KICK-OFF REPORT – FINAL VERSION

Study on services to irrigated agriculture – Launching Report CAMBODIA

Chantier services aux irrigants – Rapport de démarrage CAMBODGE

Deliverable L0A

Jean-Marie BRUN

Sophoan MIN

With contributions from Sylvain CEDAT et Christophe RIGOURD

April 2021

- Iram Paris (siège social)
  49, rue de la Glacière 75013 Paris France
  Tél. : 33 (0)1 44 08 67 67 • Fax : 33 (0)1 43 31 66 31
  iram@iram-fr.org • www.iram-fr.org

- Iram Montpellier
  Parc scientifique Agropolis Bâtiment 3
  34980 Montferrier sur Lez France
  Tél. : 33 (0)4 99 23 24 67 • Fax : 33 (0)4 99 23 24 68

- ARTE-FACT Development & Agri-Food Consulting Co., Ltd.,
  #405B Street 61 BT, Boeng Tompon, Phnom Penh – Cambodge
  Tél: +855 (0)12 807 817
  jm.brun@artefactdev.com

- BICHE SARL., Bureau d'Ingénieurs Conseils en Hydraulique et Environnement,
  9 rue Ahmed Rami 1002 Tunis, Belvédère, Tunisie
  Tél: +216 71285946
  biche@gnet.tn

Content

Acronyms

ADB	Asian Development Bank
AFD	*Agence Française de Développement* / French Agency for Development
ASIrri	*Projet d'Appui aux Irrigants et aux Services aux Irrigants*
AVSF	*Agronomes et Vétérinaires Sans Frontières*
CAVAC	Cambodia Agriculture Value Chain Program (AusAID)
CARDI	Cambodian Agriculture Research and Development Institute
CC	Commune Councils
CCA	Climate Change Adaptation
CDRI	Cambodia Development Resource Institute
COSTEA	*Comité Scientifique et Technique de l'Eau Agricole*
DAE	Department of Agricultural Extension
Dis.	District
DP	Development Partners
DRC	Department of Rice Crops
FO	Farmer Organisations
FWN	Farmer and Water Network
FWUC	Farmer Water User Community
GDA	General Directorate of Agriculture
HH	Household
IBG	Input Buying Group
IRAM	*Institut de Recherche et d'Application des Méthodes de Développement*
ISC	Irrigation Service Center
ISF	Irrigation Service Fee
IWRM	Integrated Water Resources Management
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Ministry of Economy and Finance
MFI	Micro-Finance Institution
MLMUPC	Ministry of Land Management Urban Planning and Construction
MoWRaM	Ministry of Water Resources and Meteorology
MRD	Ministry of Rural Development
NGO	Non-Governmental Organization
NWISP	North-West Irrigation Sector Project (ADB/AFD)
O&M	Operation and Maintenance (of irrigation schemes)
PDA(FF)	Provincial Department of Agriculture (Forestry and Fisheries)
PDoWRaM	Provincial Department of Water Resources and Meteorology
PDRD	Provincial Department of Rural Development
PIMD	Participatory Irrigation Management Development
PIP	Public Investment Program

PPP	Public-Private Partnership
PSG	Paddy Selling Group
RGC	Royal Government of Cambodia
SAW	Strategy on Agriculture and Water
SCCRP	Support to the Commercialization of Cambodian Rice Project
SCIRIP	Stung Chinit Irrigation and Rural Infrastructure Project
SNEC	Supreme National Economic Council
SPS	Sanitary and Phyto-Sanitary
SRP	Sustainable Rice Platform
ToR	Terms of Reference
TWGAW	Technical Working Group on Agriculture and Water
WASP	Water and Agriculture Sector Project (financed by AFD - completed)
WAT4CAM	Water resources management & Agro-ecological Transition for Cambodia(financed by AFD – on-going)

1. Introduction

1.1. Recall of the study objectives

1.1.1. Background on COSTEA

Since June 2013, the French Association for Water, Irrigation and Drainage (AFEID) has been working with the French Development Agency (AFD) and a large set of international partners, within the framework of the Scientific and Technical Committee of Water in Agriculture (Comité Scientifique et Technique de l'Eau Agricole – COSTEA), the overall objective of which is to promote the sharing of knowledge and experiences between actors in irrigation in order to support operations and policies in agricultural water.

The specific objectives of COSTEA are as follows:

- Produce conceptual and methodological summaries on the technical, economic, environmental and institutional aspects of agricultural water;
- Support the production of new references on innovations;
- Support actors in developing countries in the development and development of their policies, programs and projects;
- Structure an interdisciplinary and multi-actor network of irrigation partners based on the 3 previous objectives.

COSTEA's geographic coverage extends to the Mediterranean, West Africa and South East Asia.

1.1.2. COSTEA Study on services to irrigated agriculture

COSTEA has commissioned a study on "services to irrigated agriculture" which aims at elaborating a global framework for the formulation and the organization of supports for irrigating farmers in several contexts of intervention of AFD on irrigation policies in order to maximize their impact. The study is implemented in two countries (Tunisia and Cambodia) by a consortium led by IRAM, associated to ARTE-FACT in Cambodia and BICHE in Tunisia.

The study is implemented on one site only (in each country) and will assess service needs and existing service provision systems in place. The study has two dimensions:

- A methodological dimension: develop methods and tools to assess needs for services in irrigated context, test them and draw lessons.

- An operational dimension: on the selected irrigation scheme, the study is expected to elaborate the vision of an implementable frame for multiple services development to irrigating farmers. [Nota bene: Yet, it is not the responsibility of the study team to operationalize this frame, but it could be carried over by an existing project].

1.2. Main activities carried out in the country since the launch of the study

Since the beginning of the study in September 2020 the following steps and activities were undertaken in Cambodia:

- Information of key institutional stakeholders, notably the Ministry of Water Resources and Meteorology (MoWRaM), the Ministry of Agriculture, Forestry and Fisheries (MAFF), and Farmer & Water Net (FWN) about the launching of COSTEA study on services to irrigated Agriculture.

- Work on study methodology (see section 3 and 5 for a presentation of the methodology and the tools).

- Present and discuss the key selection criteria for the study site, elaborate a matrix of 10 potential sites with the participation of MoWRaM and FWN, and gather information on the different key criteria for each site (see section 3 and annex 5).

- Narrow down the shortlist to be presented to the launching workshop for final selection.

- Gather and review documentation on irrigated agriculture (irrigated rice in particular) in Cambodia. Analyse key elements of irrigated rice problematic in Cambodia (see section 2).

- Prepare the launching workshop agenda, identify key participants and manage invitation and logistic (including last minute cancellation[1] and rescheduling due to Covid-19 outbreak), and prepare workshop facilitation.

- Implement the launching workshop (on 15th of January 2021) (see the workshop report in annex 4).

[1] The workshop was initially scheduled in November 2020.

- Prepare the report of the first (preparatory) phase of the study.

A more detailed timeline of activities implemented is shown in Annex 1.

It is acknowledged that the activities have been conducted beyond the initial schedule proposed. Some activities had to be delayed because of Covid-19 pandemic, notably the launching workshop, initially foreseen to take place on 30th of November, but which had to be postponed and was finally organised only on 15th January 2021.

1.3. Content of the launching report

The present report contains:

- A preliminary analysis of the issues of the irrigated sector (and services to irrigating farmers) in Cambodia, based on expert knowledge and on literature review. This preliminary analysis leads to first elements or problematic and hypothesis that will be taken into account in the study process (see section 2).

- An up-date on the methodology and foreseen time frame of implementation of the study in Cambodia (see section 3 and 5).

- A rapid and preliminary presentation of the selected study site (see section 4)

- Some elements on survey tools (that are still to be further developed) (see section 5 and annex 6).

- Last, we underline some possible risks or difficulties that the implementation of the study may encounter (see section 6).

In annexes, we have included:

- ANNEX 1: A timeline of the implementation of the study activities in Cambodia in this first launching phase;

- ANNEX 2: Relevant bibliography

- ANNEX 3: ToRs for the field team

- ANNEX 4: Detailed calendar and time inputs for Phase 2

- ANNEX 5: The report of the launching workshop

- ANNEX 6: First extended list of shortlisted schemes

2. Preliminary analyses of the issues of the irrigated sector and the issues of services to irrigating farmers in Cambodia

A list of bibliographic references used so far is presented in Annex 2. Additional bibliography will continue to be consulted.

2.1. Elements from the bibliography

2.1.1. General background on services to irrigated agriculture

Irrigation development projects have often been too exclusively focused on the building of hydraulic infrastructures, in the best of the cases integrating a reflection and support on the operation and maintenance of the infrastructure, but rarely embedding the development of irrigation in a broader and more comprehensive vision of the context and requirements to ensure the effective and full expression of the potential brought by the irrigation service. This has been described in the background note on COSTEA study topic on services to irrigated agriculture. It is also well stated by Florence Deram Malerbe[2] who underline this need to consider the irrigated system in a broader environment, considering notably the integration in agricultural value chains and the dependency of the production on upstream sectors for inputs and downstream sectors for the marketing of products (including services such as storage, transport, processing, marketing, etc.). Agronomical context and options, land tenure issues, financial services, etc. are also dimensions to be considered.

Olivier Gilard[3] had put this in other terms, describing a technocratic vision of the technical/agronomical support to irrigated agriculture driven by the need to increase productivity in order to balance the costs of the operation and maintenance of the

[2] Malerbe F., "Aménager pour l'irrigation : une simple affaire de canaux ?", in Bouarfa S., Brelle F., Coulon C. (coord.), 2020. Quelles agricultures irriguées demain ? Répondre aux enjeux de la sécurité alimentaire et du développement durable. Éditions Quæ, Versailles, 212 pages.

[3] Gilard O., "Agroécologie et irrigation font-elles bon ménage ?", in Bouarfa S., Brelle F., Coulon C. (coord.), 2020. Quelles agricultures irriguées demain ? Répondre aux enjeux de la sécurité alimentaire et du développement durable. Éditions Quæ, Versailles, 212 pages.

infrastructures (a strange reversal whereby agriculture is put at the service of irrigation, instead of the opposite!), which has led in past decades to a frequent direct connection between irrigation infrastructure development and a Green revolution model, which nowadays shows its limits.

Box 1 : Where green revolution model that has been promoted together with irrigation schemes development shows its limits…

"By reducing the climate hazard at the cost of a costly investment, irrigation requires minimum productivity to cover operating and maintenance costs, as much as possible, and amortize the investments, at least economically in the absence of direct financial profitability. This most often leads to a artificialisation and intensification of cropping systems, which in most cases, drew on the principles of the first work-based Green Revolution soil, the use of improved seeds and chemical inputs to supplement the nutrients extracted from soils and fight disease.

While this type of intensification has allowed a strong improvement in productivity in a first, compared to traditional approaches lacking in resources, it shows now its limits both at the scale of farms and territories and small areas. Thus, we see that a productivity ceiling has been reached (or even a decrease under certain circumstances) and the increase in externalities environmental negative (soil contamination, loss of biodiversity, etc.)."

(Gilard O., "*Agroécologie et irrigation font-elles bon ménage?*", in Bouarfa S., Brelle F., Coulon C. (coord.), 2020. *Quelles agricultures irriguées demain ? Répondre aux enjeux de la sécurité alimentaire et du développement durable*. Éditions Quæ, Versailles, 212 pages.

These environmental and sustainability issues are interesting to take into account in the problematic of services to irrigated agriculture. This will be valid also in the context of Cambodia with the observed erosion of soil fertility in some areas.

