising source of funding for the colleges. There are already good examples of agricultural companies funding repairs to school infrastructures and selecting colleges as a site to establish models of modern technologies (e.g. solar dryer funded by Thai companies in Champasak).

3) Rural Development Agencies and Programs

Donor-supported rural development programs are key stakeholders in agricultural education. While they only employ a few graduates per year, these are the “top jobs” as they pay high salaries. Donor-based programs are also setting professional standards that colleges can use to improve their curriculum. Donor-based programs are also often the main source of financing for district extension work. While not sustainable by their temporary nature, donor programs could support temporary placements of graduates in extension positions at the level of clusters of villages.

4) Small entrepreneurs in agricultural production and services

At present, 80 % of graduates cannot find a job on the paid labor market. Most of them become self-employed. Much more could be done to support graduates to set up small businesses in production and service delivery in the agricultural sector. The agricultural colleges could serve as “business incubation” centers.

5) Other Providers of education

In each region, agricultural colleges share the responsibility for absorbing secondary school graduates with other education institutions: technical colleges, teacher training colleges, universities etc. More coordination is needed between these institutions for balanced human resource development. There is also a lot of potential for collaboration e.g. on the development of training materials, between colleges and universities.

6) Farmers, parents of students

There is little interaction between the agricultural colleges and farmers in the surroundings. Yet these farmers send their children to the colleges. Colleges should teach best farming practices based on regular interactions with innovative farmers. Farmers could benefit from skills-based training delivered by the colleges through outreach programs. Last but not least, parents and farmers could participate more the management of the colleges through various representation systems.

3 Reform Strategy for Agriculture and Forestry Colleges

3.1 Objectives and purpose

The overall objective of the reform strategy for technical agricultural education is:

“To develop skilled human resources for market-based development in the agricultural sector”

The main purpose of the strategy is to improve the quality of teaching and learning in technical education at the agricultural colleges.

3.2 Key strategies

The reform strategy consists of six key components:

1. Linking training to the extension system and the labor market
2. Linking education to enterprise development
3. Skills-based curriculum building (adding extension and business skills)
4. Training teachers
5. Improve management, self reliance, accountability
6. Upgrade infrastructures

3.3 Linking training to the extension system and the labor market

3.3.1 Linking training to the extension system

A. Link to farms around colleges through extension systems

- Link/coordinate with various stakeholders in agriculture in districts around the schools to involve students in extension work
- Write case studies on a farm experience outside the school
- Collect baseline information on training needs of farmers, companies
- Design training plans according to needs of target groups
- Build key trainers among farmer who can lead by example
- Implement experiments in school farms to learn new farming practices
- Monitor and evaluate regularly in a continuous problem solving cycle

B. Colleges should provide “refresher” courses for extension workers

- Colleges provide a one and a half year training course for Government extension workers to upgrade from lower to intermediary level diploma. Roughly 200 district extension workers follow this program every year.
- While this is useful, the program only covers district officers who have officially been appointed as government staff. In a typical province there may be 50 of such staff, compared to another 150 or so “temporary government

staff”. The number of official Government staff cannot be increased. Thus this training program only covers a small fraction of the extension workers and it only offers a one-time training event.

- More could be done to provide compact, recurrent training courses to all extension workers to become more effective in their work. The agricultural colleges could provide such courses as long as they do not compromise the capacity of the colleges to provide their other formal education courses. Such courses could be developed in coordination with various programs working under the National Agriculture and Extension Service such as the Lao Extension Approach Project.

C. Colleges can provide extension staff to the “kum ban patana” village development clusters and sub-district information centers

- The Government aims to set up 330 village development clusters (“kum ban patana”) in the 47 poorest districts initially. Each cluster will need at least 2-4 agricultural extension workers. So there is an immediate need for some 600-1200 new extension staff to be working at sub-district level. This creates job opportunities for graduates of agricultural colleges.
- It is not yet clear how these staff positions could be financed. As a temporary measure, foreign aid donors could be asked to provide modest funding for getting the first batch of village cluster extension agents in place. However, this is only an “ad-hoc” solution, more sustainable funding mechanisms need to be developed for deploying cluster extension workers on the long term.
- To support the “kum ban pattana”, the Government is also promoting rural information centers at sub-district level. These centers would provide farmers with market information and technical information. Additional skilled extension staff will be needed to work in these centers.

