

Orissa Community Tank Management Project

Terms of Reference

For

Developing a Web-Enabled Management Information System

1. Background:

The Government of Orissa in partnership with Government of India has initiated a project to repair and rehabilitate approximately 900 minor irrigation tanks having a command area of 40 ha to 2000 Ha and covering 1.20 lakh ha across the state of Orissa with funding from World Bank. Tank irrigation is one of the oldest methods of irrigation in Orissa. The State has 28,303 tanks approximately, including tanks of the Government and Private Sector (GoI, Minor Irrigation Census, 2001). About 3646 of these tanks are relatively large with an irrigation capacity of 5.47 million hectares. These 3646 tanks, known as minor irrigation tanks (projects), irrigate between 40 ha to 2000 ha of land and are managed by the Chief Engineer (MI). The Orissa Community Tank Development and Management Society (OCTDMS) has been formed under the Department of Water Resources, Government of Orissa and will implement the Orissa Community Tank Management Project (OCTMP). The project envisages execution through primary and secondary institutions from the State Project Unit to the Community Level Groups with facilitation of Support Organizations.

2. Objectives of the Project:

The overarching objective of the project is for ***selected tank based producers to improve agricultural productivity and water users associations to manage tank systems effectively***. In order to do so the underlying objectives of the project include:

- ***Strengthening community-based institutions to assume responsibility for the tank system improvement and management:*** This would include, inter alia, development of human resources, formation and/ or strengthening of local institutions for tank improvement and management, and developing mechanisms whereby the needs of the traditionally vulnerable stakeholders can be addressed.
- ***Tank System Improvements:*** This would include physical investment in tank systems. The actual rehabilitation work required would be determined for each tank system individually with an upfront 'Tank Improvement and Management Plan'

prepared in consultation with tank users prior to undertaking any investments. In general, interventions are likely to address deficiencies in feeder channels, tank bed and structures, and the water distribution and drainage systems.

- ***Livelihoods support services for tank system users:*** This would include promotion of farmer interest groups, agricultural research and extension support through public agencies and private sector providers as appropriate, and facilitation of market linkages for agricultural producers /groups (including fisheries and livestock products).
- ***Project Management:*** The objective of this component is to ensure smooth implementation of project activities, monitoring of project implementation progress and outputs/ outcomes achieved, and learning from project experience. Major activities under this component would include: (i) setting up and supporting project management units at the state and district levels, (ii) project MIS, (iii) internal monitoring, evaluation and learning, (iv) services of an external M & E agency to be engaged as consultants for the duration of the project; and (v) information and communications support including establishment of project website and documentation of project experience and its dissemination into the wider development community (v) Finance and Procurement.

3. Organization and Implementation Structure:

The overall responsibility for project implementation and coordination would rest with the Orissa Community Tank Development and Management Society (OCTDMS) which has been established to serve as a coordinating agency for tank rehabilitation in the state. The Governing body of the OCTDMS is chaired by the Agriculture Production Commissioner and includes representatives of various line departments and civil society. The OCTDMS would consist of a State Project Unit (SPU) and about 21 District Project Units (DPUs). All the activities of OCTMP are to be implemented at three levels: State Level, District Level and Tank Level. Both the SPU and DPUs would have six cells each –

a) Institution Strengthening Cell, b) Technical Cell, c) Livelihoods Cell, d) Monitoring, Evaluation Learning and Cell, e) Finance and Procurement Cell, f) Communication, Information Dissemination and Disclosure Cell.

At the State level there would also be a State Level Steering Committee to guide and review the activities of the OCTDMS, work on policy issues and coordination. At the district level there would be a District Level Steering Committee (DLSC) headed by the Chairman (District Collector) for reviewing the work and guiding the DPU as well as coordinating with line departments. The

District Project Director of the District Project Unit would be the Member Secretary of the (DLSC). At both the district and state level, OCTMP would be supported by the Line Departments. At the Tank Level, the Pani Panchayat is the nodal implementation partner and the Support Organisations would facilitate implementation processes.

In each project districts there will be one M & E specialists supported by one data numerator to co-ordinate the MIS related activities under the MLE section of the DPU. The project needs a well-designed, easy to use product to be developed which will be a comprehensive and decentralized MIS product for the smooth functioning of different project units, timely monitoring, tracking institutional performance and to ensure quick decision making related to project management. Therefore, it is proposed to utilize the services of an agency for designing the Management Information System for the project.