The need to encompass a broader range of services to irrigated agriculture was already explicitly identified in the collective report "Innovations in Services for Irrigation Users: a comparative analysis of three institutional innovation processes in Cambodia, Haiti and Mali"[4] (see Text box below). Functions listed are primarily related to the scheme management (such as maintenance, water operation, fee collection…) but "other possible services" are also mentioned (including access to inputs, financial services, extension, processing and marketing, etc.). Yet, in practice, the ASIrri project (which had produced this document) has mainly focused its operational work to the consolidation of functions related to scheme management (or support functions to Water Users' Organisations to undertake scheme management functions).

[4] AVSF, CEDAC, CROSE, CUDES, Faranfasi So, FONHADI, ISC, GRET, IRAM, Innovations in Services for Irrigation Users: a comparative analysis of three institutional innovation processes in Cambodia, Haiti and Mali, Les éditions du Groupe Initiatives, Traverses No 39, 2012.

Box 2 : About the needs of services to support farmers' management of irrigation

"Yet, the proper operation of hydro-agricultural developments requires a range of complex functions to be fulfilled, some of which are beyond irrigation users' capabilities: scheme maintenance, water operation and management (sharing rules, agricultural calendar, etc.), scheme protection, by-law enforcement, information management (land, services, fees), fee collection for self-funding, financial management and control, representation of member farmers and advocacy services, and the organization of other possible services (access to inputs, financial services, extension, processing and marketing, etc.)

These functions can be fulfilled by different actors depending on the specifics: public structures, irrigation users' organizations, federation of irrigation users' organizations, other farmers' organizations, service centers, etc."

(AVSF, CEDAC, CROSE, CUDES, Faranfasi So, FONHADI, ISC, GRET, IRAM, Innovations in Services for Irrigation Users: a comparative analysis of three institutional innovation processes in Cambodia, Haiti and Mali, Les éditions du Groupe Initiatives, Traverses No 39, 2012).

2.1.2. Issues in the context of Cambodian irrigated rice sector, from bibliography review

There are some bibliographic references related to irrigation in Cambodia, mainly produced by internationally financed projects in the irrigation sector. But most of the references are quite focused on the management of irrigation (development of infrastructure and operation and maintenance of irrigation schemes), and rarely looking with a wider lens at the irrigated agriculture in a broader context. Which in itself is telling of a predominance of an approach focused on infrastructures development.

The fact that irrigation investments are in most of the cases not defined with the farmers and based on their aspirations and vision of the development of their agricultural production is striking, and is reflected in some of the bibliographic references reviewed. The "necessity to take into consideration pre-existing farmers practices and agro-ecological/social context" is the first conclusion drawn by Stung Chinit project "lessons learnt document"[5]. In the development of this idea, the document mainly underlines the lack of consultations at the stage of the feasibility study and how it has affected the relevance of the design of the infrastructures. It could even have gone further, as it appeared after the rehabilitation that

[5] See: Rousseau Ph., Balmisse S., Stung Chinit Irrigation & Rural Infrastructure Project: main lessons learnt from project implementation, MoWRaM (+ GRET, CEDAC, AFD), February 2009 – page 20.

most of the farmers did not really had an intension to grow a second crop of rice, which actually questions the very decision of investing in these infrastructures[6].

In Cambodia, the compartmentalization between on one hand the Ministry of Agriculture, Forestry and Fisheries (MAFF) and on the other hand the Ministry of Water Resources and Meteorology (MoWRaM)[7] has certainly not been favourable to a better integration between the development of irrigation infrastructure and water management and the technical / agronomical, social and economic aspects of agriculture production in irrigated area. Whereas some projects have been trying to enhance the synergies and ease the coordination, it is still often one of the difficulties for a fully efficient and successful use of irrigation facilities. For instance, in Prey Nup polders, the relation between the specific constraint of the hydraulic system management and the need for tailored technical advisory / agriculture extension has been well enhanced[8], and both services of Agriculture and Water Resources have been mobilised. Yet the difficulties remained after the project facilitation ended.

2.2. Stakeholders views of Cambodian irrigated rice sector: main observations from the launching workshop

The launching workshop of COSTEA study on services to irrigated agriculture in Cambodia took place on 15th of January 2021 in Phnom Penh. The afternoon session gave the floor to different stakeholders to express their views on the subject of irrigation development and services to irrigating farmers. Not surprisingly, the views expressed were very different depending on the institutions to which the speakers belong. This is quite normal as each institution has its specific mandate, but still it is telling of the compartmentalization mentioned before, and on the difficulty to build a consolidated vision of irrigated agriculture development (in the rice sector, as it was the focus of the discussions). One will refer to the Annex 5: "Launching workshop report" for more details on the point of views expressed by participants.

Different institutional points of view clearly come with a different vision of issues. Sometime nearly with a different language: for instance, MoWRaM focuses on the infrastructures, on the capacity to ensure water availability and on the figures of irrigated surface (in thousands

[6] The scheme is now finally used with at least double cropping on the majority of surfaces… but it took more than 10 years to reach this situation, and it will be interesting to understand better why and what were the bottlenecks that have progressively been lifted.

[7] MoWRaM was created in the late 1990s', whereas irrigation was before under a "Department of Hydraulic" of the Ministry of Agriculture.

[8] For instance, the Agro-ecological Atlas of Prey Nup polders explain well the need to adapt recommendation on rice varieties to the topographic location of rice fields inside polders, or how the water management can resolve early season toxicity on acid sulphate soils.

of hectares)… but not on tons of rice produced which is rather MAFF indicator. While MEF look at value, financial resources invested (the costs for the public sector) and "return on investment". Indeed, it is striking to see that in the last decade, irrigation schemes (for rice production, nearly exclusively) have absorbed around 60% of all public investments made by Cambodia for the agriculture sector, whereas the economic growth in the agricultural sector is not anymore driven by rice production.

Cambodian Rice Federation (with a major focus on rice exports) is thinking in terms of competitiveness, and would like to see more focus of public investments of larger commercial rice farms: the ones producing more surplus for exports, and with the idea that economies of scale of larger farms could reduce paddy production costs.

Farmer Water User Community (FWUC) representatives (through Farmer & Water Net) expressed views which are more the ones of persons in charge of the day to day operation and maintenance - which is their primary mandate - than the one of farmers as ultimate users of the irrigation (probably because they were invited to the workshop in their quality of FWUC leaders, which could explain their contribution in the discussion was quite focus on issues related to Operation and Maintenance as those are FWUC's mandate)[9]. They underlined difficulties they are facing in their specific role, such as the limits of the water resources availability, the insufficiencies of the infrastructures to allow a proper distribution of the water, or the difficulties they are facing to achieve coordination of farming practices in term of calendar and varieties). Experiences of collective selling of paddy were also evoked (also with difficulties encountered). We found that FWUCs contributions in the discussion were, as expected, practical and down-to-earth, but also encompassing a relatively broader vision of farmers' issues for irrigated rice.

2.3. Formulating study hypothesises

Overall, these outcomes of the initial steps of the study (bibliography review and launching workshop) have not fundamentally modified the study hypothesis or approach that IRAM, ARTE-FACT and BICHE have presented in the technical offer.

But we find they reveal with even more emphasis the compartmentalisation and the lack of a shared vision of irrigated agriculture development at the local and national level, that shall be the nodal point for stakeholders to have a more systemic view, while ensuring their respective roles. The bibliography and the launching workshop also reveal that farmers' vision is rarely acknowledged.

[9] Farmers' views, as ultimate users of irrigation and as producers, will be captured through interviews in the field.

The discussions in the launching workshop also suggest that focusing on "services to farmers" is not a usual entry point, and could thereof contribute to elaborate a different way to look at irrigation issues. This surely enhance the relevance of the methodological dimension of the study, formulated in the outcome "develop methods and tools to assess needs for services in irrigated context, test them and draw lessons".

Above (or before) the identification of service needs, it pleads for the collective definition of a desired vision of local irrigated agriculture, around which the different services needed (and the way to ensure these needs are fulfilled) would articulate. This will be particularly important in the last stage of the study: the elaboration of a plan for services development.

- ➔ **Study hypothesis: Formulating services for farmers is an unusual entry point that first requires a common vision of irrigation development (which is rarely the case).**
- ➔ **Study hypothesis: Unless farmers' vision is truly acknowledged (which is not the case today), services will not yield their expected benefits. Hence the need for advocacy organisations.**

The discussions in the launching workshop have also underlined that, after construction or rehabilitation of irrigation schemes, the expected potential of use of the irrigation and increase of the production (in volume and in value) is not always reached. Limits in actual availability of water have been underlined, but also it seems that the context of rice sector and value chain locally can be a strong factor to pull the investments of farmers in a second rice crop (whereas irrigation often start to be used only as a supplementary irrigation for one wet season rice). The selection of Stung Chinit as study site will be interesting from this point of view, we will come back on this in chapter 4 below.

- ➔ **Study hypothesis: Beyond water availability, services related to value chains, are strong incentives to reach the full potential of irrigation.**

Yet it is not so simple and the territorial diagnosis and the farm typology will look at multiple factors impacting irrigation development, such as: land tenure, labour force available, access to dryland farming, job opportunities, etc. The study will look at which services have tackled in the past those constraints, and may help tackle those constraints in the future.

- ➔ **Study hypothesis: A systemic approach is necessary to prioritise services.**

3. Methodology, tools and implementation planning of the study for Cambodia

3.1. Overview of the methodology

The study requires:

- A **territorial diagnosis** to better understand the local context (and its evolution over the past 10 to 15 years);
- An assessment of **farmers' needs in terms of services = "demand" side:** the team will prepare a typology of farmers and will highlight the main services required for each type of farmer (priorisation);
- An **assessment of services that are currently available = supply side:** The team will describe the current situation of offer of services (and how its evolution have contributed to unlock the potential of irrigation over the last decade), will provide a mapping and will asses them rapidly (SWOT analysis).
- An assessment of **how supply actually responds to farmers' needs** and the elaboration of an **operational frame for services.**

As it was foreseen in the Technical offer developed by IRAM, ARTE-FACT and BICHE, the methodology for the Phase 2 of the study implementation (implementation of territorial diagnosis) will include:

- A review of additional bibliography and documentation specific to the selected site.
- An initial meeting at the local level to introduce the study to local stakeholders (as agreed during the Launching workshop in Phnom Penh in January, the study team will request introduction letters from MAFF and MoWRaM to facilitate the collaboration with the provincial departments and with local authorities).
- Then the team will gather additional information from key informant interviews, farmer surveys and focus group discussions.
- These analyses (territorial analysis, "demand" analysis and supply analysis) will then be presented to stakeholders, will be deepened and a operational frame for services will be elaborated.

More details are provided in the section below.

3.2. Details of the methodology and tools

3.2.1. Complementary bibliography (focusing on Stung Chinit scheme)

The team will gather additional more specific bibliography / documentation (see box below for the main topics to be looked at) specific to Stung Chinit scheme:

- Synthesis reports / experience capitalisation documents from Stung Chinit scheme development project;
- Documents on the scheme management and water users (from FWUC);
- FWN reports / assessment of its members;
- Reports or documentation from other projects and interventions in the area since the construction of the scheme (ASIrri project, Agricultural research activities conducted by CIRAD on agroecological practices in the area on rice and on fodder crops), etc.

Box 3 : Main subjects that will be covered through the complementary bibliography

- Elements from the bibliography will be exploited to come back on the history of the development of the irrigation scheme.
- Reports from projects (SCIRIP, ASIrri, etc.) shall provide useful elements on the irrigation infrastructure and services, but also on the agricultural development inside and around the scheme.
- We also hope to be able to get general socio-economic data on the area (demographic data).

3.2.2. Presentation of the study to stakeholders in Kampong Thom province and Stung Chinit area

A kick-off meeting of the field study will be organised at Stung Chinit FWUC office in Kampong Thmar, with the board of the FWUC, provincial services of the Ministry of Agriculture, Forestry and Fisheries (PDAFF), provincial services of the Ministry of Water Resources and Meteorology (PDoWRaM) and local authorities (communes).