D. Shared production of extension and training materials

- The colleges need new training materials and extension officers need new extension materials. The National Agriculture and Extension Service and the National Agriculture and Research Institute have just started a new cooperative program called “Agricultural Information Mechanism”, aimed at producing short, easy-to-read booklets and handouts on agricultural topics. These products will be disseminated to extension offices and to district information centers in so called “wisdom bags”. These materials could also be used by the schools as training materials. Involving the colleges in the AIM program would be another step towards bringing agricultural education closer to the extension practice. Teachers of colleges might also become involved in the production of training materials.

E. Specific focus on developing extension staff and materials for disadvantaged groups: ethnic minorities and women

- Ethnic minorities still remain largely excluded from agricultural modernization. The agricultural colleges should become the main training ground for young people of ethnic minorities. They should train as extension workers. They should be made to feel confident to speak their own language besides the national language and develop leadership among ethnic minorities. They can teach students of the majority ethnic group to understand and respect local ethnic cultures.
- Ethnic minority students and teachers could play a unique role in producing extension materials in local languages that do not require reading (video, radio, drama etc).
- Male students still outnumber female students at a ratio of 1:3. Colleges can do more to attract female students and develop training packages that engages women in commercial agricultural production.

F. Link agricultural training with the environment and conservation of agrobiodiversity, organic farming and sustainable use of uplands

- Sustainable agriculture is not only about markets, but also about conserving the landscape and genetic resources that are at the source of agricultural production.
- Colleges already have partnerships between agricultural colleges and NGOs to promote organic farming practices. These need to be expanded to also cover clean processing techniques, certification and quality control in organic production chains, etc.
- Colleges need to develop new partnerships to raise student's awareness on agricultural biodiversity and conservation of soils, landscapes, ecosystems.
- Agricultural companies need to adhere to environmental standards. Agricultural students should learn about environmental issues, environmental impact assessment etc.

3.3.2 Improving networking and social accountability

A. Adjust agricultural education to the demand of the labor market

- The demand for technical agricultural education on the paid labor market will remain limited over the next ten years or so. The absorption capacity of the Government's extension system will depend on its ability to raise funds sustainably. Colleges need to adjust training to these two sectors but also

prepare students to become self-employed as entrepreneurs in the agricultural sector.

- Colleges are faced with a growing number of secondary school graduates seeking access to technical agricultural education. Yet colleges are faced with a limited demand from the labor market. Colleges should manage the number of students by raising entry requirements through a system of entry exams. At the same time, they should encourage entry of students from disadvantaged groups, e.g. ethnic minorities and women.
- There is also a need to provide lower level agricultural education which is not provided by the agricultural colleges. Perhaps these needs could be covered by non-formal education centers. A national agricultural human resources development strategy should be prepared to provide long-term solutions to the needs for agricultural education at various levels.
- Colleges should do regular tracer studies to find out how graduates move on in the labor market and share these with policy-makers.

B. Build networks between colleges and other stakeholders

- Teachers and Directors of the Schools need to build better networks with innovative farmers in their area, to learn about best practices together and to identify external training opportunities for students.
- To motivate teachers to work on improving their curriculum, teacher training committee should be formed, where teachers from various schools can meet and exchange experiences in curriculum building. E.g. in Luang Prabang, teachers from teacher training colleges, from the technical college and from Souphanouvong University could join with the teachers from the Agriculture and Forestry College to exchange experiences on curriculum reform by meeting regularly, say every three months.
- Colleges should be linked to national and regional knowledge networks, e.g. Lao-link, Lao-Fab, All-in CBNRM, etc. through web and face-to-face meetings.

