

Agro-ecological zones and main farming systems in the project area

The target districts of the project encompass the whole range of agro-ecological zones present in inland Cambodia. This extends from heavily flooded areas near Tonle Sap Lake (South of Soutr Nikom and Chi Kreaeng in Siem Reap, East of Moung Ruessei in Battambang) where floating, deep water and recession rice is grown, and fishing a main activity for farmers, to forested upland zones in the periphery of the project area (e.g. Rotonak Mondol and Sampov Lun in Battambang) where farmers mainly live from non-rice crops (maize, cassava), cattle grazing and agro-forestry activities. The main agro-ecological zone lays between these two extremes, largely dominated by lowland rice, the main staple crop in Cambodia. This zone actually covers a range of different agro-ecological situations, depending on local topography (relative importance of submerged paddy fields and elevated chamcars), bimodal rain patterns (longer short drought in the north of Battambang), local water resources (reservoirs, canals and rivers for irrigation) and proximity to Tonle Sap Lake, which greatly conditions the importance of annual floods and related selection of rice varieties by farmers (shallow, medium or deep water).

Four main types of farming system have been identified in the project area based on the available water resources and main crops grown: **(1) rainfed lowland rice**, the most widely spread in all target districts and in Cambodia at large; **(2) irrigated rice**, linked to the availability of irrigation systems (currently 8% of the cropped area); **(3) upland crops**, only present in few districts (especially in Battambang), and **(4) market vegetables**, which is rather a specialisation and not a typical farming system.

If farming systems based on rainfed lowland rice obviously deserve the prime project attention, they are severely constrained by both rain patterns (total rainfall, distribution, short droughts) and flood patterns (time/duration, extent/water depth) which may greatly vary between years and locations, and strongly limit their potentials for possible improvement, in addition to other factors (e.g. soil fertility). The availability of irrigation may alleviate this problem at different degrees depending on the capacity of irrigation systems. In many cases, especially concerning small schemes, the main role of irrigation is actually to secure the production of rainfed rice/crops by covering their water needs during the short droughts occurring in rain season, and/or at critical phases of crop cycles. Dry season cropping (rice and other field crops) is generally linked to the presence of medium to large scale irrigation schemes, supplied by large reservoirs or other water sources. Such schemes have proved very difficult to manage under the local context (e.g. BAPEP in Battambang, which is experiencing a low recovery of water dues despite important increases in rice yields)

Upland farming systems, though representing a small part of the project area, are important for several reasons: upland farmers are not rice-oriented and already grow a small range of field crops (including feed grains/fodders) which will facilitate further diversification towards new species/varieties; there are large uncultivated land areas available for both cattle grazing and expansion of cropped areas; farm-scale / small-scale irrigation is possible in many locations using small streams and hillside dams as water sources.

The production of vegetables, fruits, mushrooms and other high-value crops on a commercial basis is a specialisation in line with the growing demand of urban areas and tourist sector for such quality products all year round. These markets are presently served in a large extent by imports from Vietnam and Thailand especially during the rain season, due to the lack of technical, production management and marketing skills of local farmers and weak market knowledge and organisation. All these constraints can be alleviated through adapted training and support to interested and motivated farmers as successfully demonstrated by the EU-funded PADSA and PADAP projects in Banteay Meanchey, Battambang and Siem Reap.

**Insert here the
“Map of farming systems in the ECOSORN project area”,**

which is already available in the website under Statistics

The IRDM approach

Poor farmers in the Northwest provinces are constrained by numerous factors (both internal and external) preventing them to reach self-sufficiency in food production. Besides, problems of access to land, water and markets, these factors especially include lack of agronomic, crop production and animal production knowledge and skills, insufficient extension support, poor quality seeds and planting material, and lack of funds to purchase good quality inputs in sufficient quantity, due to heavy indebtedness with local money lenders. All these factors being interrelated, they have to be tackled all together at once (integrated support) to give farmers the chance to jump one step above the poverty line. As it is unrealistic to provide such a multiple support to a very large number of farmers, and not all farmers are able to take up the challenge to improve their farm in all aspects, the strategy is to concentrate the efforts on a limited number of selected, motivated Pilot Farmers who will be accompanied and supported in their endeavour for a long period until their farm and farming practices have been improved in a sustainable manner. Their farms can then be used as live demonstrations to incite other farmers to replicate the improvement process while the Pilot Farmers can also act as Trainers for their peers.