Tentatively, this meeting is schedule on the 10th of March 2021, and a draft agenda is presented in Annex 7. The major issues to be presented and discussed are listed in the box below.

Box 4 : Main issues to be discussed during the local kick-off meeting

During this meeting, the team will present the context, objective and work plan of the study (including the possible participation of PDAFF and PDoWRaM). A discussion will take place to benefit from the knowledge of all participants, regarding:

- The evolution of the rice sector (beyond farmers, but also with an attention to the arrival of new key players from the rice industry in the area) will be discussed, as well as the evolution of other income generating activities for the rural population of the area (on-farm and off-farm). Changes on natural resources (forestry, fisheries) and on their exploitation will be looked at as they might also be a contributing factor in recent changes.
- overview of the local context, notably from an economic point of view, and with a dynamic vision (looking at changes over the past 10 to 15 years and not only at a "photography" at "t" time.The typology of farmers,
- The evolution of agriculture production in Stung Chinit scheme since its construction (what has progressively allowed to increase the use of irrigated area, what obstacles were addressed and how, what are the remaining bottlenecks for further development).
- A preliminary identification of services and key service providers in the area.

3.2.3. Local / territorial diagnosis

Through documentation, available data/statistics and especially through interviews with key informants, the study team will study more broadly the evolution of the local socio-economic context in Kampong Thom province and more specifically in Kampong Thmar / Stung Chinit scheme area.

After the kick-off meeting in Kampong Thmar, the team will interview key informants, notably local authorities' (communes and/or district level) representatives. This shall provide more element on the context and on the local governance. One aspect that will be interesting to look at is the recent change in local services to agriculture, with increased prerogatives on this matter that were given by recent reforms to the district authorities (under Ministry of Interior).

Other interviews with various interlocutors will also contribute to understand the evolution of the local context (with FWUC leaders, with local agriculture services agents, with organisations such as the ISC which has a long history of work in the area…).

The history of the scheme will be an important aspect of these interviews with key stakeholders. Reviewing the history and the progression (over about 15 years) of the actual use of the irrigation, and linking it to evolution of the local context (including maybe the development of services, addressing bottlenecks to double-cropping for instance) will be of great interest for the purpose of this study.

Box 5: Main issues to be looked at for the territorial diagnosis

- Development of other economic opportunities (industry, construction, …) in the area and in other regions (for instance Phnom Penh, Mondolkiri, Ratanakiri).
- Smaller farmers exiting agriculture for other activities and land concentration (hypothesis)?
- Development of a more commercial orientation toward rice farming (in link with rice exports increase and investment in rice milling industry, and land renting by companies for rice production): is there an evolution of the destination of rice produced in the scheme: Farmers own consumption / Local market / Export? Development of contract farming with large millers / exporters? Evolution of the local buyers of paddy?
- Restrictions on the exploitation of other natural resources (timber, fisheries…).

- Technical innovations appearing in the area (shorter crop-duration varieties…)
- Evolution of local governance and institutional setting of agricultural services at district and commune levels, either be from public or private initiative.
- Farmers' Organisations (FWUC, FWN, ACs…).

3.2.4. Assessment of farmers' needs regarding services: Typology of farms, farmers' needs and farm trajectories

a. Typology of farmers

In Stung Chinit rice cropping is done mostly two times to three times per year on the same plots. We will have to check if the two crops are done by the same farmers (some may rent out their land in Dry Season).

The FWUC of Stung Chinit shall be able to provide a list of irrigation users and the surface of land they own or use in the irrigation scheme, which can already be an element to build the typology (based on the distribution of surface) (see box below). The typology shall also integrate criteria on other factors of production (not only land but labour availability and capital, but also surfaces outside the irrigated scheme, land tenure, etc.), and shall take into consideration off farm income generating activities.

Box 6: How can FWUC's data help to draw the typology

We expect to have access to the user database of the Farmer Water User Community of Stung Chinit: in principle, the FWUC has a database of landowner and/or land users that is regularly up-dated as it serves for the purpose of Irrigation Service Fee collection. We will explore in detail what we can get from this source, but we can expect that it will at least provide an information on the distribution of paddy fields land inside the scheme command area, allowing to set classes of farmers based on surface of land owned (or exploited) inside the scheme.

This being said, it seems that in Stung Chinit scheme, there has been a significant development of land rental (often on a seasonal basis), and we are not yet sure about how this is documented and if the FWUC has information on land owners mainly, or on land users, disaggregated by season /cycle of production. Therefore, qualitative interviews will also be conducted to go beyond the figures.

We can then complete this by interviews of key informants and farmers to enlarge the scope of information on farming households (land owned outside of the irrigation scheme, other crops production / livestock production, off farm activities).

We are envisaging (but still to be confirmed) to have a brief (half day) work session with knowledgeable people that could help to build a typology "from expert says", taking into account a more comprehensive knowledge and understanding that what can be extracted from FWUC database (which will not incorporate agricultural or off-farm activities conducted outside of the scheme command area).

Some interviews of farmers (representing the different "groups" of the typology) will contribute to fine-tune the typical profiles that can be described. This could possibly allow to better understand farmers' ability and capacity to innovate (cf. risk aversion strategy).

b. Farmers' needs regarding services

Both farmer interviews and focus group will include discussion on the service needs and service provision.

It is important to acknowledge that potential needs are not always well identified and not translated in an expressed demand by farmers. It is likely that the identification of needs will not always be direct and straight forward, but the facilitation of discussions (notably in focus groups) should help to identify possible bottlenecks or constraints that may prevent further improvements for farmers, and the reflection on this basis can lead to an identification of needs that might not be immediately identified and expressed.

Also, as mentioned in the previous section, the review of the history of Stung Chinit scheme since the end of SCIRIP that we will try to facilitate in group discussions will be – we hope – fruitful to identify retrospectively the changes in the local context that have been determining in the transition from under-used irrigation in 2010 to a much more efficient use of the irrigation potential. The analysis of this history will allow to identify the shortcomings of the initial situation and the key elements (including in term of services or emergence of new stakeholders) that triggered major changes. This will be telling of the needs (in term of services and conducive environments) to allow irrigated agriculture to take off, and we might be able to translate part of the findings into replicable recommendations.

c. Farm trajectories

A few farm trajectories will also be described.

3.2.5. Assessment of offer of services to farmers: mapping, priorisation and SWOT analysis

Information on existing services availability will be gathered, first during the field kick-off meeting, then during interviews and focus groups with farmers, which shall also allow to namely identify service providers that will be interviewed in a second stage of the field work.

On this basis we will build the mapping of service provision. This is expected to cover a broad range of services to irrigated agriculture (services to irrigating farmers and possibly to their organisations) as described in our technical offer:

- **Material services such as:**
  - water supply and water management,
  - input supplies (seeds, fertilizers, phytosanitary products…),
  - equipment,
  - service-based mechanization (ploughing, harvesting…),
  - credit / financial services,
  - processing,
  - storage,
  - market access,
  - quality control and certification…
- **Immaterial services:**
  - training,
  - information,
  - advisory services,
  - technical extension,
  - advocacy,
  - legal services…

The first meetings and group discussions shall allow to prioritize the most determining services for farmers, as the limited time for the study may not allow to have an exhaustive coverage of all types of services listed.

The study team will then conduct specific interviews with service providers and actors of the agriculture sector in order to analyze the governance and business models of the different services, and to identify strengths, good practices or shortcomings and failures.

Box 7: Preliminary list of service providers to be interviewed (will be prioritised)

- Extension workers and technical officers (from PDAFF, PDoWRaM and from district authorities)
- Input suppliers,
- Service providers (mechanisation…),
- Collectors, middlemen,
- Rice millers,
- Micro-finance institutions and banks,
- Farmer Organisations (FWUC, of course, and possibly cooperatives),
- Specialised organisations such as the Irrigation Service Center…

Box 8 : How to prioritize services ?

The study will not be able to cover in detail all the potential scope of services to irrigated agriculture. Based on the interviews and focus group discussions, we will be able to identify and prioritize:

- The services that have been key to unlock the potential of irrigation (considering the history of the use of irrigation in Stung Chinit, already underlined before).
- The services (or absence of services) that have been (or still are) major constraints to the full realization of the potential of irrigated agriculture in the scheme.
- The services which – because they are unequally accessible – are appearing as factors of differentiation between farmers and are determining of different trajectories (toward intensification of the production, or on the opposite, triggering a decline of on-farm activity).

Box 9 : External and « indigenous services » / farmers to farmers services

Above are listed material and immaterial services often required by farmers.

Services to farmers are often seen as services provided by various (external) stakeholders, either be public, private or farmers' organisations, to farmers. Rarely it is taken into account that farmers may have other ways to satisfy their needs in terms of services, for instance through more informal ways (exchanges, etc.). Yet they are numerous examples whereby farmers exchange labour force, seeds (for instance through seeds fare), know-how (informal groups, discussing with fellow farmers, etc). At this stage we refer to these as "indigenous services", or farmers to farmers services, or peer to peer services, but a more proper word will be elaborated through the study, provided such modalities are actually reported in the field.

Ultimately the study shall help defining more precisely services to irrigation farmers (external and farmers to farmers services).

3.2.6. The elaboration of operational frame for services

At this stage, the methodology of the third phase of the study, with in particular a 2-days workshop on the preparation of operational frame for service development, is not significantly changed. One can still refer to the technical offer presented by IRAM – ARTE-FACT – BICHE for this matter. Outcomes of phase 2 will be presented during the workshop and will serve as a basis to develop a reflection on the operational frame for services.

The methodology and tools for the development of an operational frame for service to irrigated agriculture will be revised and adjusted later on, after the first part of the field study has been done.

The fact that we will start the field work with a first local workshop (which was not explicitly foreseen in our initial technical offer) will already contribute to prepare stakeholders and to engage a reflection on services to irrigating farmers (See the tentative agenda of the "Field kick-off workshop" in Annex 7. This, we hope, will contribute to have a more in-depth collective reflection with the various stakeholders during phase 3.

The workshop on the development of operational plan is foreseen to be conducted over two days. Its objectives will be to:

• Present, debate and validate the elements of the diagnosis: territorial diagnosis, typology of farms, analysis of service needs (typology and prioritization), analysis of the service offer and its adequacy in regard of needs;

• Identify pathways for improving services;

• Identify the broad lines of an operational plan for the development of services to irrigating farmers or a vision for the development of services to irrigating farmers / irrigated agriculture.

3.3. Site selection process and justification of the site selection

3.3.1. Site selection Criteria

The criteria for study site selection are presented in the box below. They were discussed with MoWRAM and FWN during the process, and were presented before the site selection during the launching workshop.

It is noted that we generally did not have clear information regarding the criteria about "on-going project support" (despite we considered it important to increase motivation and mobilisation of stakeholders, considering this would give more chances for the outcomes of the study to be carried over and operationalised). As sites selected were already operational, generally MoWRaM had no more on-going interventions there. And MAFF interlocutors, on their side, seem to have no clear picture of on-going project that could potentially encompass the shortlisted schemes.

Box 10 : Recall of the study site selection criteria

MANDATORY CRITERIA

→ Rice production irrigation scheme

→ Fairly operational (in term of irrigation service),

→ Used in dry season or farmers available on-site in dry season,

OPTIONAL CRITERIA

→ Irrigated surface not less than 500 ha,

→ Possibly with experience of collective selling of paddy,

→ Preferably with an on-going project support that could take stock of the outcomes of the study and carry over the elaborated frame for multiple services development to irrigating farmers / irrigated agriculture,

→ Fairly good collection rate of Irrigation Service Fees.