4. Justification for an MIS Product for OCTMP:

In alignment with the overarching objectives of the project, it is required that data generated at the tank, district and state level with regards to the project components and sub components would need to be tracked, captured and analyzed for ensuring the storage and evaluation of information and data, evaluating project performance, better project management, disclosure of information, learning, informed decision making and feedback etc. Given the size and the components of the project, performance tracking assumes a critical role in the management of the project. However, it would be practically impossible to track and maintain the performance related information from different project units manually. Therefore, the Orissa Community Tank Development and Management Society needs to procure the services of a competent and professional agency to establish a functional computerized MIS product and web page design to facilitate implementation of the Orissa Community Tank Development and Management Project and facilitate in performance tracking on a continuous basis.

5. Objectives of the Consultancy:

The central purpose of the consultancy is to design, develop and implement a comprehensive computerized and web-enabled "Management Information System" product for OCTMP which is cost effective, user friendly and functional and which responds to the needs for improved Project component planning, implementation and management of the project. The objective is to help to track and manage project activities in a manner that provides the right information to the right set of people at the right time to enable adaptive project management and decision support.

The specific objectives of this Consultancy include:

- Design and development of a modern, web-enabled project management and monitoring system for the OCTMP
- Development of an Orissa Tank Information System
- Development of internal and external websites
- Deployment and implementation support
- Defining Institutional arrangements and undertake training and capacity-building for effective MIS implementation and sustainability

6. Scope of work and Key Deliverables:

For all the Key Activities and Deliverables mentioned below the External Agency has to consult with the Project Director OCTMP and SPU. The Consultant's tasks will include but not be limited to the following:

Task 1: User Requirement Assessment

The Consultant will:

- **Improve familiarity with all project activities** through project documentation, field visits, and discussions with stakeholders.
- **Determine detailed user requirements for the MIS** based on business requirements of Orissa Tank management and the OCTMP at various levels – community, tank, cluster, block, district, and State and related different tiers of management (SPU, DPU, *Pani Panchayat*, etc) including:
 - Determination of MIS stakeholders (all who have a role in data acquisition, processing, reporting, or use/decision making)
 - Determination of detailed project management and tracking indicators for the basic project Tracking Indicators (**Ref. Table-3 of Chapter -12 in PIP vol. I**)
 - Determination of various types of reporting content, formats, and frequency
 - Determination of various types of information to be catalogued and stored in the MIS (e.g. alphanumeric data, location, reports, photographs, videos, etc.) relating to the status and effectiveness of various project activities
 - Basic information flow requirements (into, within, and out of the MIS)
 - Basic additional hardware/software/dataset requirements
- **Detail design recommendations in a Systems Requirement Study** for the proposed OCTMP MIS. The design should be based on close interaction with the Client and be flexible to incorporate changes in activities or future phases of the project/program.

Task 2: Tank Information System

An important output of the MIS will be a modern minor irrigation Tank information System for all the minor irrigation tanks (presently about 3646 tanks) in Orissa. This will include:

- **Development of a computerized MI Tank database** on location and key characteristics (e.g. min/max water spread area, length of bund, command area, status of bund, , catchment area, rainfall, inflows, add other relevant parameters esp. those for which data is available in MI Census etc.) of all known minor irrigation tanks in the State of Orissa. Although this information is largely with the Client, the Consultant will need to gather the required information from appropriate offices/officers with the facilitation of the Client and will also need to evolve data formats and computerize the information collated in a computerized database.
- **Development of a simple GIS system** with location and attribute information collated. Overlays with available satellite imagery and administrative datasets at district, block and village-level (to be procured separately) will be undertaken by the Consultant. One purpose is for this system to help in future choice of tanks for improvement.
- **Appropriate Phasing will be undertaken** - priority will be given to first develop the Tank information system for the known project tanks and subsequently expanded to all the minor irrigation Tanks in Orissa.

Task 3: Project Management and Monitoring Information System

The primary function of the MIS will be to track and manage project activities in a manner that provides the right information to the right set of people at the right time to enable adaptive project management and decision support. The primary activities of the Consultant in this regard will include:

- **Development of a Web-enabled system to track project status.** This will include the development of a software system appropriate to the modern, effective tracking of the project keeping in mind the status of IT networking and other (e.g. power, institutional capacity) issues in Orissa. The system will probably need to be accessed both in an networked (off internet sever) and off-line (regularly downloaded) mode. The Database needs to be structured intelligently and appropriately to ensure ease of entry, quality management, access control, processing, visualization, and reporting. There will need to be appropriate links to simple GIS/mapping systems to provide an additional spatial perspective to the project status data. Appropriate security arrangements need to be made (e.g. for data backup and security, access levels, viruses, etc.). The systems developed should be compatible with the computer specifications and operating systems for the Client end users (to be decided in consultation with Client) and be interfaced closely with the work of other Consultants . The use of various visualizations to help better understand the data is essential (e.g. graphics, project management charts, maps, before/during/after photographs, etc.).

