

Overview of Agricultural Extension System in Cambodia¹

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1. Introduction

Department of Agricultural Extension (DAE) of Ministry of Agriculture, Forestry and Fisheries (MAFF) was established in 1995 with the government mandate of developing a demand-driven, district-implemented, provincially-managed and centrally-overseen extension system appropriate to the needs of Cambodia.

The mission is to promote the quantity (yield) and quality of agricultural productions of Cambodia in a sustainable way by providing effective leadership, support and *improving human capacity* for a decentralized provincial based agricultural extension service managed by provincial department of agriculture and implemented through District Agriculture Offices (DAOs) and field extension agents.

The DAE is a leading government organization that contributes significantly toward the improvement of food security, rural income and agricultural production in Cambodia. Through its stewardship, national and provincial extension programs are coordinated, supported and managed by central services of DAE, Offices of Agricultural Extension (OAEs). So comprehensive and integrated extension services are effectively implemented by district and community-based extension workers.

Agricultural Extension System should consist in an effective management/extension system with infrastructures and capable human resources for disseminating technology and providing support to farming family and farming community country-wide in order to increase quantity and improve quality of market-oriented agricultural production and processing, so as to contribute to food security and income generation in environmentally sustainable and gender-responsive manner.

To achieve this general goal, agricultural extension has the following specific objectives:

1. Develop extension/facility and strengthen/expand extension systems by doing regular improvement on organization structure, role, responsibility and increasing cooperation and collaboration with relevant stakeholders to ensure sustainable extension operation;
2. Develop management system in response to development needs by improving planning, strategy, monitoring and evaluation systems and decision making;
3. Develop capacity of staff as well as capacity of partners (private sectors/NGOs) at all levels within extension systems to manage extension programs/activities and to provide support to farmers and farming community in agricultural production, agri-business and processing to respond to market needs and to increase rural farm income;
4. Develop and strengthen effectiveness and efficiency of mass media and agricultural technology broadcasting systems to support technology dissemination to farmers and farmers' communities;
5. Develop provincial and district [management] information systems to provide support and facilitate management and implementation of extension programs and activities; and
6. Support and encourage the development of farmer organizations and agricultural communities.

2. Agricultural Extension review

2.1 Extension Situation

The extension service program existed in Cambodia before 1970s with aim of transfer improved technology to farmers in rural areas including rice, vegetables and livestock. Several techniques and methods to transfer

¹ Edited version of document available on: <http://daecambodia.org/index.php/en/>.

and disseminate technology and information to farmers were used by technical staff and extension officers and by mass media communication such Radio and TV. Extension system was stopped from 1975 to 1979 during Khmer Rouge regime.

After 1979, extension services were carried out by technical departments of the Ministry of Agriculture through target areas of research stations and agricultural development centers. In 1980 the Ministry created a committee for development extension materials such as scripts for radio and TV programs, booklets and posters for provincial and district agriculture office to disseminate to farmers.

In 1988, 'Australian Catholic Relief' (ACR) started extension work and in 1989 it sent a group of delegation from MAFF to visit agricultural extension program in Australia. ACR also trained 17 government officers from MAFF in extension and trained extension team. It also helped extension officers to work in 12 provinces (Kandal, Takeo, Prey Veng, Svay Rieng, Pursat, Kampong Cham, Siem Reap, Kampong Thom, Banteay Mean Chey, Kampong Chang and Kampong Speu). The extension activities also were carried by local and international NGOs through community development activities such as PADEK ('Partnership for Development in Kampuchea'), CIDSE (*Coopération Internationale pour le Développement et la Solidarité*, now 'Development and Partnership in Action'/DPA), Church World Service (CWS), World Vision and CWS/LWS (Church World Service/Lutheran World Service).

MAFF created the Department of Agricultural Extension (formerly called the Department of Techniques, Economics and Extension) through Sub-degree No. 43 signed on May 17th, 1995 to implement agricultural extension activities. In 2000 Department name was changed to Department of Agricultural Extension (DAE) through Sub-degree No. 17 signed on 7th April 7th, 2000 as well as Sub-degree 188 signed on November 4th, 2008. DAE has mandate to lead and coordinate extension and technology transfer activities in Cambodia by collaboration with technical departments and institutions, provincial department of agriculture, service providers and field agents (e.g. NGOs) and local authority with the following activities:

- (i) facilitate and organize extension and technical training,
- (ii) farming system and technology development,
- (iii) farmer organization development,
- (iv) mass media and broadcasting of agricultural technology and,
- (v) assist and promote household food security and income generation.