C. Make colleges more accountable to the society

- Agricultural colleges need to be closer to the local Government and become more involved in local policy making processes
- Agricultural colleges could set up a steering committee involving key employers in local Government, Private Sector and Civil Society (e.g. associations of farmers and parents)

- Students could be more involved in school management, e.g. through a board of students or as member of various management committees

3.3.3 Linking training to private sector employers

A. Adjust training to private sector needs

- The Government encourages foreign investors under the formula 2+3: Lao villagers bring in land and labor (2 factors) while the foreign companies bring in technology, capital and markets (3 factors). Colleges need to adjust their training programs to produce people who can work in these new industries.

B. Partnerships with local business to hire students, invest in training

- Colleges should market their students to the many new foreign investment companies who are developing commercial agricultural plantations, e.g. for rubber, corn, oil palm, eucalyptus, jatropha etc. While these companies often tend to bring their own technical staff, e.g. from China, they need to be stimulated to employ local technicians, especially for extension.
- Private sector companies investing in agriculture are already connecting to the agricultural colleges to extend new practices. E.g. a large new solar drying shed is being built at the Champasak Agricultural College by a Thai company aimed at growing cassava in Laos, with support from the Thai Ministry of Energy. Schools can do more to promote themselves as platforms for dissemination of modern farming practices for the private sector.
- Private sector could provide a range of support mechanisms to promote entry of students and graduates into the labor market, e.g. through scholarships, internship programs etc.

3.4 Linking training to micro-enterprise development

A. Training program on Micro-enterprise development

- Specific training components on micro-enterprise development and basic business skills need to be added to the curriculum
- Training programs for micro- enterprise development of graduates can be linked to programs to promote entrepreneurship between teachers and students and extension programs outside the colleges aimed at Small and Medium Sized Enterprise Promotion (SME).

B. Small Business Incubation Centers

- Over the next five years or so, the paid labor market will continue to be too small to be able to absorb all agricultural college graduates. Schools need help in developing support mechanisms for graduates who cannot find employment

with the Government or with companies, in order to start their own business as farmer or small trader.

- Such mechanisms could include a business incubation center, where young entrepreneurs get help to develop business plans, get a start-up loan, access to trade fairs, etc.

C. Small grants fund for school leavers starting their own agri-business

- Most specifically, agricultural colleges should set up credit funds where graduates can apply for loans by submitting well written business plans. Foreign donor support may be needed to set up these funds, but maintenance of the funds should be achieved by realistic interest rates, collective accountability and transparent administration mechanisms.

3.5 Skills-based curriculum building

A. Identifying skills needed in the labor market

- Colleges should be encouraged to do regular “Training Needs Assessments” among key employers in the Government en Private Sectors. This would yield lists of skills or competencies that need to be taught, teachers can then adjust their curriculum accordingly.
- A simple framework could be used to identify key skills or competencies:

Employer:	Technical skills	Social skills	Management skills	Accounting skills	Marketing skills
Innovative farmer					
Small business					
Companies					
Public Sector					

B. Understanding key professional profiles and their training needs

- The Government policy for extension workers is to have four key roles:
 - 1 “songseum” extension of new policies and practices
 - 2 “neopouk” introducing new varieties
 - 3 “pongkanpanyat” protection against pests and diseases
 - 4 “feukobhom” building capacity of village cluster groups
- Good extension workers should also be able to:
 - ✓ Analyze the situation of farmers, their farming and production systems
 - ✓ Be a good extension worker, making a curriculum for farmer training

- ✓ Be good organizers of meetings and facilitators of group building
 - ✓ Easily assimilate new farming techniques and transfer them to farmers
 - ✓ Undertake new enterprises by themselves and be a model for others
- To work in the private sector, graduates need to be skilled in:
 - ✓ Basic business skills, market analysis, cost-benefit analysis
 - ✓ Accounting and financial management
 - ✓ Planning, management and reporting
 - ✓ Marketing, sales, product promotion
 - ✓ Product processing, product chain management

