

**Kingdom of Cambodia
Nation Religion King**

**Ministry of Agriculture, Forestry and Fisheries
Cambodia Agricultural Sector Diversification Project
IDA Credit No. 6366 KH**

TERMS OF REFERENCE

Consulting Firm for Feasibility Study to develop an Agricultural Information System (AIS)

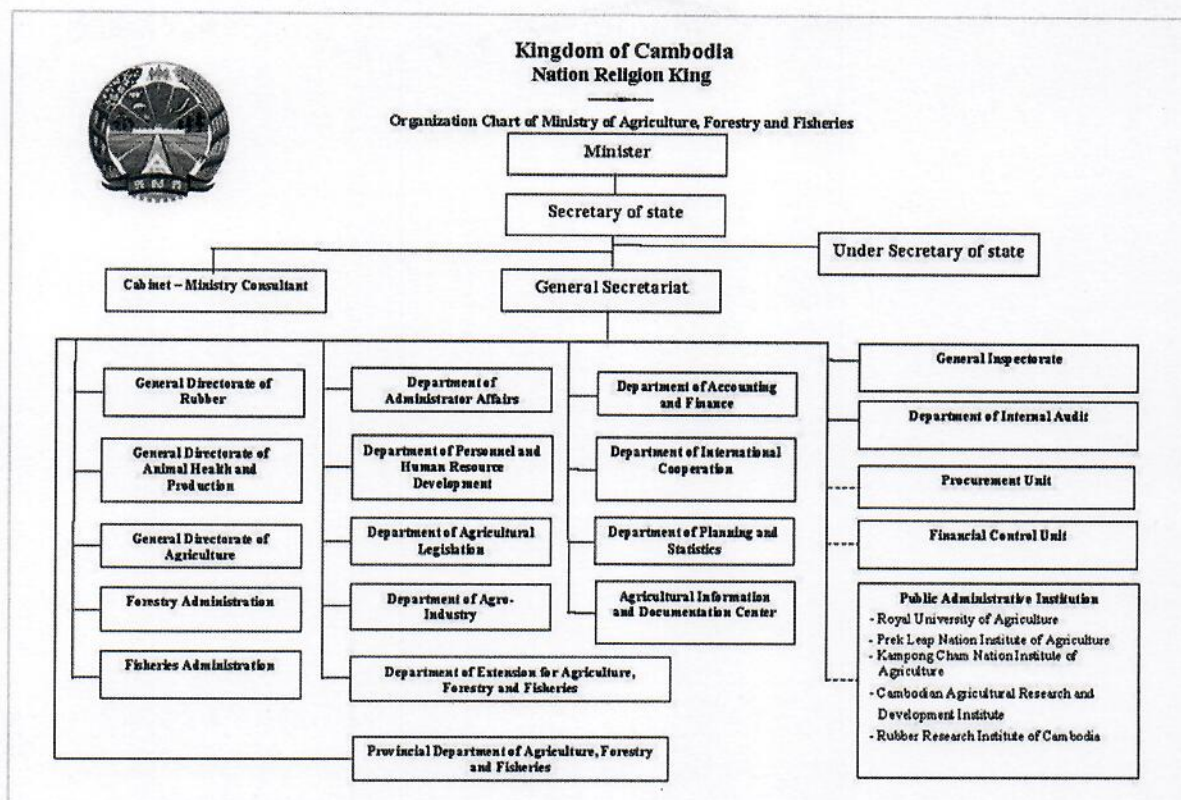
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| Post Title: | Consulting Firm for design and implementation of Agriculture Information Systems (AIS) |
| Project Title : | Cambodia Agricultural Sector Diversification Project (CASDP) |
| Duty station : | Phnom Penh, Cambodia |
| Level : | Consulting Firm |
| Duration : | 6 Months |
| Supervisor : | Project Director of CASDP |