→ Member of Farmer Water Net.

3.3.2. Site selection process

The process of the selection of the site for the study has gone through the following phases:

- Step 1: A first shortlist of scheme has been prepared in consultation with MoWRaM and FWN[10]. The first list was covering 8 schemes (or systems), and was then extended to 10, with two additional suggestions (accepted by MoWRAM). The list of 10 sites is shown in Annex 6.

- Step 2: Additional information were collected on the schemes from the shortlists, notably with phone contact made with the leaders of the Farmer Water User Communities. On this basis, the shortlist has been narrowed down to 4 schemes only: 1) Preah Sdach scheme (Kampong Trabek system); 2) Krouch Saeuch scheme (Damnak Ampil system); 3) Stung Chinit scheme, and 4) Ang Kou scheme.

- Step 3: The selection process was finalised during the study launching workshop. Selection criteria were presented. One representative from each of the four FWUCs was invited to attend the workshop in Phnom Penh[11]. They had all confirmed their attendance, but on the last minute the representative of Preah Sdach FWUC (Kampong Trabek system) informed that he would not come. Each FWUC representative has made a presentation on the situation of the scheme (summarized on the screen in a table). Then all the participants in

[10] MAFF and AFD were also invited to contribute or react to the preliminary shortlist of sites, but they did not make any suggestion or comment.

[11] Costs for their transportation, accommodation and food allowance were covered for them.

the launching workshop took part in a vote to select the study site. One participant had three "voices" with the possibility to give all the three to one site or to dispatch the votes on more than one site. As a result of the process, Stung Chinit scheme has been selected with 21 votes (See the report of the launching workshop in Annex 5).

3.3.3. Justifications of site selection

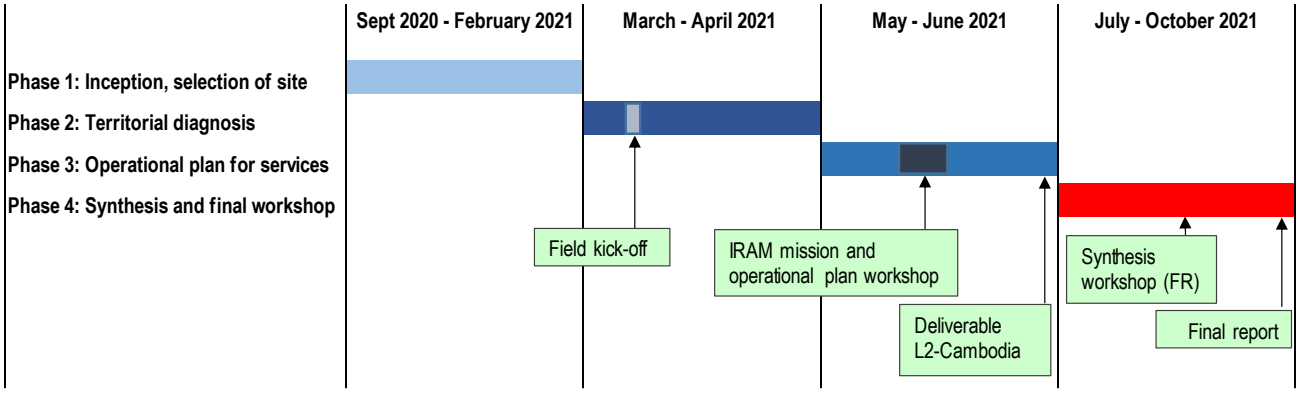
Stung Chinit irrigation scheme is fulfilling well the mandatory criteria listed in the Box above (Rice production irrigation scheme, fairly operational, and used in dry season or farmers available on-site in dry season). It also checks the boxes of most of the optional criteria: the scheme has a command area of 2,800 ha and is used for two to three cropping cycles. Stung Chinit FWUC is a member of FWN and has experimented the Paddy Selling Group approach with the support of AFD-funded SCCRP project. Stung Chinit FWUC performs also relatively well regarding Irrigation Service Fees collection, with a recovery rate of 77% as reported.

We believe that the larger size of the scheme and the fact that it can reach 3 crops per year for some plots have drawn the attention of participants in the launching workshop and these two criteria have been main drivers for the participants' votes.

The only pending unclear point is if there could possibly be some on-going or up-coming projects that could potentially be interested to take stock from the outcomes of COSTEA study (in particular for the development of frame for service provision in the area. But there was no clear information on this matter for all the shortlisted schemes. For MoWRaM, in general, the support to irrigation schemes generally ends immediately or only few years after their construction or rehabilitation. And MAFF interlocutors have not been able to provide information or indicate if some of the potential schemes could be located in the target geographical area of on-going or up-coming projects.

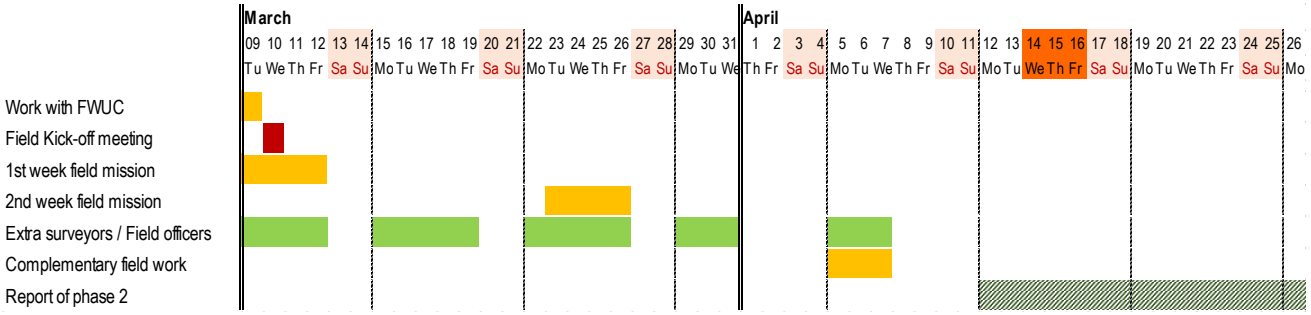
3.4. Revised implementation calendar

The figure below presents an up-date of the overall study for Cambodia.



Phase 2 of the study will be implemented in March-April 2021.

We tentatively plan to organise the field kick-off meeting on 10th of March, after one day of preparation work, notably with Stung Chinit FWUC.



Then the field work by the team (Jean-Marie Brun and Sophoan Min) will be done in the following days, and in the fourth week of March. In between, we plan to mobilise extra surveyor(s) / field officer(s) to conduct more farmer interviews and help through that to namely identify most of the key service providers which will be met in the following week.

In early April, Sophoan could also make a third trip to Stung Chinit area to collect missing data.

Analysis and reporting (report L1 Cambodia) will be done in the end of April or no later than early May 2021.

The Annex 3 present the Terms of Reference for the team members for phase 2, and the Annex 4, a more detailed calendar with time inputs for the team members for phase 2.

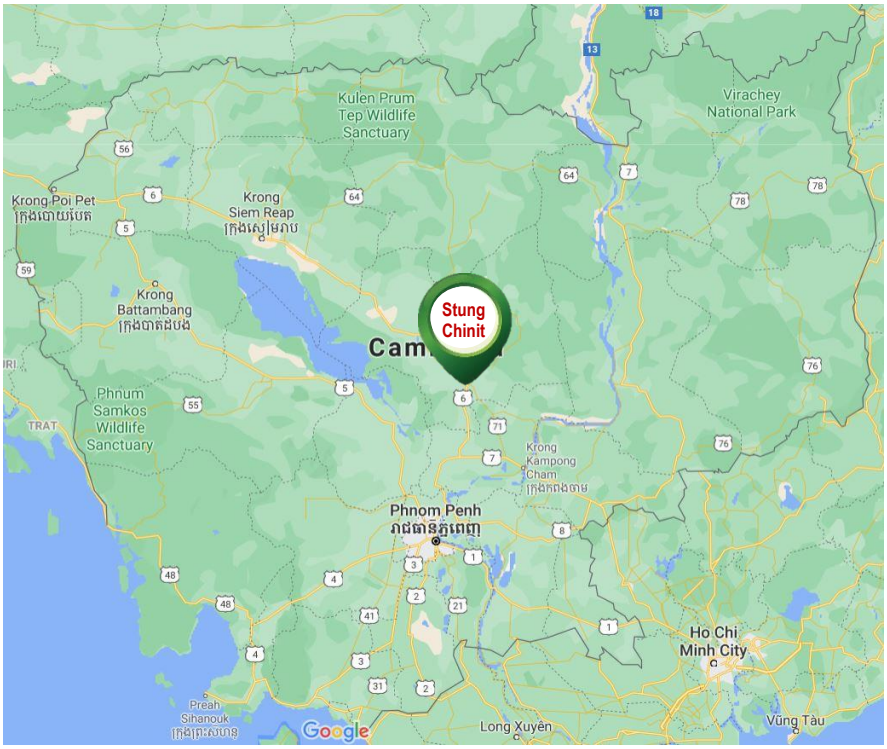
Phase 3 of the study could be done in May / June. Ideally the second workshop supported by a mission from Iram will be organised in May in the field (so as to be coordinated with the second workshop in Tunisia also planned in May). June-July will allow some exchanges between findings from Cambodia and from Tunisia and L2 Cambodia will be produced.

4. Preliminary presentation of the selected study site

4.1. 4. Preliminary presentation of the selected study site

Stung Chinit irrigation scheme is located in Kampong Thom province, on the East of Tonle Sap lake, and quite central in the country (See map below).

LOCALISATION OF STUNG CHINIT IRRIGATION SCHEME ON CAMBODIA MAP.



The Stung Chinit irrigation scheme has been built / rehabilitated in the first decade of 2000 by the Stung Chinit Irrigation and Rural Infrastructures Project (SCIRIP), under MoWRaM ownership and financed by AFD.

The scheme consists in one reservoir on the Chinit river (shared with another scheme in the South) a main canal going straight from South to North from the reservoir and 5 secondary canals supply water to a command area of 2,800 ha.

The irrigation and the maintenance of infrastructures (except primary infrastructure) is implemented by the Stung Chinit Farmer Water User Community.

At the end of the implementation period of the "Stung Chinit Irrigation and Rural Infrastructure Project", so after infrastructures were built / rehabilitated and FWUC established, the irrigation was used only for supplementary irrigation of one cycle of wet season rice, and was used for a second cycle of production on less than 10% of the irrigated area. This level of use of the irrigation facilities was clearly below the expected use (and thereof below the foreseen economic benefit) of the investment made. Nowadays, about 10 years later, practically all the surface inside Stung Chinit irrigation scheme is used for two rice crop a year, and up to three cycles for some plots.

4.2. Hypothesises regarding the issues of services to irrigating farmers on the selected site

This history of Stung Chinit will be very instructive to review and explore further, through the field study, having in mind these questions:

- Why did it take 10 years after the scheme infrastructure construction for the potential of the irrigation to be fully exploited?
- What were the obstacles or factors that have prevented the irrigation to be better used right after the construction of the scheme? More specifically, in terms of services to farmers.
- Were there shortcomings in the management of irrigation at the early stages (learning process)? Or in agriculture extension? Or lack of other services?
- Was it the social and economic context that was not conducive to incentive farmers?
- Was it a matter of availability of inputs or services that was preventing farmers to actually tap the potential of the irrigation?

Certainly there are factors related to the social-economic environment, to services developed in the area or to the evolution of the rice sector that can be reviewed retrospectively and that can tell a lot about what is needed to make expected benefits from the irrigation become a reality. It will be interesting to review this history and identify what were the changes in the context that have triggered the development of a full use of the irrigation.