3. Agricultural Extension systems

The four principal functions of extension will be considered:

1. Participatory assessment or Diagnosis of farmer socio-economic and agro-ecological condition of their constraints, opportunities and the needs.
2. Technology or message transfer through trainings, participatory technology development, mass media, awareness creation, skill development and education.
3. Provide feedback to researchers, scientists and policy makers on farmer reactions to new technology to refine future research agenda.
4. Development of linkages with researchers, policy makers, NGOs, service providers, farmer's organizations, credits and micro-finance, etc.

The Extension services also play roles transferring of knowledge, information and technology in four categories:

- Cultural and production techniques, such as cultivation and husbandry techniques (timing, planning and harvesting, use of inputs, crop management, pest management, soil fertility management, water management and control, animal production and health, post-harvest and farm-building design.
- Farm management, such as record-keeping, financial and organization management, legal/regulation issues, and business plan.
- Market and processing information, such as prices and market options and information, post-harvest and storage procedures, packaging techniques, transport and quality and purity standards.
- Community development, such as farmer organizations, agricultural community development and farmer user community/groups...etc.

Department of Agricultural Extension (DAE)

At national level, the Department of Agricultural Extension (under DGA, MAFF) has responsibility for policy guidance and development, program development, quality assurances and control (M&E) of program implementation and provision of technical support to provinces and districts through training and mass media production. DAE has the mandate of managing extension program, and coordinating and facilitating agricultural extension in Cambodia. Technical departments and agencies such as technical department within Directorate Department of Agriculture (formerly Department of Agronomy and Agricultural Land Improvement/DAALI), Cambodian Agricultural Research and Development Institute (CARDI), Departments of Animal Health and Production (DAHP), Fishery Administration (FiA), Forestry Administration (replacing the former Department of Forestry and Wildlife), Provincial Departments of Agriculture, NGOs, and other field extension agents also have extension services.

Provincial Departments of Agriculture (PDAs)

At provincial level, the Provincial Office of Agricultural Extension of PDA provides local level support for district extension staff. PDA coordinates and manages delivery of extension systems to ensure all extension workers and extension services providers are effective and efficiency implemented. PDA has responsibility duties to provide provincial extension planning guidelines and facilitate technical support and advise, training and media services to DAO, which undertake agricultural extension and technology transfer programs with farmers, farmer groups and other communities (value chain actors) in the district or village level.

District Agricultural Offices (DAOs)

Under the MAFF guidelines for agricultural extension in Cambodia, the staff of DAO is responsible for technology transfer programs down into communes and villages and for coordination and integration of agricultural development planning for communes and village levels. The district agricultural teams are managed by and be responsible to the District Agriculture Chiefs.

Within national framework of agricultural extension, PDA and DAO have established commune extension workers and village extension workers with voluntary based to assist DAO staff in extension activities and facilitate and coordinate extension and technology transfer from others extension service providers in the communes and villages.

Subject Matter Specialist (SMS) Departments/institutions

The provincial and district extension workers receive technical training from Subject Matter Specialists who are located at each provincial office or national department level. SMS departments/institutes include technical department with in MAFF, research institutes like CARDI, and Universities and colleges like Royal University of Agriculture (RUA) are responsible for production, technology research and development, regulation support, human resources development and technical backstopping to provincial and district extension.

Field Extension agents

Field extension agents are from NGOs and Projects (for instance, 'Agricultural Quality Improvement Project'/AQIP and previously, 'Cambodia-Australia Agricultural Extension Project'/CAAEP, both funded by Australian Agency for International Development, AusAID). It also includes private extension service providers are also undertaken extension and technology transfer. With these regards, some private firms are already involved in agricultural extension through contract farming such as British-American Tobacco Cambodia (BAT), Angkor Kasekam Rongroeng and Bandanh Kaksekar. Some NGOs – national and international - and other field extension agents are also taken extension services in districts, communes and villages such as CEDAC (*Centre d'Etudes sur le Développement Agricole du Cambodge*), CelAgrid (Centre for Livestock and Agriculture Development), CARE, etc.