I. Background to the study:

1. The CASDP is a project to support the implementation of the Royal Government of Cambodia's to enhance market opportunities through an inclusive, beneficiary-led, market-driven approach leading to enhanced competitiveness and increased capacity to manage climate risks and to be implemented over 6 years. The Project Development Objectives of the recently approved CASDP are to facilitate the development of diversified agriculture value chains in selected geographical areas in Cambodia and to provide immediate and effective response in case of an eligible crisis or emergency. The project aims to support (i) facilitating integrated agribusiness investment; (ii) investing in farm-level organizations and farm productivity; (iii) expanding value chain linkages; (iv) stimulating agribusiness innovation; (v) investing in critical public goods which provide the supportive environment; and (vi) identification and provision of key economic infrastructure to remove constraints to diversified agriculture development. The key results the project expects to achieve are (a) Increase in the volume and value of gross sales at benefitting farms (percentage); (b) Increase in the value of gross sales of benefitting agribusinesses (percentage); (c) Share of non-rice production area of participating farmers. The main beneficiaries of the project are: (i) farmers in selected project regions, both rural and peri-urban; (ii) agribusinesses (entrepreneurs and workers) participating in identified value chain development; (iii) general population in rural project areas; and (iv) project implementing agencies (IAs) at national and sub-national level. The Cambodia Agricultural Sector Diversification Project (CASDP) comprises the following five components: (a) Component 1- Enabling Agriculture Diversification; (b) Component 2 - Supporting Public Infrastructure; (c) Component 3 - Improving Agriculture Information Systems and Quality Control Management; (d) Component 4 - Project Management, Coordination, and Monitoring and Evaluation; and (e) Component 5 - Contingent Emergency Response.

2. A diagram showing the overall structure of MAFF is presented below:

Figure 1. Organigram of Ministry of Agriculture Forestry and Fisheries (MAFF)



II. Rationale for the study:

3. The Component 3 of the CASDP aims at strengthening foundational knowledge, data analysis capacities, and delivery systems within the public sector and their implementation and enforcement. These will contribute to broad and transparent knowledge and improved decision making of public sector and private actors, with impacts reaching beyond the project's beneficiary farmers, POs, and SMAs. Agriculture information and quality control management systems will also benefit farmers, POs, and SMAs that operate in areas not included in the project communes and provinces. Under sub-component 3.1, the CASDP aims to upgrade MAFF capacity in three key areas: a) Technical Information and Dissemination, b) Market Intelligence and c) Agricultural Statistics.

- (a) **Technical information collection and dissemination.** The existing system in the MAFF will be strengthened to ensure that quality extension information is available to all stakeholders, in particular to and through extension works directly to farmers, POs/ACs, and agribusinesses. Data and information on farming systems and economics will be systematically collected and analyzed to improve the economic planning and production; post-harvest and processing, packaging; advice provided to farmers, POs, and agribusinesses. TA will be provided to update and upgrade the ICT work and collaborate with mobile network providers, the MAFF's agriculture extension website, its YouTube channel and Facebook tools, and other communication channels that are currently in use or could be of future importance. Support activities will be aligned and coordinated with the support that other development partners have provided the MAFF. Collection and dissemination of technical information will also be coordinated with regard to the quality management requirements (for example, for the Association of Southeast Asian Nations good agricultural practice [GAP]) and as developed under Sub-component 3.2. This aspect will include elements that support private sector agribusiness investment, such as seed and fertilizer catalogs, phytosanitary reporting, water resources and user registries, and publication of regulatory requirements. Efforts will be made to align the frequency and types of data to enhance the contributions of the agriculture sector to the overall national multisectoral nutrition agenda. The project will support the establishment

and operation of a database repository of all technical, policy, and legal (agriculture) documents relevant to the sector for internal and external access and use.