C. Adding more skills to the curriculum

- Technical farming skills need to be updated as new production systems are introduced to farmers (e.g. rubber planting, cut-and-carry livestock feeding etc.)
- The curriculum is still mainly based on technical skills, what needs to be added most urgently are economic, social and management skills.
- The curriculum needs to be extended to cover things like social skills (how to organize meetings), planning skills (writing proposals, budgets, work plans), English language, computer/internet
- Training should not only cover agricultural production but also processing and quality control.
- As the establishment of industrial plantations is becoming important, students need to learn more about modern land surveying techniques, using maps, GPS, GIS etc.
- The curriculum should include sections on understanding various Government policies and how to apply them, e.g. on environmental guidelines.
- Colleges may need to attract new teachers and set up additional departments to cover these new subject areas.
- With so many new topics to be taught, colleges need to start making clear choices between “compulsory” and “facultative” topics. In future, students could chose between different study packages, perhaps less according to technical criteria (livestock, crops) but more according to future job prospect (extension worker, innovative farmer, trader, manager, etc).
- Teachers who have studied abroad know that agricultural colleges in other countries provide most of their training through practical experience. More time is spent in the field than in the classroom. Teachers can adapt their

curriculum to have more time spent on practical work. Each teacher can identify some practices that students can learn by doing.

D. Using the school farm as a training ground

- For every skill taught teachers should have practical activities where students can learn from doing.
- The school farm should be improved to have a wide range of practical trials and demonstrations where students can learn from experience.
- Teaching needs to be closer to the reality of farming practices, addressing real needs of farmers in the region.
- Students should be encouraged to pursue their favorite farming skills and try to be excellent at them.

E. Make students work with farmers on their farms

- Students need more opportunities to visit farmers, go on study tours to learn about the farming reality outside the schools
- In the present system, students only start doing practical work with farmers in the third year of their study. Colleges should try to change this, let students already work with farmers from year one onwards.

F. Link curriculum building in the colleges with other institutes of learning

- Basic agricultural skills training should already begin at primary and secondary schools, so that students already have basic agricultural skills when they enter the colleges. College teachers should be involved in building a simple outreach training program for primary and secondary schools.
- The National University of Vientiane (Nabong agricultural faculty and Dongdok forestry faculty), the newly established Souphanouvong University in Luang Prabang and the Southern University of Pakse are all engaged in processes of participatory curriculum building. It would be desirable to link these processes through learning networks for teachers.

G. Maintaining and monitoring the quality of skills-based training

- Set up standards for evaluating effectiveness of skills-based training
- Regular reflection and evaluation exercises

3.6 Teacher training

A. Human Resource Development Plans, Personal Development Plans

- The colleges need to have clear strategies and plans for human resource development of teachers and students inside their institution
- As a general principle, teacher training skills should be built according to the 4 targets and 13 instructions of the party.
- Some teachers never received any teacher training for 20 years. Others can study abroad. All teachers should get opportunities to improve themselves.
- Teachers need to be encouraged to study constantly and improve the curriculum constantly as new techniques and practices evolve.
- Every individual teacher is responsible for his or her personal advancement. However the colleges could support teachers to write their own personal development plans, and introduce systems of coaching that make it possible for teachers to monitor their personal progress.

B. Exchange partnerships with Universities in surrounding countries

- All colleges already have developed partnerships with Universities and Colleges in Thailand and Vietnam for teacher training. Several teachers in the colleges of Bolikhamxay, Savannakhet and Champasak follow weekend courses at Thai Universities in Kalasin, Sakhon Nakhon and Ubon. Other teachers are engaged in one and a half year courses at various Thai and Vietnamese Universities. In general they are very positive on the impact of these studies on their teaching ability. We can also see that teachers who return from studies in neighboring countries often set up successful small enterprise activities. The concept of teacher training through partnerships with Universities in neighboring countries is clearly working well and needs to be expanded.

C. Teacher training networks between agricultural colleges in Laos

- As mentioned for curriculum building, teachers would benefit from having more opportunities to exchange experiences more regularly within the country through exchange networks between colleges and other institutes of learning.

3.7 Improved management, self-reliance, entrepreneurial approach

A. Identifying options for income generation within the schools

- Some teachers have already set excellent examples of entrepreneurship. In Luang Prabang, a teacher is raising frogs as a family business, he also teaches students against a small fee how to become frog farmers. In Savannakhet, a

teacher has a small business selling mushroom spores to mushroom cultivators. These examples need to be built upon.