4. Agricultural Extension activity

DAE adopts and uses the participatory training and extension approach and methodology for deliver and transfer agricultural knowledge, information and technology with following activities (i) training agricultural technology and extension methodology, (ii) farming system development (participatory assess and planning, and technology development, (iii) farmer organization development and (iv) extension material development

and dissemination and (v) household food security.

The Extension formulates the following priorities and programs:

1. Participatory Assessment and Planning:

(i) Agro-Ecosystems Analysis (AEA): A participatory needs assessment methodology to identify priority farmer problems and development opportunities at the commune level.

(ii) Commune Agricultural Plans (CAP): An integrated planning process to facilitate the delivery of Technology Implementation Procedures (TIPs) to farmers through the national Decentralisation and Deconcentration (D&D) Planning System and

(iii) Farming Systems Management Information System (FSMIS): A national database for the storage, management and dissemination of AEA and extension technical packages (TIPs) data to key stakeholders in Cambodia.

2. Participatory Technology Development: A tool to develop technology packages needed by farmers such as TIPs: improved agricultural technologies and supporting materials to solve the major problems identified by Commune AEAAs.

3. Participatory Training and Extension: An approach to deliver and transfer technologies and information by building the capacity of extension workers and farmers through extension staff trainings (extension methodology and technical training), farmer field school (discovery based learning, experiential and participatory based learning).

4. Extension materials development and dissemination: A mass media and broadcasting of agricultural technology to assist farmers in increasing quantity and quality of agricultural products through improving awareness and access to knowledge, information and technology of farmers.

5. Farmer Organisation Development: An activity enhancing and empowering local community for production, self-help grouping for production and creating market oriented agricultural products such as agricultural production and input supply groups as well as agricultural cooperatives.

6. Household food security: An activity focusing on transfer technology for people living under poverty line (35% of population according to Cambodia Socio-Economic Survey/CSES, National Institute of Statistics/NIS, 2005) and under food poverty line (20%) to improve household food security and income generation through increasing agricultural productivity and diversification in crops, livestock, fisheries and water controls, improving nutrition and health awareness, empowering of local farmer community (saving groups), and promoting community micro-projects.

5. Agricultural extension tools, methodology

Agricultural extension adopts and uses the participatory training and extension approach and methodology for deliver and transfer agricultural knowledge, information and technology.

3.1. Participatory methods

a) Participatory Assessment and Planning (PAP)

The Agro-Ecosystem Analysis (AEA) is a participatory analysis tool to identify and prioritize agricultural development needs at commune level, and irrigation system design and irrigated agricultural development. CAEA is currently being also modified to a better address natural resources and environmental management issues and develop integrated land management strategies for each agro-ecological zone in the commune and irrigation scheme.

The CAEA results have integrated in Commune Planning Development (CPD) and the D&D planning process, CAEAAs identify and prioritize important problems and opportunities for each agro-ecosystem, and solution and technology for intervention (Annex 2).

As Commune AEA coverage expanded, a means of storing and managing the growing amount of data generated became necessary. A Farming Systems Management Information System (FSMIS) was therefore developed to support the management and transfer of this information among agricultural development stakeholders at the national and provincial levels.

FSMIS software has been installed on the computers of Provincial Offices of Agricultural Extension (OAE) in 17 provinces, and AEA data are entered into the system by OAE staff. The data are used by the province

for management and planning purposes, and are also transferred by CD-ROM to DAE's national FSMIS database in Phnom Penh.

The FSMIS is being used on an ongoing basis by **Research institutes** to match farmer problems with the research technologies available for their solution. By this means, CARDI Research Offices have been able to identify technologies with high farmer demand and are currently preparing extension materials for these technologies in the form of TIPs for use by DAE and other agencies.

The FSMIS is also used by **research institutes** to identify common farmer problems for which no practical solutions currently exist. This helps research institutes identify new research opportunities and to adjust their research portfolio in line with farmer needs (annex 3).

b) Participatory Technology Development (PTD)

A tool and kit for transfer knowledge, information and technology to farmers and agri-business actors. This tool has been by extension, researchers and farmers through farmer field schools, field demonstrations, farmer-led research, field days and exchange visits.

c) Participatory Training and Extension (PTE)

A methodology to transfer and deliver technology to farmers and agri-business actors through discovery based learning, experiential based-learning and participatory learning of farmers, extension officers and researchers. Training of trainers (ToT), farmers field schools (FFS), field demonstrations and field days are common tools for extension.