- (b) **Market intelligence.** The Agriculture Marketing Office (AMO) under the Department of Planning and Statistics of MAFF already operates a limited Agriculture Marketing Information System (AMIS) with some digital tools for collection and collation of price data collected on a real-time basis from key markets around Cambodia. Currently the system collects wholesale and retail data three times per week from approximately 150 local markets country-wide and covering approximately 250 commodities. A functional AMIS (www.amis.org.kh) is operational and transmits this market information. The AMIS will be upgraded to include information to allow strategic decisions on long-term investments in perennials (for example fruit trees, spices) and livestock. Support measures will be geared toward ensuring that new and/or improved value chains provide more sustainable and financially viable alternatives in the medium and long term. The system of market price information and dissemination will be reviewed, and demand-based improvements in coverage and outreach will be implemented. The AMIS will be expanded taking advantage of mobile technologies and including Agricultural Statistics Information System. Technicians and extension service providers will be connected to farmers and AC/POs through mobile Apps in which technical information can be provided and inquired, and feedbacks given. Mobile Apps will also provide networking among market information service providers, farmers POs, ACs and SMAs each will play a role as information suppliers and consumers. Farmers, POs, ACs and SMAs can use the Apps to coordinate among themselves to manage supply and respond to market signals. Options to improve the dissemination (increased frequency) of the AMIS for selected commodities will be explored and recommended. Farmers and POs/ACs can also use the media to regularly share/report on their production status (e.g., cultivated areas, produce quantity, expected harvest date, etc.).

(c) **Agricultural Statistics.**

The Department of Planning and Statistics under MAFF is responsible for gathering, collating and analyzing data collected from provincial sources and has a key role in relaying and sharing this information with other MAFF line departments as well as with other users. The consulting company will integrate the specific needs of MAFF regarding management of agricultural statistics within the framework of the feasibility study.

4. While these are separate areas, there is considerable overlap and potential for sharing of information and resources involving the different Line Departments of MAFF. Unfortunately, the current system in MAFF does not facilitate information sharing as there is no centralized IT system based in MAFF at the current time. Each line department currently develops its own system in an *ad hoc* manner at Line Department level with no MAFF integration. It is therefore critical to review the current data management system of MAFF and to guide its evolution to enable achievement of results in the three key areas mentioned above.

III. Objective of the Study

5. The objective of the assessment study to provide recommendations for the design and implementation of an Agricultural Information System, covering both the hardware and software requirements that address the needs of all central and provincial entities of MAFF. The objectives of the Agricultural Information System are twofold--(i) it serves as the integrated (one-stop-shop) information management system for all data related to agriculture sector across MAFF, and (ii) it serves the needs of both public sector for policymaking purposes and private sector for assessing market information (such as prices, quantities, and critical actors along the various value chains). The study should therefore assess needs for upgrade/enhancement of content and modalities of implementation of existing systems and/or establishment of new ones, following consultations with clusters of stakeholders from public and private sectors (for example, for market price information for private actors such as ACs and SMAs, what should be the frequency of information dissemination, most

relevant information to disseminate, from which markets, etc.) This is especially relevant at the provincial level where data collection and dissemination should be closely integrated with farmer beneficiaries and other stakeholders. The study should also assess the capacity of MAFF's staff, and recommend training activities in the operation, maintenance and development of the AIS, as well as draw up adequate manuals and related documentation. The assessment should also consider the possibility of an MIS which would provide information on monitoring of the on-going implementation of MAFF activities.

6. The proposed assessment study is expected to include a thorough review of the existing IT and human resources capacity of MAFF aligned with the needs and requirements of the various line departments as the starting point to the scope and design the proposed AIS. It is expected that the Consulting Firm draw extensively from the recently completed study funded by ADB¹ on the digitalization of agriculture in Cambodia. Furthermore, the Consulting Firm is expected to offer realistic and sustainable AIS design options, taking into account the financial, technical, and human resource capacity available at MAFF. The Consulting Firm will be expected to present the findings and recommendations of the feasibility study to CASDP and MAFF. The assessment study will enable MAFF senior management to select the most appropriate AIS design which corresponds to the current and future projected AIS needs of MAFF.