5. Main risks / difficulties for the study implementation, based on preliminary findings

We can identify the following risks or concerns for the implementation of the next steps of the study:

Identified risks/difficulties	Mitigation measures
General / contextual risks	
• COVID-19 pandemic: with less than 500 cases in total since the beginning of the pandemic, Cambodia has been relatively spared. Yet measures are sporadically taken with restrictions imposed to face to face meetings, gathering, and some time in-country travels. This has already impacted on the calendar of implementation of the study as we have seen. It could potentially occur again and bring new delays in the implementation. This situation makes very uncertain the ability of IRAM team to travel to Cambodia and take part in the second workshop foreseen to take place in Phase 3.	We will monitor the evolution of the situation, and adjust the calendar if needed. Depending on the evolution of the situation, the date of the second main workshop of the study might be adjusted, if a delay could be seen as an option to allow IRAM expert to travel to Cambodia and to take part in the event. Otherwise, we will have to switch to an on-line participation, as is was done for the launching workshop.
Specific risks or difficulties related to the particular case / object of the study	
• No on-going project is clearly identified, that could carry over the outcome of the study, in particular regarding the operational framework for services development. This could reduce the interest for local stakeholders to fully engage in the process.	We will try to engage FWN and the ICS in the process, as – given their history of close relation with Stung Chinit farmers and local actors – they could help to motivate and engage actors. Because of their national coverage, FWN and ISC are also likely to be interested by the study and its outcome and could take stock of the findings for their further activities, which will be a factor of motivation. The fact that Stung Chinit FWUC is particularly engaged in FWN could also be an asset from this point of view.
• Also the fact that the irrigation in Stung Chinit seems now to be fully used and to perform well might reduce the interest of actors to look for possible improvements.	

6. Annexes

6.1. ANNEX 1: Timeline of the implementation of the study activities in Cambodia in this first launching phase

- → 03/09/2020 – Skype meeting with IRAM (Christophe Rigourd and Sylvain Cédat) on the preparation of the study + Preparation first Power Point presentation for introduction of the Study to the Ministry of Water Resources and Meteorology (MoWRaM).
- → 14/09/2020 – Information meeting at the Ministry of Water Resources and Meteorology (MoWRaM), with the participation of MoWRAM, MAFF and AFD and of Mr Jean-Philippe Venot (IRD and COSTEA focal point in Cambodia and Southeast Asia).
- → 21/09/2020 – Skype meeting with IRAM (Christophe Rigourd and Sylvain Cédat) work on the study methodology.
- → 28/09/2020 - Search for documentation + request for information (send e-mails) to various stakeholders[12] in order to elaborate a 1st shortlist of sites.
- → 06/10/2020 – Preparatory discussion within Cambodian team (J.M. Brun and S. Min), then meeting in MoWRAM on scheme pre-selection, with the participation of MoWRaM and of Farmer and Water Net (FWN). Elaboration of a first short-list of sites and gathering of information on each of them.
- → 09/10/2020 – Gather complementary information on the preliminary shortlist of sites.
- → 17/10/2020 – Review of detailed methodology proposed by IRAM, and send detailed comments. Contact MAFF and AFD (by e-mail) to gather their inputs on the proposed shortlist of potential study sites.
- → 26/10/2020 – Preparation of draft agenda & tentative participant list for the launching workshop of COSTEA study
- → 28/10/2020 – continue the preparation of the launching workshop and consult (by e-mail) stakeholders to get their feed-back on proposed agenda and date for the workshop. Review documentation available.
- → 16/11/2020 – Working session between J.M. Brun and S. Min on the preparation of the launching workshop: adjust agenda / mails to MAFF and MoWRAM to request their participation and identification of additional officers to mobilize from relevant Departments. Contact by e-mail key guest speakers (SNEC/MEF, CRF, MAFF, FWN…) for the afternoon session of the workshop (dedicated to present different point of views on the stakes and challenges of irrigated rice sector in Cambodia). Address logistic issues for the workshop.
- → 25/11/2020 – Working session between J.M. Brun and S. Min: adjustments on the agenda, preparation of the facilitation process. Contact invited participants for confirmation of their attendance or appointment of representatives. Address logistic issues for the workshop.
- → 26/11/2020 – Prepare Power points for the launching workshop.

[12] MoWRaM, MAFF, AFD, ISC, FWN.

- → 29/11/2020 – Prepare Power Point on methodology… Then manage the last minute cancellation of the Launching workshop, due to a new Covid-19 outbreak in Phnom Penh (inform participants, cancel venue…).
- → 31/12/2020 and 04/01/2021 – Consult key stakeholders on a suitable date to reschedule the launching workshop.
- → 05/01/2021 – Confirm workshop new date and re-inform all participants. Re-arrange logistic issues. Start to work on the reporting for the first phase of the study (present report).
- → 13/01/2021 – Follow up on the confirmation of participants. Prepare workshop. Adjust presentation.
- → 15/01/2021 – **Launching Workshop**.
- → From 15/01 to early February: Launching Workshop report, and preparation of the present report of phase 1 of the study.

6.2. ANNEX 2: Relevant bibliography used so far

- AVSF, CEDAC, CROSE, CUDES, Faranfasi So, FONHADI, ISC, GRET, IRAM, Innovations in Services for Irrigation Users: a comparative analysis of three institutional innovation processes in Cambodia, Haiti and Mali, Les éditions du Groupe Initiatives, Traverses No 39, 2012.
- Bouarfa S., Brelle F., Coulon C. (coord.), 2020. *Quelles agricultures irriguées demain ? Répondre aux enjeux de la sécurité alimentaire et du développement durable*. Éditions Quæ, Versailles, 212 pages.
- Brun Jean-Marie, Khim Sophanna, "Ex-post evaluation of the Technical Assistance to Agriculture and Water Resources Sector Policies – Final report" (Cambodia), NIRAS, AFD, December 2012.
- Brun Jean-Marie, Mainstreaming of actions in support to FWUC under NWISP (Cambodia): Statement, lessons learnt and follow-up support – Final Report, MoWRaM, Phnom Penh, October 2011, 149 p.
- Chea C., Nang P. et al., Decentralized governance of irrigation water in Cambodia: matching principles to local realities, CDRI working paper No 62, October 2011.
- Diepart, J.-C., The fragmentation of land tenure systems in Cambodia: peasants and the formalization of land rights, The Technical Committee on "Land Tenure and Development", GRET / AgroParisTech, AGTER, June 2015.
- Kibler, J.-F., Perroud C., Towards Co-Management of Hydro-Agricultural Infrastructures: lessons learnt from the Prey Nup project in Cambodia, GRET, Etudes et Travaux en ligne No7, 2006.
- Lagandré D. and Lavigne Delville Ph.: "Polder rehabilitation, agricultural growth and inequalities: the socioeconomic impact of the Prey Nup project (Cambodia) – Summary Document, GRET, Etudes et Travaux en Ligne No 13 Dec. 2007.
- MAFF, Strategic Development Plan for Cambodian Agro-Industries 2019-2030, MAFF, Phnom Penh, February 2020.
- Meas Chanty, Brun Jean-Marie, Kheak Bunna, Lagandré Damien, Sim Laksong, Cailleux Maryline, *"Agro-ecological atlas of Prey Nup polders"*, GRET, Projet de Réhabilitation des Polders de Prey Nup, Octobre 2007.
- Meas Chanty, Brun Jean-Marie, Kheak Bunna, Cailleux Maryline, *"La mise en valeur agricole des polders de Prey Nup: une experience de Recherche-Action et Vulgarisation Agricole"*, GRET, Projet de Réhabilitation des Polders de Prey Nup, Octobre 2007.
- Mouillot Réjane, "*La gestion de l'eau dans les polders de Prey Nup*", DVD, 20', GRET, MoWRaM, CUP, Janvier 2007.
- Mounier E., "*Construire contre les marées: évaluation filmée du projet Prey Nup au Cambodge, 1998-2008*", DVD, 58', AFD – Studio K, 2008.
- Rousseau Ph., Balmisse S., Stung Chinit Irrigation & Rural Infrastructure Project: main lessons learnt from project implementation, MoWRaM (+ GRET, CEDAC, AFD), February 2009.

- SNEC, Experiences and achievements of the "Support to the Commercialization of Cambodian Rice Project (2013-2017), SNEC (+ IRAM and NIRAS), February 2018.
- SNEC (the Analytic Unit for Agriculture Sector of the Supreme National Economic Council), Review of public investment in agriculture sector in Cambodia, SNEC/ASPIRE, April 2020.
- Thy HY (GRET), Fertilizer Buying Group of Stung Chinit FWUC with Bayon Heritage holding group, Case Study No 8, Support to the Commercialization of Cambodian Rice Project, SNEC, February 2018.
- Thy HY (GRET), Paddy Selling Group of Baray FWUC, Case Study No 4, Support to the Commercialization of Cambodian Rice Project, SNEC, February 2018.

6.3. ANNEX 3: ToRs for the field team

6.3.1. Field team composition

The Field team will be composed of

- Mr Jean-Marie Brun, Coordinator of the study for Cambodia;
- Mr Sophoan Min, National expert;
- Ms Doung Sokkhim, Additional field expert (Irrigation Service Center);

Besides, two counterpart officers will be involved for key steps and general data gathering:

- Mr/Mrs …… PDoWRaM Kampong Thom
- Mr/Mrs …… PDAFF Kampong Thom

} Focal points from PDAFF and PDoWRaM) have not been appointed yet.

6.3.2. Coordinator of the study for Cambodia – Jean-Marie Brun

Phase 2

Time input in Phase 2 = 17 days.

Key tasks in Phase 2:

- Prepare guidelines for interviews, review additional documentation and prepare detailed agenda and presentation for field kick off;
- Co-facilitate field kick-off meeting with national expert;
- Brief additional experts;
- Take part in some initial farmer's interviews and provide methodological guidelines to additional expert;
- Take part and facilitate part of Focus group discussions;
- Take part in interviews of key service providers;
- Analysis of data collected
- Analysis, consolidation of data and preparation on diagnosis report.

Phase 3

Time input in phase 3 = 9 days.

Key tasks in Phase 3:

- Preparation of consulting workshop;
- Elaboration of preliminary scenarii;
- Co-facilitatation of consulting workshop;
- Elaboration of operational frame for services to irrigating farmers.

Phase 4

Time input in phase 4 = 5 days.

Key tasks in Phase 4:

- Contribution to the overall report and preparation of restitution workshop;
- Take part in restitution (most likely at distance?).

6.3.3. National expert – Sophoan Min

Phase 2

Time input in Phase 2 = 19 days.

Key tasks:

- Prepare guidelines for interviews, review additional documentation and prepare detailed agenda and presentation for field kick off;
- Co-facilitate field kick-off meeting with the Study Coordinator;
- Brief and backstop additional experts;
- Collect data from additional expert interviews and analyse results;
- Conduct some initial farmer's interviews and provide methodological guidelines to additional expert;
- Take part and facilitate part of Focus group discussions;
- Take part in interviews of key service providers;
- Analysis of data collected
- Analysis, consolidation of data and preparation on diagnosis report.

Phase 3

Time input in phase 3 = 9 days.

Key tasks in Phase 3:

- Preparation of consulting workshop;
- Elaboration of preliminary scenarii;
- Co-facilitatation of consulting workshop;
- Elaboration of operational frame for services to irrigating farmers.

Phase 4

Time input in phase 4 = 0 day.

6.3.4. Additional expert (Irrigation Service Center) – Ms Doung Sokkhim

Phase 2

Time input in Phase 2 = 20 days.

Nb: In addition, Seng Sophak (Irrigation Service Center Director) will be mobilised for 2 days. The time input of Mr Seng Sophak, senior FWUC expert, is mainly foreseen to be

mobilised in phase 2 in the initial workshop and to contribute to consolidate the information regarding the history of Stung Chinit irrigation scheme and of the evolution of its use by farmers.