3.2. Agricultural extension kits

Extension materials development and dissemination develops from research results and outcomes for transferring and dissemination to farmers and agri-business actors. Extension materials consist of Technology Implementation Procedures (TIPs), technical booklets and leaflets, 'Ag.notes', agricultural journals and magazines, posters and mass media broadcasting such as video spots, radio spots and TV debates and fora on agricultural technology, etc.

Technology Implementation Procedures (TIPs) describe improved agricultural technologies that have been developed to solve the major farmer problems identified by Commune AEA. They are intended for use by extension workers, NGOs and others working in agricultural development at the field level. TIPs can be defined as 'The entire package of information, procedures, methods and materials necessary for an extension worker to implement the improved technology.'

3.3. Farmer organization development

Farmer organizations and agricultural cooperative are target groups and clients of agricultural extension and researchers for sold services and transfer technology. DAE has been facilitated and support 13,037 farmers' organizations and 81 agricultural cooperatives in Cambodia.

3.4. Household food security

DAE in collaboration with field agents carry out the household food security and poverty reduction program for improving family food production and income through increasing agricultural productivity and diversification such as crops (especially rice), livestock, fisheries and water controls, improving nutrition and health awareness, empowering of local farmer community (saving groups), and promoting community micro-projects. This program is aimed to improve food security and poverty reduction for rural poor farmers, thus significantly contribute towards fulfillment of Cambodian Millennium Development (MDG) No. 1, and it targets "To halve, between 1993 and 2015, the proportion of people whose consumption is less than the national poverty line".

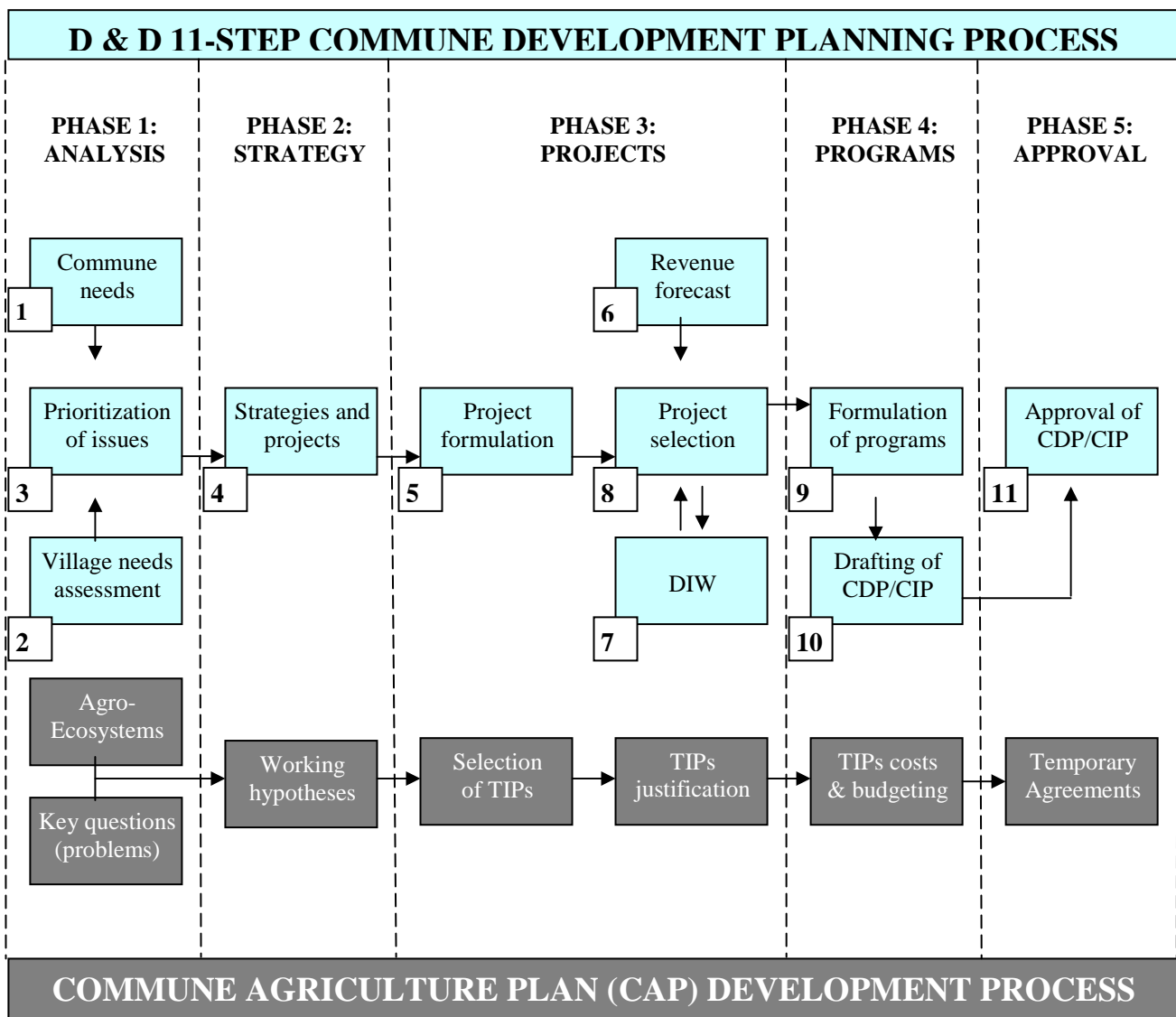
The poor and vulnerable people need extension services and technology support for improving food and income generation through intensification and diversification of crops, livestock, water supply, aquaculture and agro-forestry. The poor and vulnerable groups are generally poor and limited access of extension services, technology and resources (land, credit, inputs, etc.).