- Colleges could provide special courses on specific topics to various province-level development projects on paid basis. The income could be used to feed into school credit funds, to support salaries of staff and to feed into school maintenance funds.
- Teachers could be hired as short-term consultants, trainers.
- More could be done to look into adding value to agricultural products by processing and quality improvement.

B. Supportive mechanisms to start up small group enterprises by students and teachers

- Colleges should adapt policies to encourage small entrepreneurial groups of teachers and students to start up small business activities for learning by doing and to raise income for teachers, students and for the schools.
- Colleges should raise a small enterprise start-up credit fund, giving revolving loans to enterprise groups (they could ask support from donors)
- Colleges should set up clear rules for using school resources (land, water, electricity, tools) for production groups, with good systems of record keeping (figures on yields, use of labor and other inputs etc)
- Colleges could do more to show themselves as centers of agricultural excellence. They could advertise successful school enterprises (e.g. frog farming in Luang Prabang, mushroom farming in Savannakhet). They could plant fruit trees along the road and sell school products in roadside stalls.
- Colleges should have more activities for marketing and promotion of school products outside the schools (e.g. agricultural products fair).

C. Fair mechanisms of benefit sharing

- Colleges should have clear mechanisms for sharing benefits from selling products between teachers and students.
- Teachers who earn external income as consultants could be asked to contribute 5-20% of their salaries to a school fund aimed at boosting income of temporary staff who often live on very low salaries.

3.8 Upgrading infrastructures

A. Living quarters, water and sanitation, canteen

- Living quarters and toilet/bathing facilities for students need to be upgraded to basic standards (these need to be clarified at national level). Each college can provide more details on construction plans if required.
- All-year round access to clean drinking water supply should be available in sufficient quantities.
- The colleges could set up a school canteen which buys products of the school farm to feed the students.

B. Class rooms, workshops, labs

- To enable teachers and students to develop options for adding value to agricultural products by processing, basic laboratory facilities are needed. They should be aimed at food processing, production of quality seed materials and livestock breeding stock as well as basic farm machinery development.

C. School farms, fishponds

- To make college farms more productive, some basic infrastructural investments will be needed, e.g. in Luang Prabang a system is needed to pump irrigation water from the Mekong river. The college in Savannakhet will be moved to a new location, it will need to develop an entire new campus and college farm.

D. Communications, electricity, internet

- All colleges should be linked to broadband internet as a matter of highest priority. Teachers and students need to learn to use the internet as a source of technical and market information, as well as a source of e-learning and for knowledge networking. Options for making more use of existing mobile phone networks for internet access and for cellular information exchange systems should be explored. All colleges should have access to reliable electricity power supplies.

E. Planning, maintenance and funding mechanisms for infrastructures

- The Nakae Agricultural College in Savannakhet will need to be resettled within the next two years, as its present location falls under the Savannakhet Business Development Zone. A new site will need to be developed, the college will need external support for building new premises and school farm utilities.

- Agricultural colleges should not only look at the Government and foreign aid donors for financial support for to improve their infrastructures. In Bolikhamxay and in Champasak, new class buildings and a meeting hall were recently constructed with financial support from agricultural companies interested in raising the quality of education.

4 Implementation mechanisms

4.1 Organization structure

The Organization and Personnel Department of the Ministry of Agriculture and Forestry will be responsible for supporting agricultural colleges in implementing the reform strategy.

At the national policy level, the Organization and Personnel Department will set up a steering committee to guide and monitor the implementation of the reform strategy. More specifically the Steering Committee will review progress made in the implementation of the strategy and recommend changes in implementation, adjusting targets and strategic focus, as may be needed over time to reach the objective of developing technically skilled human resources for market-oriented agricultural development.