IV. Tasks of the Consulting firm:

7. **Task 1.** Detailed assessment of the current agricultural extension system, including data collection, processing, and dissemination, in close consultation with all relevant officials at MAFF and PDAFF. In addition, visits may be undertaken to selected provinces in order to assess provincial capacities. The topics to be covered are not limited to the following:

- i. Review system at the Department of Planning and Statistics (DPS) on agricultural statistics data collection, processing and information dissemination.
- ii. Review the work of AIDOC, Technical Departments and MAFF Extension Department on development of extension materials, how these are cataloged and stored and the transmission mechanisms making such materials available to farmers at field level.
- iii. Current state of MAFF IT system functionality for handling and collecting data including AMIS and covering delivery of information services to users.
- iv. Sharing of database information among line departments and stakeholders on intranet as well as for external users.
- v. Assess the MIS reporting system for monitoring and evaluation processes of MAFF and integration with data collecting system.
- vi. Review capacity to collect and process data from provinces and disseminate information back to provinces via extension services.
- vii. Evaluate numbers of current users and projections for future user growth of AMIS.
- viii. Assess current human resources capacity at MAFF for maintenance and development of IT system and possible training/recruitment measures required to maintain the proposed system.
- ix. Draw up specifications required for IT hardware, data server storage, and software capacities and possible cloud storage capacities needed along with estimated budgets
- x. Assess IT security and cyber security measures required for the system.

8. **Task 2.** Detailed assessment of desired functionality of future AIS expressed by stakeholders of MAFF both from Central and provincial locations. This assessment should cover the following:

- i. Functionality required by MAFF for the various database in MAFF to be integrated (talk to teach other) as well as data collection and management to serve this purpose.
- ii. Functionality required by for internet-based applications and end-user services.

¹ MAFF, Digitalization strategy development for agriculture in Cambodia, ADB 2022

- iii. Functional capacity requested by MAFF line departments in order to use live streaming tools for animal and plant disease diagnosis (bandwidth requirements to be assessed as well as geographical coverage considered).
- iv. Extension services communication tools provided to farmers (via smartphone or other technologies).
- v. Functionalities requested by MAFF stakeholders in database management and data handling.

9. **Task 3. Digital Marketing Needs Assessment**

- i. Detailed review of current AMIS results and proposed expansion operated by MAFF in consultation with Department of Planning and Statistics
- ii. Consultation with agricultural market operators and users of market information for development of on-line marketing and sale of agricultural commodities.
- iii. Design appropriate digital tools corresponding to needs and capacity of MAFF
- iv. Assess possibility for the AMIS to generate fee payments by users in order to contribute to AMIS running costs.
- v. Design appropriate user support and help systems as well as monitoring of user feedback, and complaint/satisfaction levels link to RFM.

10. **Task 4. Presentation of proposed Solutions**

- i. Stand-alone system – advantages, disadvantages, costs
- ii. Cloud-based system – advantages, disadvantages, costs
- iii. Combined systems - advantages, disadvantages, costs
- iv. Operational Feasibility
 - *Will the proposed solution fulfill user requirements?*
 - *How will the solution change the user work environment?*
- v. Technical Feasibility
 - *Is the proposed solution practical?*
 - *Does MAFF possess the necessary technical expertise to maintain the proposed technical option, and can this capacity be attained? (Hardware/Personnel)*
 - *Hardware and software infrastructure needed to implement the proposed option*
- vi. Financial Feasibility
 - *Is the proposed solution cost-effective?*
 - *Compare capital investment amounts and yearly operations costs for different solutions*
 - *Identify costs linked to future upgrading or expansion*
- vii. Schedule Feasibility
 - *Outline a realistic work plan with anticipated deadlines and milestones*
 - *Estimate the volume of work inputs (person/months) and profiles of contractor staff required to implement recommended options.*

V. Duration of the assignment.

11. The planned duration of the Contract is six months. The Consulting Firm is expected to carry out consultation work with key management stakeholders of MAFF on site in Cambodia.

VI. Working Arrangement, Deliverables and Reporting Requirements

12. ***Working arrangements.*** The Consulting Firm will work closely with, as well as report to, the MAFF.

13. ***Deliverables.*** The Consultant Firm will be responsible for carrying out the tasks outlined above. PCO will provide coordination support in arranging meetings and consultations with MAFF both at

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national and provincial levels. It is expected that the Consulting Firm will organize a total of 3 workshops involving the participation of relevant stakeholders: i) a feasibility study launch workshop in order to introduce the Consulting firm to MAFF; ii) an inception report workshop within one month after commencement of the Contract and iii) a final workshop which presents the findings of the feasibility study to relevant stakeholders at MAFF and other development partners.