Key tasks:

- Take part in initial meeting with Stung Chinit FWUC;
- Participate in field kick-off meeting;
- Take part in interview Farmers representatives and technical services;
- Take part in test interviews of farmers (or small groups);
- Take part in briefing with Coordinator and National expert;
- Implement interviews of farmers / water users;
- Prepare synthesis of interviews / surveys;
- Take part in Focus Groups discussions.
- Implement interviews of service providers, relevant stakeholders;
- Prepare reports of interviews,
- Debrief with Study team.

Phase 3

Time input in phase 3 = 4 day.

Key tasks in Phase 3:

- Participate in consulting workshop;
- Support logistic, preparation and minutes taking.

Phase 4

Time input in phase 4 = 0 day.

6.3.5. Focal points from PDAFF and PDoWRaM

Phase 2

Time input in Phase 2: PDAFF = 4 days;
PDoWRaM = 4 days.

Key tasks:

- Support information and communication with local authorities;
- Facilitate the coordination and interview with institutional technical services at local level;
- Take part in some of the Focus Group discussions on relevant subjects.

Phase 3

Time input in Phase 3: PDAFF = 1 day;
PDoWRaM = 1 day.

Key tasks in Phase 3:

- Participation in the consulting workshop;

Phase 4

Time input in phase 4 = 0 day.

6.3.6. Synthesis of time inputs in Phases 2, 3 and 4

Phases	Coordinator (JMB)	National expert (SM)	Additional expert (ISC)	PDoWRaM	PDAFF
Phase 2	17	19	20	4	4
Phase 3	9	9	4	1	1
Phase 4	5	0	0	0	0
TOTAL	**31**	**28**	**24**	**5**	**5**
			34		

Note: in our technical offer, IRAM and its partners had made a provision to cover the costs of 40 working days of basic surveyors / enumerators. As seen above, we will mobilise 34 working days, but with more experimented profiles than surveyors. The costs will be higher, but the budget of the study is unchanged because unit costs are higher.

6.4. ANNEXE 4: Detailed calendar and time inputs for Phase 2

Date	Activities	Location	Coordinator (JMB)	National expert (SM)	Additional expert (ISC)	PDoWRaM	PDAFF
01/02 to 08/03	Prepare guidelines for interviews, review additional documentation and prepare detailed agenda and presentation for field kick off	Phnom Penh	3	3			
09/03	Meeting with FWUC. Gather available documentation, scheme map, members list, "historical" documents (Evolution of use of irrigation, members list and land owners lists, etc.)	Stung Chinit (FWUC Office)	1	1	1		
10/03	**Field kick-off meeting** + Discussion with local authorities and specific technical services.	Stung Chinit (FWUC Office)	1	1	1	1	1
11/03	Interview Farmers representatives and technical services	Stung Chinit area	1	1	1	1	1
12/03	Interviews of farmers (or small groups) – test data collection Brief Additional expert for the planning for following week data collection – work on data collection tools	Stung Chinit area	1	1	1		
15-19/03	Interviews of farmers / water users	Stung Chinit area			5		
22/03	Prepare synthesis of interviews / surveys	Kampong Thom			1		
23-26/03	Debrief with surveyor / additional expert / Continue field survey: FOCUS GROUPS discussion + interviews with key service providers	Stung Chinit area	4	4	4	2	2
29-31/03	Additional field surveys with farmers, service providers and relevant stakeholders	Stung Chinit area			3		
01/04	Analysis data collected – preliminary finding and identification of additional data or information to collect – preparation last surveys	Phnom Penh	1	1			
05-07/04	Debrief with additional expert / Additional field surveys with farmers, service providers and relevant stakeholders	Stung Chinit area		3	3		
By end of April	Analysis, consolidation of data and preparation on diagnosis report	Phnom Penh	5	4			
	TOTAL		**17**	**19**	**20**	**4**	**4**
					28		

6.5. ANNEX 5: Launching workshop report

6.5.1. Agenda of the launching workshop

Below is the agenda of the launching workshop of COSTEA study on services to irrigated agriculture in Cambodia, which took place in Phnom Penh on the 15th of January 2021.

Study on services to irrigated agriculture – Cambodia Case
Kick-off workshop

Phnom Penh ▪ 15 January 2021
Venue: Tonlé Bassac II Restaurant (#534 Preah Monivong Boulevard, Phnom Penh)

Time	Content / Activities	Speaker / facilitator
08:30 – 08:45	Welcoming participants.	
Introductive session: Background and purpose of the study		
08:45 – 08:55	Opening remarks by MOWRAM representative.	H.E. Chhea Bunrith, MOWRAM
08:55 – 09:05	Welcome remarks by AFD and general background on COSTEA.	Mr Muong Sideth, AFD
09:05 – 09:20	Round table introduction of each participant	All
09:20 – 09:30	Introduction on the purpose and background of the study on services to irrigated agriculture.	Mr Jean-Marie Brun (study team)
Methodological session: Study approach and methodology		
09:30 – 09:45	Presentation of the proposed study methodology	Mr Jean-Marie Brun (study team)
09:45 – 10:05	Questions, answers and suggestions to improve the methodology study.	Facilitator: Mr Sophoan Min (study team)
10:05 – 10:15	Synthesis and validation of the methodology and identification of reference documentation and sources	Mr Jean-Marie Brun (study team)
10:15 – 10:35	*Coffee break*	
Study site selection session		
10:35 – 10:45	Recall of the site selection criteria	Mr Sophoan Min (study team)
10:45 – 11:20	Presentation of the shortlist of 4 sites pre-identified Information by FWUC representatives on each sites Questions and answers on the short-listed sites and suggestion of additional criteria to consider	Mr Sophoan Min (study team) FWUC Representatives
11:20 – 11:50	Round-table: most suitable sites for participants and justifications Vote.	Facilitator: Mr Jean-Marie Brun (study team)
11:50 – 12:00	Synthesis and final selection of the site	Mr Sophoan Min (study team)
12:00 – 12:10	Synthesis of morning session	Mr Jean-Marie Brun (study team)

12:10 – 13:30	*Lunch break*	
Time	**Content / Activities**	**Speaker / facilitator**
Brainstorming session: Key stakes and challenges for irrigated agriculture in Cambodian rice sector		
13:30 – 13:35	Introduction of the session : stakes and challenges for rice-sector irrigated agriculture in Cambodia	Mr Jean-Marie Brun (study team)
13:35 – 13:50	Stakes and challenges for (rice-sector?) irrigated agriculture in Cambodia: 1- Links with policy objectives and performance of public investments.	Mr Lao Poliveth, Ministry of Economy and Finances (MEF)
13:50 – 14:05	Stakes and challenges for rice-sector irrigated agriculture in Cambodia: 2- a point of view by MoWRaM on irrigation management challenges.	MoWRaM representative
14:05 – 14:20	Stakes and challenges for rice-sector irrigated agriculture in Cambodia: 3- MAFF services to rice farmers.	MAFF representative
14:20 – 14:35	Stakes and challenges for rice-sector irrigated agriculture in Cambodia: 4- The point of view of the rice industry.	Mr Lun Yeng, Secretary General Cambodian Rice Federation
14:35 – 14:50	Stakes and challenges for rice-sector irrigated agriculture in Cambodia: 5- a point of view of irrigating farmers.	FWN representative
14:50 – 15:05	*Coffee break*	
15:05 – 15:50	Brainstorming and open discussion on the service needs and current services provided to irrigated agriculture, and challenges to address for increased valuation of irrigation	Facilitator: Mr Sophoan Min (study team)
15:50 – 16:00	Synthesis of the main outcomes of the discussion	Mr Jean-Marie Brun (study team)
Closing session: synthesis and next steps		
16:00 – 16:10	Summary of the workshop main outcomes	Mr Jean-Marie Brun (study team)
16:10 – 16:20	Information regarding the next steps of the study implementation	Mr Sophoan Min (study team)
16:20 – 16:30	Workshop closing speech	Mr Srun Sokhom (GDA/MAFF)

6.5.2. Attendance list of the launching workshop

Below is the final attendance list of participants in the launching workshop of COSTEA study on services to irrigated agriculture in Cambodia, which took place in Phnom Penh on the 15th of January 2021

No	Name	Position	Institution
01	H.E. Chhea Bunrith	General Director of Technical Affairs	Ministry of Water Resources and Meteorology
02	Mr Men Mlobbon	FWUC Department	Ministry of Water Resources and Meteorology
03	Mr Tang Sophat	Deputy General Director of Technical Affairs	Ministry of Water Resources and Meteorology
04	Mr Srun Sokhom	Deputy-Director General, COSTEA focal person in MAFF	General Directorate of Agriculture (GDA) Ministry of Agriculture, Forestry and Fisheries
05	Mr Kong Sam Oeun	Deputy Director	Rice Crop Department Ministry of Agriculture, Forestry and Fisheries
06	Mr Yun Sophan	Vice-Chief of Office	Department of Agriculture Extension (DEAFF), Ministry of Agriculture, Forestry and Fisheries
07	Mrs Seng Sophois	Officer	Department of Agriculture Extension (DEAFF), Ministry of Agriculture, Forestry and Fisheries
08	Mr Muong Sideth	Project Officer	French Development Agency (AFD)
09	Mr Sok Socheat	Executive Secretary	Farmers and Water Net (FWN)
10	Mr Lao Poliveth	Economist	Ministry of Economy and Finances (MEF)
11	Mr Lun Yeng	Secretary General	Cambodian Rice Federation (CRF)
12	Ms. Sorn Chhorvy Vatey	Project Coordinator /Communication	Cambodian Rice Federation (CRF)
13	Mr Chham Khon	President	Damnak Ampil system / Krouch Saeuch FWUC
14	Mrs Rom Reoun	President	Stung Chinit FWUC and Farmer and Water Net (FWN)
15	Mr Sea Cheav	2nd Vice-President	Ang Kou FWUC
16	Mr Sok Dara	Program coordinator	AVSF
17	Mr Neang Leng	Officer	Irrigation Service Center (ISC)
18	Mr Jean-Marie Brun	Study Coordinator	Study team (ARTE-FACT)
19	Mr Sophoan Min	National expert	Study team
on-line from Europe, in afternoon session only			
20	Mr Benjamin Vennat	Head of project COSTEA	AFEID
21	Mr Sylvain Cédat	Irrigation expert	Study team (IRAM)
22	Mr Christophe Rigourd	Team leader	Study team

6.5.3. Power-point presentations of the launching workshop

Power point presentations are provided in separate files.

6.5.4. Launching workshop report

Overview of the objectives of the workshop, and main sequences

- ### Objectives

The objectives of the study kick-off workshop were the following:

➡ To replace the study in the Cambodian context and identify key stakes.

➡ To present, discuss and validate the study approach and methodology.

➡ To select the site for the field study.

- ### Sequences of the workshop (agenda structure)

The structure of the workshop was made of five sequences as follows:

- Introductive session: Background and purpose of the study
- Methodological session: Study approach and methodology
- Study site selection session
- Brainstorming session: Key stakes and challenges for irrigated agriculture in Cambodian rice sector
- Closing session: synthesis and next steps

The detailed agenda is shown in Annex 1.

Proceedings of the workshop

- ### Introductive session: Background and purpose of the study

➡ *Opening by H.E. Chhea Bunrith, MoWRaM*

The workshop was opened by a statement delivered to the participant by H.E. Chhea Bunrith, General Director of Technical Affairs of the Ministry of Water Resources and Meteorology.