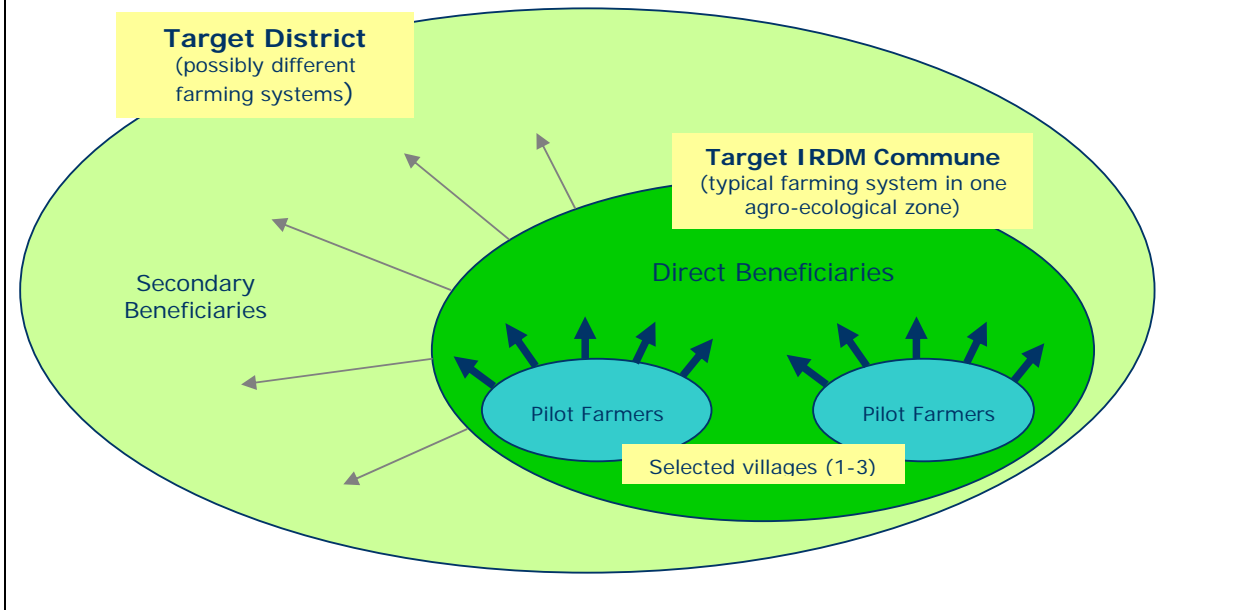
Pilot Farmers will benefit from the financial support of the project for the procurement of extra inputs, allowing them to boost yields for the first year, and to secure funds for purchasing the same inputs for the following season. As this financial support cannot be extended to other farmers, the availability of credit at reasonable cost for input purchase will be a key factor for the rapid adoption of improved technologies / practices by these other farmers.

Pilot Farmers need to be closely coached, trained and supported by the project, implying that they should be organized in Groups, the Pilot Farmers Groups (PFGs), supported by Agricultural Extension Workers (AEWs). One AEW should be attached to each PFG all along the support period to the group (3 years). The Pilot Farmers of a Group should preferably belong to the same village in order to increase the group cohesion, avoid tensions between farmers from different villages, and facilitate the work of AEWs and other supports. PFGs of 20 farmers should be an ideal size to allow AEWs to visit each farm / farmer once per week in average, in addition to their other duties with Pilot Farmers and office work.