14. **Reporting requirements.** Reports should be submitted in Khmer and English. This applies to the updated reports/plans specified below as well as studies, reports, briefers, technical guides or any other document for public distribution (on a case-by-case basis).

15. All reports and plans are subject to written final approval and acceptance by MAFF and include the following.

- **Inception Report.** The Inception Report will provide an overview of issues identified during the inception period and highlight any possible changes or amendments to the workplan. The draft Inception Report will be prepared and submitted 3 weeks after commencement of the Contract. The final version of the report will be issued one month after commencement of the Contract, taking into account comments and recommendations from MAFF.

- **Draft Final Feasibility Study Report and Final Feasibility Study Report.**

16. The Consulting Firm will submit a draft feasibility study report by the end of the fifth month and, following comments from MAFF, the final report will be submitted by the end of Month 6 after a presentation of the feasibility study findings at a closing workshop.

| No | Deliverables | # Timelines of deliverables | Payment Schedule % |
|----|--------------------------------|-----------------------------|--------------------|
| 1 | Inception Report | End 1 st month | 30 |
| 2 | Draft feasibility study Report | End 5 th month | 50 |
| 3 | Final Report | End 6 th month | 20 |
| | Total | 6 months | 100 |

VII. Support provided by the MAFF

17. The MAFF will ensure that the consulting firm has the necessary access to all relevant officials at MAFF for carrying out the feasibility study. The MAFF will also facilitate visits made to provinces based on the feasibility study work schedules.

VIII. Key Personnel

18. The assignment will be carried out by a consulting Firm or other organization with the relevant experience specific to the assignment notably in design, implementation, and management of AIS, AMIS or AKIS (Agricultural Knowledge and Innovation Systems) for agriculture ministries. At a minimum, the Consulting Firm will have (country based) International Chief of Party (COP)/Project Manager, supported by 2 suitably qualified local IT experts.

IX. The assignment will require the following minimum qualifications of the Consultant:

(a) Consulting Firm:

- Extensive and demonstrated professional experience of at least five years in systems analysis, design, and implementation of AIS, AMIS, or AKIS technologies supporting Ministries of Agriculture world-wide especially in developing and transition countries, as well as East Asia;
 - Demonstrated experience in implementing at least 2 similar assignments
 - Demonstrated experience managing complex programs and technical staff;
- (b) The Lead Consultant (6 months input) is responsible for the overall management of the contract. The candidate must have a track record of successful project management and experience working on development and operation of Agriculture Information Systems to include:
- Qualified to Master's level in agricultural economics or equivalent
 - Minimum 10 years of experience working on agricultural statistics and data processing at ministerial/ sub-ministerial level, or internationally. Familiarity with AIS, AMIS or AKIS with Ministries of Agriculture would be an important asset.
 - Strong capacity in using IT systems with application to data analysis reporting with capacity to advise and support counterpart ministerial staff
 - Capacity to manage teams and contribute to the budgeting for investment and operation of AIS or equivalent system
 - Other desired qualifications include: prior experience in South East Asian countries; a proven ability to work collaboratively with the government, World Bank and/or other donors; experience forging partnerships between private sector entities.
- c) Digital Marketing Specialist (3 months input)
- Minimum 10 years of international experience as an IT professional with experience in the food or agriculture sector
 - Demonstrated experience in use of digital marketing tools preferably using multi-user web-based systems preferably in the agricultural sector
 - Experience in supporting digital marketing in agriculture related activities especially in AMIS, AKIS, AIS, or similar.
 - Capacity to define IT hardware and software requirements in order to deliver digital marketing activities
- d) Senior IT Systems Analyst (6 months input):
- Qualifications in IT studies to Master's level or equivalent together with proven international experience in implementation of AIS, AMIS or AKIS with Ministries of Agriculture.
 - Minimum 10 years of experience as an IT professional with demonstrated experience of managing IT teams on projects linked to the agriculture sector.
 - Strong capacity in systems analysis and design, audit of IT systems and capacity to assess IT human resources services
 - Proven track record of participating in at least one IT feasibility study providing services in a multi-user internet based environment.