- **Development of an information management system** in order to ensure that the parameters tracked are captured, conveyed, stored, processed, visualized, and reported in an adequate and timely manner to support project status review and adaptive decision making. This will include the development of appropriate forms/ledgers and business processes (e.g. process of entering and using data from various offices – including at *pani panchayat* levels - at appropriate intervals, conversion of paper-based to electronic data, integrating into a centralized database at State-level, data quality management, etc.) to capture relevant administrative/institutional, financial, technical/physical, procurement, environmental, and social data from various offices. This will require the Consultant to work closely with the Client and other project Consultants (through discussions, interviews, participatory stakeholder workshops, iterative designs, etc.) in order to produce data and reports in a format relevant for various kinds of reviews (e.g. *ad hoc*, weekly, fortnightly, monthly, half-yearly, yearly, and status-to-date type reports on project status) at various levels (e.g. SPU, DPU, Cluster-level, *Pani Panchayat*, individual MI Tank). The process will include identification of MIS target user groups and determination of what, when, and how they can contribute to the MIS and what, when, and how they wish to access and use appropriately-designed MIS reports. The Status Reports should include tables, charts, maps, photographs, and descriptions/comments with comparison of current status to historical progress and targets, and be in easy-to-understand layouts to facilitate status reporting and decision-making to a wide range of MIS stakeholders.
- **Phased Deployment:** The system will be piloted in limited locations with limited functionality to iron out deployment issues. The system will then be scaled-up and deployed in all locations for the full functionality envisaged. Appropriate phasing-in/backup procedures will be designed and employed to ensure business continuity.

Task 4: OCTMP Internal and External Website Development

The Consultant will also develop an internal and external website to support OCTMP management and outreach. This will include:

- **Internal Website:** This will include the development of an internal website accessible (with appropriate content and functionality to those with appropriate institutional roles) with access to internal information for OCTMP management, including the web-enabled project management and monitoring system, and basic documentation and functionality to support internal processes.
- **External Website:** This will include the development of an external website/web portal that can be viewed with common web browsers with information about Orissa MI tanks, the OCTMP activities and basic documentation, public domain project status and progress, useful links, tenders, advertisements and support for feedback.

The Consultant will discuss closely with the client on the types of information that are needed to be in the internal and external domain. Appropriate measures would be taken to ensure security and minimize vulnerability to hacking/viruses/Trojans, etc. In addition, the Consultant will facilitate the

hosting of these web-services using appropriate arrangements (outsourced or internal) in consultation with the Client.

Task 5: Institutional Capacity Building for Implementation Support

The primary activities of the Consultant in this regard will include:

- **Institutional Arrangements:** The Consultant will suggest appropriate staff/positions in the OCTMP institutional structure (based on field visits and interviews) that can effectively manage the various MIS-related tasks – such as data entry, computerization, validation, processing, reporting, and use, as well as effective systems administration, security, updating, and sustainability. The Consultant will also conduct regular online and other surveys to determine user satisfaction and solicit suggestions for improvement.
- **Documentation and Training:** The Consultant will develop electronic and hardcopy documentation for all aspects of the MIS developed and provide appropriate training to relevant MIS stakeholders. This will include on-the-job support and handholding (including in-person, telephone and on-line support), as well as formal courses at regular intervals throughout this assignment.
- **Support for Procurement of MIS-related hardware, software, datasets, and communication:** The Consultant will assist the Client with procurement-related documentation (e.g. specifications, bid documents according to World Bank guidelines) and evaluation support for any additional MIS related hardware, software, datasets, and communication (e.g. broadband access) at various OCTMP offices.

7. Guiding Principles of MIS Design:

In order to minimize the complexities and make MIS a useful tool of performance monitoring, the consultant would be expected to adopt the following key principles in the development of MIS for the OCTMP-MIS.

- (i) The computer-based information sub-system at State Project Unit would answer state level needs for information to improve project management. This sub-system could mainly be a consolidation module as almost all the actual data entry and implementation tracking is expected to be done at the district level.
- (ii) Information needs and indicators to capture information for the project, the format and presentation style of the web page are to be identified in a participatory manner involving the key stakeholders of the project (the client) and the consultant.
- (iii) The potential users of information understand the utility of MIS and their role in collection, recording, transmission and use of information;