This committee will include representatives from relevant departments within the Ministry (e.g. the National Agriculture and Forestry Extension Service and the National Agriculture and Forestry Research Institute) as well as relevant departments from the Ministry of Education and the Ministry of Industry and Commerce, as well as representatives from private sector organizations, e.g. the National Chamber of Commerce. Directors of the colleges should join Steering Committee meetings as non-voting members. The Steering Committee should meet at least once per year.

At the level of the colleges, at least five new working units need to be established to implement the reform strategy:

6. Outreach Unit (linking to outside organizations and farming practice)
7. Enterprise Development Unit (adding enterprise skills to the curriculum)
8. Communications and Extension Skills Unit (adding extension skills to curriculum)
9. Skills based learning and teacher training Unit (based on existing teacher councils)
10. Resource Management Unit (based on existing administration unit)

The roles and responsibilities for each unit are outlined below.

1 Outreach Unit

- Linking to extension
- Linking to labor market
- Linking to farming practice
- Developing stakeholder alliances (involving stakeholders, public relations)

2 Enterprise Development Unit

- Adding basic enterprise and business skills to curriculum
- Promoting small enterprises among teachers and students
- Developing micro-finance schemes to support enterprise start ups for graduates

3 Communications and Extension Skills Unit

- Adding communication and extension skills to the curriculum
- (facilitating groups, presentation skills, reporting skills, social skills)
- Improving communication and extension skills of teachers and students
- Applying field experiences, case studies in teaching

4 Teacher Training Unit

- Promoting skills-based learning in teaching program
- Reviewing of training programs
- Developing training skills of teachers
- Partnerships with providers of teacher training in the region

5 Management Unit

- Improve management systems for:
 - Participation of students in management
 - Upgrading infrastructures and teaching facilities
- Promote enrollment of disadvantaged groups: ethnic minorities and women
- Improve resource mobilization by:
 - Income generation and benefit sharing from school services
 - Diversified fund raising from various stakeholders

4.2 Indicators of success (2020 targets)

By 2020 the reform strategy should have reached the following indicators of success:

1 Linking education to the extension system and the labor market:

- Agricultural colleges deliver 600-800 skilled graduates per year.
- 30% of students engage in their own business within a year after graduation
- 20% of students find paid employment with companies each year
- 50% students join the extension service each year
- At least 30% of students belong to ethnic minorities, at least 50% of students are women

2 Small and Medium Agro-Enterprise development

- Every college has at least 10 small agro-enterprise activities co-managed by teachers and students, providing income to them and to the college
- Colleges have strong links with local farmers and agro-enterprises, these stakeholders can support half of all final-year students for a 5-months practical internships with them each year
- Colleges organize regular exchange events among farmers and agro-enterprises, they are a focal point for agro-enterprise development in rural areas
- Colleges provide short-term training courses on specialized topics for farmers and small entrepreneurs in the agricultural sector

- Colleges have an “agri-business incubation centre” facilitating access to micro-credit programs and other business development services, to support college graduates and farmers who want to start up new enterprises

3 Skills-based curriculum building (adding extension and business skills)

- Student competencies are linked to labor market needs and verifiable according to agreed standards
- Extension, communication, social, economic, micro-finance and business skills are integrated parts of the curriculum
- Most teaching is provided as “Learning by doing” (practical work is at least 60% of total credits)

4 Teacher training

- All teachers have been trained in competency-based teaching methods
- Every teacher has applied competency-based teaching methods to his/her teaching subjects
- At least once per year all teachers participate in a training workshop aimed at evaluating and improving teachers skills and standards
- There are annual training plans, providing opportunities for all staff
- There are partnerships with international teacher training programs

5 Improved management, self reliance, accountability

- Colleges have clear mechanisms for involving stakeholders in the management of the institution (extension agencies, private sector, etc.)
- Colleges have clear mechanisms for participation of students and staff in the management of the institution
- Colleges have a clear organizational structure, including dedicated units for outreach, enterprise development, extension skills training, resource management etc.
- Colleges have clear and transparent mechanisms for monitoring and evaluating its performance
- Colleges have transparent incentive mechanisms to reward good performances of students and staff
- Colleges have transparent mechanisms for sharing benefits from income generated by teachers and students

6 Upgrade infrastructures

- Basic infrastructures are in place to enable schools to maintain school farms, e.g. irrigation water supply systems, suitable farm land, basic farm machinery
- Basic teaching facilities are in place to develop options for adding value to agricultural products by processing. E.g. labs, library, production of good quality seed materials and livestock breeds etc.