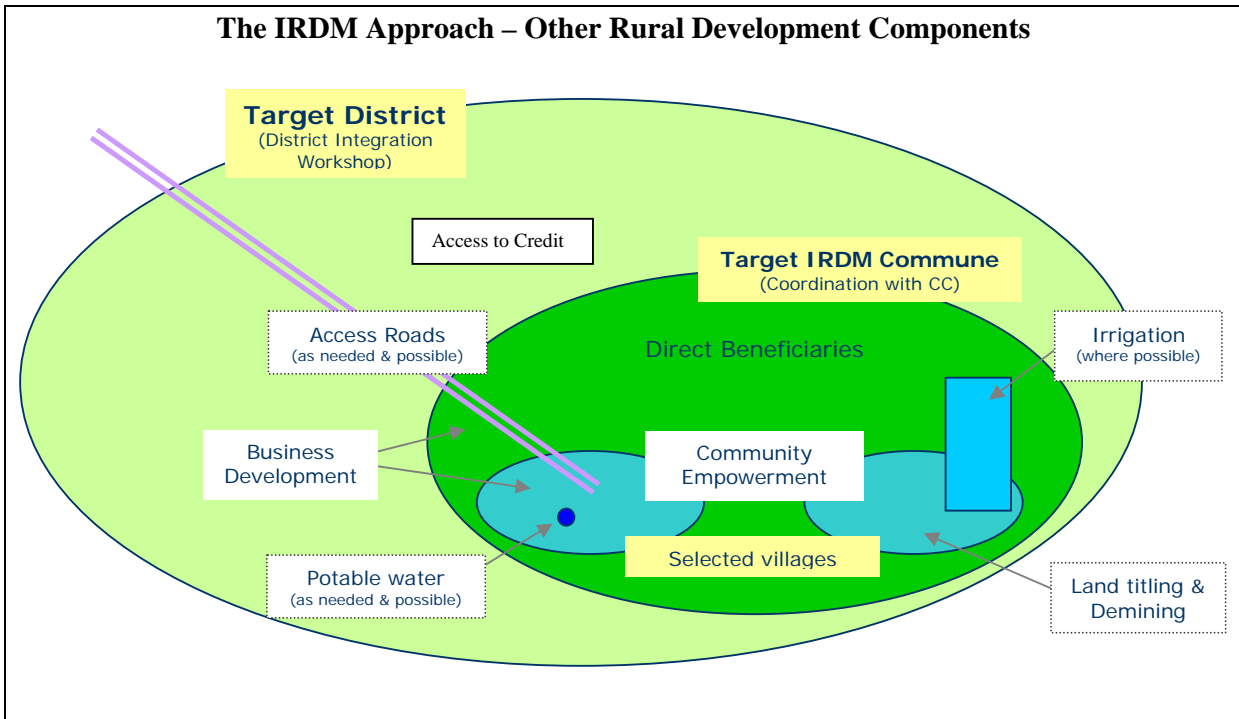
In addition to the 2 levels of integration mentioned previously (farming system approach, integrated support to Pilot Farmers), a third dimension of integration will provide the Rural Development element to these modules through a comprehensive range of other supports in target villages / communes / districts, including agriculture inputs (rice seed associations, fish hatcheries/nurseries, fruit nurseries, etc), irrigation schemes (rehabilitation and creation), community development, rural infrastructure (access roads, water supply, etc), economic/ business development and access to land (land titling and mine risk reduction) as illustrated in the 2 graphs below.

The PFGs and their farms are at the heart of the Integrated Rural Development Modules (IRDMs) which the project intends to develop in the target villages as initial nuclei for development. Hence, there will be 4 types of IRDM based on the 4 farming systems described above.

The IRDM Approach – Agriculture, Livestock & Fisheries Production / Extension



The IRDM Approach – Other Rural Development Components



Development of IRDMs

The actual size of poor farmers' land in the project area ranges between 0.5 and 2ha, not considering the poorest of them owning less than 0.5ha, a size which is not sufficient to produce enough food to feed a family; except if used to grow high value crops (e.g. vegetables and fruits). Using an average land size of 1ha, a PFG cultivates around 20ha, therefore much less than what was initially planned. This element notably reduces the establishment cost of the IRDMs (less initial production inputs required) and allows considering a greater number of Groups, as compared to the initial plan (40 groups) and also more support to Direct Beneficiaries in target communes (training, field days), Secondary Beneficiaries outside target communes (Demonstrations, field days), and to Target villages/communes taken as a whole (e.g. village fruit nurseries, animal vaccination campaigns). An objective of 90 Modules / Target Villages has therefore been set, completed by a stronger mechanism of extension towards both Direct and Secondary Beneficiaries. The proposed IRDM development schedule is shown in the two graphs below.

	Year 1	Year 2	Year 3
Pilot farms	Improvement	Consolidation	Cooperation
Inputs	<ul style="list-style-type: none"> ◆ Close coaching ◆ Technical training ◆ Production inputs 	<ul style="list-style-type: none"> ◆ Close coaching ◆ Additional training 	<ul style="list-style-type: none"> ◆ Close coaching ◆ Group Devt training ◆ Business planning
Results	<ul style="list-style-type: none"> ◆ Production increased ◆ PF HH food secured 	<ul style="list-style-type: none"> ◆ Production increased and diversified 	<ul style="list-style-type: none"> ◆ Production stabilised ◆ Group projects
Direct Benef.	Sensitisation	Initial adoption	Wider adoption
Inputs	<ul style="list-style-type: none"> ◆ Field days at PF plots ◆ Training of selected DBs ◆ Public campaigns 	<ul style="list-style-type: none"> ◆ Training by PFs ◆ Field days at PF plots ◆ Adapted credit 	<ul style="list-style-type: none"> ◆ Training by PFs ◆ Field days at PF plots ◆ Adapted credit
IT Adoption rates	Low	Increasing	Sustained

	2006	2007	2008	2009	2010
First batch (36 modules)					
Second batch (54 modules)					