H.E. Chhea Bunrith has introduced the workshop by a reference to the long history of irrigation in Cambodia, from the early stage of Angkor era, up to present times, in which water management remain a key factor for the agriculture sector, and, sometime, an issue. The important investments made by the Royal Government of Cambodia for the development of irrigation in the last two decades have been underlined, with these two figures enhanced: whereas in 1998, irrigation systems were capable of supplying water to 407,000 ha, the irrigated surface was reaching 1,716,720 ha in 2017, less than 20 years later. And still, irrigation remains an important lever of public policies to reduce poverty and increase households' nutrition.

After expressing gratitude for AFD financial and technical support to irrigation development in Cambodia, H.E. Chhea Bunrith has underlined that irrigation service, as other services, rely on the quality of service delivered and on the satisfaction of clients or users. Finally, he has invited all participants, notably relevant government institution, to bring their support and contribution to COSTEA study on services to irrigated agriculture.

➡ *Remarks by Mr Muong Sideth, AFD*

Mr Muong Sideth, AFD, has made some complementary remarks on AFD support to irrigation in Cambodia and provided additional elements on COSTEA, which was set up by AFD and gather public institutions and experts engaged in the fields of agriculture and water in different regions of the world, in particular Southeast Asia, Northern Africa and Western Africa, and which has now entered its second phase. Mr Muong Sideth also underlined that the purpose of the study here is not only the irrigation service, *stricto sensu*, but all the services to agriculture in the irrigated context. This can encompass more diverse services to agriculture, not only for rice but also potentially for other crops.

After this intervention, we went around the table to allow everyone to introduce themselves.

➡ *Introduction on the purpose and background of the study on services to irrigated agriculture (JM Brun)*

Jean-Marie Brun has then made a brief introduction on the Study on services to irrigating farmers. He has recalled the background of the study and the brief history of the emergence of this topic within COSTEA. He underlined that the topic of the study is not (or not only and not mainly) about irrigation service, but about all services that farmers may need in the context of irrigated agriculture.

This may include both material and immaterial services:

Material services	Immaterial services
Water supply, irrigation management…	Technical extension and advisory,
Input supplies;	Managerial advisory
Equipment supply and maintenance services,	Information (e.g. information on markets);
Mechanized services (ploughing, harvesting);	Relations / linkage facilitation
Logistic (harvest gathering, transport);	Certification…
Credit, financial services, insurance…	Representation, advocacy…

He explained that the study is implemented in two countries only: in Cambodia and in Tunisia, and that it has two dimensions:

- A methodological dimension: develop methods and tools to assess needs for services in irrigated context, test them and draw lessons.
- An operational dimension: on the selected irrigation scheme, the study is expected to elaborate the vision of an implementable frame for multiple services development to irrigating farmers. [Nota bene: Yet, it is not the responsibility of the study team to operationalize this frame, but it could be carried over by an existing project

The study is implemented by IRAM (international coordination) in partnership with ARTE-FACT in Cambodia and BICHE in Tunisia.

The following overall time frame of the study was presented:

Last, the three objectives of the workshop were presented:

1. Present, discuss and validate the methodological approach.
2. Select the site of the study implementation.
3. Share different points of view on the stakes for irrigated rice production in Cambodia and service development needs to better address these stakes.

Question & Answers / Points of discussion

[Q] H.E. Chhea Bunrith asked if there would be exchange on the results between the two countries (Cambodia and Tunisia).

→ **[A]** There is no plan within the study (i.e. under the responsibility of IRAM and its partner, to organise an international workshop or consultation with stakeholders of the two countries. But likely, COSTEA could organise an international workshop to present and discuss results of studies done. It is unknown if COSTEA will have a plan to invite international participants to attend (face to face, or through video-conference.

- ## Methodological session: Study approach and methodology

After a break, a second presentation was made by Jean-Marie Brun providing some more details on the study approach and methodology.

The first steps implemented were recalled, notably the preparation, with the inputs from MoWRaM and FWN, of a preliminary short-list of 10 irrigation sites, which was then narrowed-down to 4 schemes after gathering and screening of additional information regarding each of these sites.

More details were presented on the following steps of the

study, notably the field assessment implementation (which is foreseen to take place in March-April) and the Participatory elaboration of a plan for services development. Ne will refer to the Power Point presentation for details.

Question & Answers / Points of discussion

A point was made on the need to inform and possibly associate relevant institutions at provincial and local level at the early stage of the implementation of the field work. It was agreed that PDAFF and PDoWRaM should be informed, and possibly associated in some part of the field work implementation. Local authorities (communes / districts) will also have to be informed and encountered as part of the study.

As an outcome of the discussion, it was agreed that MoWRaM and MAFF would officially inform their provincial representations (respectively PDoWRaM and PDAFF) and will encourage them to support the study (request for their cooperation) and take part at some relevant stages.

It was also agreed that PDoWRaM or PDAFF would be in position to facilitate the contacts with local authorities.

- ## Study site selection session

The workshop has then proceeded to the selection of the site (one site only) for the implementation of the study.

The sequence was facilitated by Mr Min Sophoan, as a study team member. Mr Sophoan ha first recalled the criteria for the selection of site / scheme where the study will be implemented.

Before the workshop, four potential schemes were shortlisted as follows:

- Preah Sdach (part of Kampong Trabek system) - PREY VENG
- Krouch Saeuch (part of Damnak Ampil system) - PURSAT
- Stung Chinit irrigation scheme – KAMPONG THOM
- Ang Ko – KAMPONG THOM

Representatives from each of the four Farmer Water User Communities (FWUCs) were invited to attend the workshop[13]. All the four FWUCs had confirmed their attendance, but on the last minute (in the afternoon of the day before the workshop), the representative of Preah Sdach FWUC has informed that he would not be able to attend (and that no replacement from his FWUC could be able to join) due to an event organised on the same day by Prey Veng PDoWRaM on their irrigation site (delivery of pumping machines).

Representatives from the three represented FWUC have delivered a brief presentation on the situation of their irrigation schemes. The three following representatives made these presentations:

- Mr Chham Khon, President, Krouch Saeuch FWUC (Pursat);
- Mrs Rom Reoun, President, Stung Chinit FWUC (Kampong Thom);
- Mr Sea Cheav, 2nd Vice-President, Ang Kou FWUC (Kampong Thom).

A summary of key criteria for each scheme was

[13] The study team was covering the costs for their travel, accommodation and food allowance. FWN has helped to organize their attendance.

prepared while presentation was made, summarized in the table below:

	Krouch Saeuch	Stung Chinit	Ang Kou
Rice production	Yes (+ other crops)	Yes	Yes
Operational irrigation	Yes (construction 2010)	Yes	Yes
Used in DS / farmers available in DS	2 seasons DS = 700ha (11 → 02) WS = 1,500 ha Farmers available in 03-04	2 to 3 cycles DS (01 → 04) Early WS (04 → 06/07) Late WS (07 → 11/12)	2 cycles DS (12 → 03) Early-wet (04 →07)
> 500 ha	1,500 ha (560 HH)	2,802 ha	765 ha [Approx.] 595 ha (need pumping) 170 ha (gravity irrigated)
Experience paddy selling	(2017) Experience of linkage with 2 rice mills. But farmers sells individually.	Previous experiences of collective selling of paddy (+ input purchase) Links with several millers.	ACs inside the scheme: some have deals with mills.
On-going project	(Discussion for solar pumping) APFP WAT4CAM (former WASP)	APFP WAT4CAM (former WASP)	APFP WAT4CAM (former WASP)
Good ISF collection	20,000 KHR/ha 40%	60,000 KHR/ha/year 77%	300,000 to 420,000 KHR/ha ISF payment in two times 95%
FWN member	Yes	Yes	Yes

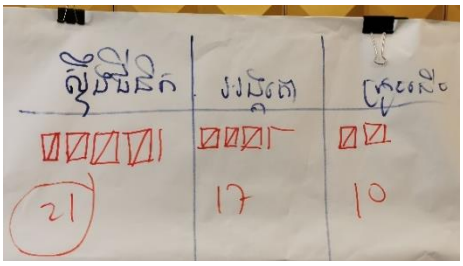
After the presentations, the workshop participant took part in a vote to select the study site. Each participant was entitled to give three votes, with the possibility to give all the three to one site, or to distribute his votes to two sites (or to the three sites equally). 18 participants took part in the vote.

The results were as follows:

Stung Chinit: 21 votes;

Angkou: 17 votes;

Krouch Saeuch: 10 votes.



And **Stung Chinit** scheme has thereof been selected as the study site.

- ## Panel and brainstorming session: Key stakes and challenges for irrigated agriculture in Cambodian rice sector

After a lunch break, the afternoon session was dedicated to hear different point of views, from different stakeholders and institutions, regarding their perception of key stakes and challenges for the irrigated agriculture in Cambodian Rice sector.

Five "panellists" were invited to present their views. Whereas the workshop agenda was anticipating to have discussion after the five presentations would have been delivered, in practice some debate took place after each of the presentations.

➡ *Mr Lao Poliveth, General Department of Policies, Ministry of Economy and Finance (MEF)*

Mr Lao Poliveth has first underlined the importance of irrigation in Cambodian public investments for the agriculture sector: in the last decade, irrigation

schemes have absorbed around 60% of all public investments made by Cambodia for the agriculture sector (with a slight decrease in the second half of the past decade: rather around 65% in the first half of the 2010's, then around 55% since 2016). It is acknowledged that the agriculture sector has contributed to the (remarkable) reduction of poverty in Cambodia over the last 15 years, and irrigation had a role in that.

Nevertheless, the presentation has also underlined that the economic return on investments made in the irrigation sector might not be commensurate to the level of efforts. Indeed, the production yields are increasing with irrigation, but production costs are increasing as well, notably with costs of pumping. Also the need to consider other crops than rice (with higher value) was also stressed.

Room for improvement was underlined by the presentation. For the up-coming years, Mr Lao Poliveth has suggested the following priorities for irrigation schemes development:

- Gradually shift the focus from large scale irrigation scheme to medium and small scale and connected to existing large ones;
- Do rationalization and harmonization irrigation projects with enhanced institutional coordination in each stage particularly pre-feasibility and feasibility study. Non-Rice Commodities should be also the priorities for irrigation investment decision;
- Continue to increase public spending in O&M for irrigation scheme;
- Strengthen the capacity of Farmer Water User Groups/Community to sustainably manage the water;
- Consider to promote privatization of irrigation scheme.

➡ *MoWRaM representatives (inputs were jointly provided by H.E. Chhea Bunrith, Mr Men Mlobbon and Mr Tang Sophat)*

MoWRaM presentation has mainly underlined technical issues related to irrigation and the development of infrastructure. H.E. Chhea Bunrith has notably underlined that there would still be huge investments necessary to improve water availability and control. Investments are still insufficient at sub-river basin level and to allow sufficient water storage capacities. It is also important to improve the water resources management at river basin level, and ensure the security of water supply over a long term plan (for the next 20 years and the next 50 years).

Mr Men Mlobbon has also underlined the lack of water distribution system.

The exploration of possible Public-Private Partnerships in the sector of irrigation is also an emerging subject for MoWRaM (and for MEF as well). The possible involvement of the private sector in building and maintaining irrigation schemes and ensuring their operation is seen as a possible way to reduce the burden on public budget. CAVAC project has approached MoWRaM to explore such possibilities, but H.E. Chhea Bunrith has underlined that this could not be done without a clear policy and legal framework.

➡ *Mr Kong Sam Oeun, Rice Crop Department, Ministry of Agriculture, Forestry and Fisheries*

Mr Kong Sam Oeun has presented the statistics of rice production (at national level) for year 2019, as shown in the table below.