- Every college has a school canteen which uses products from the school farm and provides clean, healthy and affordable food to students and staff
- Living quarters and toilet/bathing facilities for students are up to national standards
- Colleges have developed new field sites where needed. This may be the case when the present site gets a new planning destination (e.g. Nakae in Savannakhet and Pakse college in Champasak) or when there is a need to establish outreach campuses in remote provinces.
- The funding for infrastructural investments is not only obtained from Government and donors but also from other sources, e.g. private sector, civil society (e.g. temple funds).

4.3 Time schedule and targets

The time schedule for implementing the reform strategy should follow the Government five year planning cycle. Three phases are foreseen:

- 2008-2010 pilot phase: pilot new systems in 2 colleges, outreach
- 2010-2015 expansion phase: cover all colleges, one third of needs
- 2015-2020 consolidation phase: cover all colleges, all needs

Key targets or indicators for achievement are described for each phase below.

2008-2010: pilot phase

In the pilot phase, the goal is to develop and test six key implementation mechanisms for reforming technical agricultural education:

- 1 Reform organizational structure to include new units
- 2 Develop appropriate management systems
- 3 Build capacity of teachers for new tasks in new structure
- 4 Improve teaching methods and curriculum
- 5 Develop outreach and coordination mechanisms
- 6 Improve Infrastructures

The targets for the pilot phase are:

1. to reach 10% of teachers involved in new units, new teacher methods etc.
2. each college has placed students in 2 district information centers and 4 village clusters
3. to create 20 student placements with private sector partners per college
4. to develop 10 small enterprises linked to the colleges per college
5. to organize at least two stakeholder exchange events per college per year

2011-2015: expansion phase

The goal of the expansion phase is to cover all schools, one third of all needs. Typical targets include:

1. to reach 50% of teachers involved in setting up new units, teacher training etc.
2. to place students in 15 district information centers, 70 village clusters per college
3. to create 100 student placements with private sector partners per college
4. to develop 50 small enterprises linked to the colleges per college

5. to organize at least three stakeholder exchange events per college per year

2016-2020 consolidation phase:

The aim of the consolidation phase is to cover all needs in all schools

1. to reach 100% of teachers involved in setting up new units, teacher training etc.
2. to place students in 35 district information centers, 300 village clusters per college
3. to create 200 student placements with private sector partners per college
4. to develop 100 small enterprises linked to the colleges per college
5. to organize at least three stakeholder exchange events per college per year

4.4 Resource Mobilization and support needs

At present, the main sources of income for agricultural colleges are the annual Government Budget and Student Fees. Together they make up 80-90% of all income. Minor contributions are also obtained from various donor-funded projects, from private sector donations and from selling products and services.

The main expenditures are salaries (60-70%), transport and travel costs, other running costs. Minor expenditures are teaching materials and maintenance costs.

Table 3 gives an overview of the main sources of income and expenditures of a typical agricultural college.

Table 3: Main sources of income and expenditures of a typical large agricultural college with 600 students in 2006 (source: estimates of College Directors).

Expenditures	Income Sources						Share
	Government	Student fees	Donors	Private Sector	Selling products	Overall	
Salaries	\$35,000	\$30,000			\$2,000	\$67,000	67%
Transport and travel	\$5,000		\$5,000			\$10,000	10%
Other running costs	\$5,000	\$5,000				\$10,000	10%
Teaching materials		\$5,000		\$0		\$5,000	5%
Maintenance			\$0	\$3,000		\$3,000	2%
Infrastructures				\$5,000		\$5,000	0%
Overall	\$45,000	\$40,000	\$5,000	\$8,000	\$2,000	\$100,000	100%
Share	45%	40%	10%	8%	2%	100%	

In short, the cost per student is about \$160 per year. Of these, \$60 are paid by the parents in school fees, some \$70 is subsidized by the Government, the remaining \$30 is derived from other sources. Only \$2.6 is derived per student from selling goods and services.