Annex 1:

D&D (Decentralisation and Deconcentration) Local Planning Process and CAP (Commune Agriculture Plan) Development

Abbreviations:

- CAP : Commune Agriculture Plan
- CDP : Commune Development Plan
- CIP : Commune Investment Plan
- D&D : Decentralisation and Deconcentration
- DIW : District Integration Workshop
- TIPs : Technology Implementation Procedures



Annex 2:

TIPs (Technology Implementation Procedures) Development Status

TIP Subject Area		Topics Selected	Subject Matter Specialist (SMS)	Completed	Required
Rice Production	1	Soil identification and fertility management	CARDI	✓	
	2	Lowland rice variety selection	CARDI	✓	
	3	Rodent control	CARDI	✓	
	4	Land leveling	CARDI	✓	
	5	Seed storage protection	AQIP	✓	
	6	Threshing	AQIP	✓	
	7	Drying	AQIP	✓	
	8	Wet season aromatic rice	CARDI	✓	
	9	Recession aromatic rice	CARDI	✓	
	10	Rice crop diversification	ACIAR	✓	
	11	Pure line selection of popular traditional varieties	AQIP	✓	
Home Garden	1	Dry season vegetables	DAALI	✓	
	2	Wet season vegetables	DAALI	✓	
	3	Drip irrigation	IDE		✓
	4	Heat tolerant tomato varieties	CARDI		✓
	5	Biological control of Diamond Back Moth (DBM)	DAALI		✓
	6	Safe pesticide use	CARDI		✓
	7	Vegetable post harvest management	ACIAR		✓
	8	Compost preparation	Individual	✓	
Fruit/Trees	1	Cashew production	Individual	✓	
	2	Small-scale cashew processing	RUA	✓	
	3	Banana production	CARDI	✓	
	4	Water melon production	CARDI	✓	
	5	Coconut <i>Brontispa</i> control	DAE	✓	
Livestock	14	Single pig fattening	Individual	✓	
	15	Sow management	Individual	✓	
	16	Intensive pig management	Individual	✓	
	17	Commune/Village pig vaccination program	Individual	✓	
	18	Cattle fattening	Individual	✓	
	19	Haemorrhagic septicemia vaccination	Individual	✓	
	20	Foot and mouth disease management	Individual	✓	
	21	<i>Leucaena</i> management	DAE	✓	
	22	Forage legumes and grasses	DAE	✓	
	23	Village hen and chick management	CELAGRID	✓	
	24	Chicken growers and layers	CELAGRID	✓	
25	Newcastle disease control	DAHP	✓		
26	Intensive duck management	DAHP	✓		
Fish Culture	27	Small pond production	DOF	✓	
	28	Hatchery construction and management	DOF	✓	
	29	Paddy fish management	DOF	✓	
	30	Pagoda fish management	CRS	✓	
	31	Tilapia production	DOF	✓	

Abbreviations: see text

Annex 3:

Flow chart showing the National Agricultural Extension System and the relationships amongst its key components