Table of national data on rice crop in Cambodia for Year 2019

	Wet season	Dry season	Total
rop cultivation plan	2,513,895 ha	447,500 ha	2,961,395 ha

ce actually cultivated	2,739,446 ha	596,483 ha	3,335,929 ha
ce damaged	85,132 ha	2,736 ha	87,868 ha
sted surface	2,654,314 ha	593,747 ha	3,248,061 ha
ields	3,094 kg/ha	4,512 kg/ha	3,353 kg/ha
ıction	8,212,893 tons	2,678,842 tons	10,891,735 tons

He has also underlined the priority to be given to fragrant rice varieties, with a higher potential and better competitiveness on export markets. On this matter, the development of irrigation is key, with the possibility to secure two crops: one early seasons non-photosensitive variety such as *Sen Kraob*, followed by a photosensitive variety such as *Phka Rumduol*.

➡ *Mr Lun Yeng, Secretary General, Cambodian Rice Federation (CRF)*

CRF representative has first made a quite general introduction on the Cambodian Rice Federation, then on rice production and exports in Cambodia.

The main challenges underlined by Mr Lun Yeng in his presentation are:

- A rice production highly dependent on the seasons (flood, water regime);
- The small size of farmland (30% of total households have less than 1 ha);
- The heavy dependence on rainfalls;
- High production costs for small farms;
- A significant dependency on seeds from Vietnam (for short term non-photosensitive varieties);
- The change in land use, with in some cases industrial zone being developed on irrigated land;
- The high cost of pumping for non-photosensitive varieties such as Sen Kraob (16% of total production costs for early wet season Senkraob whereas no pumping is required for wet season Phka Rumduol.

CRF mentioned that there should be a delimitation of areas dedicated for growing rice for household's food consumption, and other areas for commercial production (with a focus on exports), and that the priority shall be given (in terms of investments) to commercial production and not to households' food production.

This point has raised comments, underlining:

1. That the fact that the paddy grown is destined to household consumption or to commercialisation / exports does not depends on the location of the rice fields, but on the surface owned by farmers who are likely to produce first for their consumption, then sell the surplus. In a given area, there might be farmers producing surplus while others are not reaching sufficient production for their needs.
2. The investments in irrigation / water resources control can also be a strong level to lift a number of the farmers from the category of non-self-sufficient to the category of farmers having rice surplus to sell (the

example of Prey Nup polders was recalled, with only 44% of households which were self-sufficient before the polders rehabilitation, and 74% which were self-sufficient (and having surplus) after the rehabilitation[14].

3. Also the idea to give the priorities to commercial farmers in the investments raises questions in term of policy objectives, equity, and coherence with the objective of poverty alleviation.

➡ *Mr Sok Socheat, Executive Secretary, Farmer & Water Net (FWN)*

Farmer and Water Net has presented some elements based on the experiences of its members on two main topics that related to services to irrigating rice farmers:

Topic 1: the commercialisation of paddy, through the pilot experience of Paddy Selling Groups (PSG) tested by some FWUCs[15]. On this matter, the following difficulties and challenges were reported by FWN:

- The limited Participation of FWUC's committee or farmers in the pilot initiative of PSG;
- Farmers not following the agreed selling plans;
- Loss of paddy due to weather condition, which jeopardize the selling plans;
- Difficulty to ensure more favourable prices to farmers through the PSG (buyer price often allow no margin to cover the costs of Paddy Selling Group coordination);
- Inconsistent paddy quality of PSG members, which could not meet the minimal quality requirements of rice millers;
- Practice of some companies (buyers) which limit their purchase at harvest time and pool prices down;
- Local middlemen are reluctant to cooperate with PSG of FWUC;
- Lack of availability of combine-harvest, which impact on the capacity of the FWUC/PSG to reach agreed volumes to be deliver per day to clients.
- Farmers not interested to engage with extra requirement proposed by companies (such as purchase of their fertilisers)

Topic 2: about irrigation management:

- Difficulties for FWUCs to get farmers to apply the collective cropping plans: for instance, in the same block and for a same season, some farmers decide to grow short cycle varieties, whereas other choose long-cycle varieties, which leads to conflict in water management.
- Insufficient infrastructure to distribute water efficiently to the plots, especially for the land plots that are more distant from the primary or secondary canals.
- For some FWUC, lack of reservoir / water storage capacities to keep water in dry season.

• Closing session: synthesis and next steps

Given the time (beyond schedule) the workshop has been rapidly closed after the panel session.

[14] Cf. Damien Lagandré and Philippe Lavigne Delville: "Polder rehabilitation, agricultural growth and inequalities: the socioeconomic impact of the Prey Nup project (Cambodia) – Summary Document, GRET, Etudes et Travaux en Ligne No 13 Dec. 2007.

[15] For some of them, with the support of the SCCRP project, financed by AFD from 2013 to 2017.

6.6. ANNEX 6: First extended list of shortlisted schemes

Shortlist established with the inputs of MoWRaM and FWN and discussed during meeting in MoWRaM on 6th October 2020.

No	Name of scheme	Province	District (commune)	Irrigated area (ha)	Year of establ	Irrigation operational (Year completed)	FWN	Existing project providing support until at least 2022 (name project / donor)	Other special assets or remarks that make this scheme interesting to be chosen for the study (e.g. innovative agro-ecological systems, innovation on rice commercialization, etc…)
1	Prek Kampong Trabek	Prey Veng	Kampong Trabek	1.825ha	2013	Yes		▪ MoWRaM O&M Budget	5 Pumping stations (3 for irrigation and 2 for flood evacuation). Rehabilitated with funds from China. Used for irrigated rice production. 2 crops: early wet season and dry season. (area is flooded in wet season).
2	Tomnop Sneh	Prey Veng	Ba Phnom	3.877	2011	Yes		▪ MoWRaM O&M Budget	Used for rice and other crops. (also some wild bird conservation area / integrated ecosystem).
3	Prek Saem	Kandal	Koh Thom (Sampov Pun)	175 ha	2016	Yes. Dry season and flood recession season	✓	▪ MoWRaM O&M Budget (was in WASP project)	Rice and vegetables production (maybe more vegetables: flood recession rice around the lake mainly…?).
4	Prek Wat Koh Teav	Kandal	Koh Thom (Sampov Pun)	105 ha	2016	Yes. Dry season and flood recession season	✓	▪ MoWRaM O&M Budget (was in WASP project too?)	Rice and vegetables production (maybe more vegetables: flood recession rice around the lake mainly…?).
5	Lum Hach	Kampong Chhnang	Baribor or Tuek Phos	3.289 ha	2017	Yes. Wet season and early season	✓	▪ MoWRaM O&M Budget	Quite large scheme, with concrete main canal and also concrete secondary canals (built with the support of JICA).

No	Name of scheme	Province	District (commune)	Irrigated area (ha)	Year of establ	Irrigation operational (Year completed)	FWN	Existing project providing support until at least 2022 (name project / donor)	Other special assets or remarks that make this scheme interesting to be chosen for the study (e.g. innovative agro-ecological systems, innovation on rice commercialization, etc…)
						rice.			
6.a	Krouch Saeuch (part of Damnak Ampil system)	Pursat	Bakan (Trapeang Chorng)	1,000 ha	2010	Yes. Rice production.	✓	▪ MoWRaM O&M Budget ▪ 2 or 3 projects in agriculture in the area (according to FWN)	
6.b	Tram Mneash (part of Damnak Ampil system)	Pursat	Bakan	1.500 ha	2016	Yes. Rice production.		▪ MoWRaM O&M Budget	
6.c	Polyum (part of Damnak Ampil system)	Pursat	Bakan (Trapeang Chorng)	840 ha	2012	Yes. Rice production.	✓	▪ MoWRaM O&M Budget	
7	Anlong Chrey	Kampong Speu	Thporng	870ha	2012 (FWUC in 2015)	Yes. Wet season and early season		▪ MoWRaM O&M Budget	
8	Tang Krasang	Kampong Thom	Santuk (Tang Krasang)	952 ha	2014	Yes. Wet season and early season	✓	▪ MoWRaM O&M Budget	
9	Stung Chinit	Kampong Thom	Santuk (Kampong Thmar)	2,802 ha	2006	Yes. Wet season and early season. Up to three seasons.	✓	▪ Support of FWN project (including crop diversification and livestock).	Experience of collective selling of paddy and SRP rice. >80% of irrigation service fees collected.
10	Ang Kou	Kampong Thom	Kampong Svay (Kampong Kou)	700 ha	2012	Yes. Pumping from Stung Sen.	✓	(former support of CAVAC)	Experience of collective selling of paddy. >80% of irrigation service fees collected. Good management of irrigation.

6.7. ANNEX 7: Tentative agenda and attendance list of "Field kick-off workshop"

A field kick-off workshop is foreseen to be organised in Kampong Thmar (Stung Chinit area) at the early stage of phase 2.

The objectives of the field kick-off workshop are:

- To present the study to local stakeholders.
- Collect documentation on the scheme.
- Review collectively the history of the scheme and the main changes that have triggered the evolution of the agricultural production in the scheme.
- Identification of key services needed by farmers.
- Mapping of key services and service providers.
- Identification of relevant / key stakeholders to interview (innovative farmers, input suppliers, service providers, extension workers, middlemen/millers…).
- Preparation of detailed planning.

Tentatively, participants will be:

- Study team: Jean-Marie Brun, Sophoan Min, Doung Sokkhim.
- Stung Chinit FWUC: about 5 to 7 representatives
- Representative of PDoWRaM (1 person, appointed as focal person for the study)
- Representative of PDAFF (1 person, appointed as focal person for the study)
- Representatives of local authorities (District, 3 communes)
- Innovative farmers in the scheme, representatives of former "Paddy Selling Group"
- Possibly: Farmer and Water Net and Irrigation Service Center
- Possibly some other key stakeholders as rice millers…

Next page is the tentative agenda of this workshop:

Time	Content / Activities	Speaker / facilitator
08:00 – 08:30	Welcoming participants.	
Introductive session: Background and purpose of the study		
08:30 – 08:35	Welcome remarks by FWUC Stung Chinit.	Mrs Rom Saroeun
08:35 – 08:45	Round table introduction of each participant.	All
08:45 – 09:00	Introduction on the purpose and background of the COSTEA study on services to irrigated agriculture, recall on the selection of Stung Chinit scheme for the study and Study methodology.	Mr Jean-Marie Brun Mr Sophoan Min
09:00 – 09:15	Presentation of Stung Chinit scheme history, current situation and trends	Mrs Rom Saroeun
09:15 – 10:00	Discussion on Stung Chinit history and on the drivers of the evolution of the use of the irrigation scheme	Facilitators: Mr Sophoan Min Mr Jean-Marie Brun
10:00 – 10:20	*Coffee break*	
10:20 – 11:30	Listing / brainstorming: what do farmers (and other stakeholders) need to implement irrigated agriculture to its full potential? (does all farmers – in the same scheme – have the same needs?)	Facilitators: Mr Sophoan Min Mr Jean-Marie Brun
11:30 – 13:00	*Lunch break*	
Presentation by key stakeholders / institutions on their roles and services to farmers of Stung Chinit		
13:00 – 13:15	FWUC	Mrs Rom Saroeun
13:15 – 13:30	PDoWRaM	Representative of PDoWRaM
13:30 – 13:45	ISC? FWN?	Mr Seng Sophak?
13:45 – 14:00	PDAFF	Representative of PDAFF
14:00 – 14:15	Local authorities	Commune / district
14:15 – 14:30	*Break*	
Brainstorming session: Identification of other service providers and assesses matching with needs		
14:30 – 15:30	List other service providers Come back on list of needs and check matching and gaps. (+ link with history of the use of irrigation in Stung Chinit)	Facilitators: Mr Sophoan Min Mr Jean-Marie Brun
15:30 – 15:40	Synthesis of outcomes of discussion	Facilitators: Mr Sophoan Min Mr Jean-Marie Brun
15:40 – 15:55	Program of the following days	
15:55 – 16:00	Closing	