At present the annual budget of the colleges covers basic running costs only. It does not allow for any substantial improvements in infrastructures or teaching materials. The staff salaries cover perhaps one fifth to one tenth of the average cost of living, staff have difficulties to make ends meet. Students live on very low budgets, not allowing them to eat regular meals of good quality, dress properly or buy learning materials. How could the resource mobilization be improved?

Government contribution and Student fees may be expected to grow at the same rate as the overall economic growth rate of the country. As colleges develop stronger linkages to the private sector, private sector contributions may also be expected to grow at a modest annual rate, say 5% per year.

The ability of colleges to earn income from selling products and services may be expected to grow considerably if school farms and entrepreneurial skills of teachers and students are improved. Based on the experiences from vocational training centers, it would not be unreasonable to expect this income to be raised from 2% at present to 11% of the total income of the colleges in 2020 (annual growth rate of 20%).

Table 4 below gives a rough estimate of the expected development of resource mobilization of the technical agricultural colleges from 2008-2020.

Table 4: Rough projections of resource mobilization of an agricultural college with 600 students from 2007-2020.

Income source	2007	Share 2007	Growth %	2010	2015	2020	Share 2020
Government	\$45,000	50%	5%	\$52,093	\$66,485	\$84,854	42%
Student fees	\$35,000	39%	5%	\$40,517	\$51,711	\$65,998	33%
Private Sector	\$8,000	9%	10%	\$10,648	\$17,149	\$27,618	14%
Income from selling	\$2,000	2%	20%	\$3,456	\$17,149	\$21,399	11%
total	\$90,000	100%		\$106,714	\$152,494	\$199,869	222%

The main external support needs are in technical assistance for increasing the quality of teaching by capacity building of staff and upgrading infrastructures. Micro-enterprise development of graduates might be fostered by linking colleges to credit schemes and business incubation services. Foreign donor inputs may be looked at as a potential source of funding for these types of expenditures. Investment costs may initially be high but can be expected to decrease over time, as colleges become more self-sufficient. The return over such investment would be an accelerated growth of the agricultural sector. Increased (self-) employment of college graduates in the agricultural sector could also be used as an indicator of success.

A rough estimate of the costing of external support needs is given in table 5.

Table 5: Indicative cost estimates for various external support needs

Support need	Cost estimate	Timing	Remarks	
A: Improving the quality of teaching	\$ 2,500,000	at least 4 years	<i>This kind of support could be shared between the colleges, e.g. through outreach teacher training programs</i>	
1) Technical Assistance	\$ 1,800,000			
1.1 International TA	\$ 900,000			
1.2 Regional and Local TA	\$ 800,000			
1.3 Monitoring, evaluation, auditing	\$ 100,000			
2) Operating costs	\$ 500,000			
2.1 Local staff	\$ 100,000			
2.2 Transport, communication	\$ 300,000			
2.3 Consumables	\$ 200,000			
3) Procurement (e.g. vehicles)	\$ 200,000			
B: Infrastructures	\$ 1,180,000	1-2 years	<i>per college</i>	
1) Water Supply, bathrooms, toilets	\$ 300,000			highest priority
2) Dormitories	\$ 480,000			highest priority
3) More classrooms	\$ 180,000			
3) School farm infrastructures	\$ 50,000			
4) Labs, practical teaching facilities	\$ 100,000			
6) Administrative offices	\$ 30,000			
7) Staff quarters	\$ 40,000			
C: Equipment	\$ 360,000	1-2 years	<i>per college</i>	
Broadband connection, computers	\$ 100,000			
Tractors, other farm equipment	\$ 100,000			
Trucks	\$ 70,000			
Buses	\$ 10,000			
Cars	\$ 70,000			
Motorbikes	\$ 10,000			
D: Other support needs	\$ 500,000	at least 4 years	<i>per college</i>	
Credit scheme for small business start ups	\$ 500,000			