- (iv) The system provides for a two way flow of information, such that those who collect and transmit the information receive the feedback and the information flow synchronizes with the organizational structure;
- (v) While the major burden of collecting, reporting and transmitting information is to be borne by the project staff, the MIS design should ensure that it does not impose a high work load at any level in the organization and at the same time there is no information/data 'overload' at any level. The design should be intelligent to minimize data entry during routine use (e.g. drawing upon lists, dynamic menus/options, avoiding repetitive and unnecessary entries, etc.).
- (vi) The system is flexible enough to accommodate internal learning changes in future.
- (vii) Develop test procedures for the developed MIS software, which must also include procedures for the overall modular software testing (acceptance). The MIS should be fully tested (at the program level, sub-system level and the overall MIS level) for all functionality before its acceptance by OCTMP. The testing should ensure that the MIS linkages between the districts and the SPU work correctly.
- (viii) Prepare documentation (A comprehensive technical manual) that will be used for the maintenance of the system. The documentation will also be used as technical reference manual for IT staffs. Develop user guides to go with the system (covering all the sub-systems at Tank/Block/ District and SPU levels.
- (ix) Designed to focus on information on empowerment of the poor, income security and quality of service standards, project components and sub components which would include but not be limited to various aspects of institutional strengthening, tanks system improvements through technical/ civil engineering works, livelihoods, project monitoring, learning and evaluation, communication, dissemination of information and disclosure, transparency, accountability and governance, finance, procurement etc.

Note: The actual list will be determined as an output of the "System Requirements Study" process
- (x) The agency should have adequate manpower/branches at districts to attend to implementation assistance at DPUS and tank level.

8. Deliverables and Timing

The outputs to be delivered by the consultant include the following:

Deliverable	Description	Timing (from Contract signing)
Inception Report	Inception report (detailing schedule of work, keystaff deployment, methodology, etc.) and Inception Workshop to discuss with Client.	1 month
Systems Requirement Study	All key aspects of design (MIS structure, indicators, report formats, information flow, internal and external website structure and hosting arrangements, additional hardware/software/ data/ connectivity requirements, institutional arrangements, etc.)	2 months
Tank Information System	Computerized Tank Information System (GIS-based) developed with at least known Project tanks included in Draft stage and all Orissa tanks in Final stage. <u>Design Stage:</u> Indicators, information flow, institutional arrangements, software, hardware, and process design	Draft: 3 months Final: 6 months
Project Management and Monitoring System	<u>Piloting Stage:</u> software testing, full data entry and roll-out for selected modules in selected areas <u>Full Roll-out Stage:</u> deployment of system in all project areas for full functionality <u>Post Roll-out:</u> handholding support, proactive use surveys, bug fixes & updates till end of assignment	Design: 4 months Pilot: 6 months Full Roll-out: 9 months Post Roll-out support all through till end of assignment

Website Development	<u>Internal:</u> Demo and final websites for internal OCTMP staff use <u>External:</u> Demo and final website for public access	Demo: 8 months Final: 12 months
Documentation and Training	MIS documentation (design, use, and training manuals, organizational roles, etc.), Workshops & on-the-job training	All through the assignment Workshops at all key project stages and for all key deliverable stages – draft and final versions.
Final Report	Final overview of activities, review of MIS use, user perspectives, issues, suggestions for improvement and sustainability.	Draft: 14 months Final: 15 months

Note: the total duration of the consultancy would be 15 months (1 year and 3 months).

All deliverables should be in electronic (on CD/DVD – 10 copies of draft versions and 30 copies of final versions) and color hardcopy formats (10 copies draft, 30 copies final versions). This should include all data, manuals, illustrated training manuals, etc. Workshops should accompany all key draft deliverables to ensure that any comments for improvement can be discussed and agreed in a constructive, interactive manner.

Reporting and ownership:

- ◇ The draft reports should be submitted to the Project Director, State Project Unit of OCTMP for review and feedback and recommendations. The final report should have the revision and recommendations incorporated.
- ◇ The consultant shall submit six copies of each of the above reports to the Project Director OCTMP and also soft copies in CDs (6 CDs). All primary data collected in printed and electronic form should be submitted to the OCTMP along with the final report.
- ◇ The reports will be accepted subject to the approval by the Project Director, on the recommendation of the review committee.
- ◇ OCTMP will be the absolute owner of the software and will have copyright ownership and the agency shall not replicate or reproduce or use any software developed or datasets used for this assignment without the consent of the owner.

9. Data, Services and Facilities to be provided by the client

1.	Make available all project documents including Project Appraisal Reports, Project Implementation Plan, Community Operations Manual, preparatory studies, Financial Management Manual, present Data base of M.I.Projects in M.I. Organisation,etc.
2.	Office facilities, telephone, internet, computers, training guides, etc required for performing installation and commissioning of computerized and web-enabled MIS.
3.	Facilitate participation of key SPU, DPU and other project staff in the two pre-design workshops and one final workshop.
4.	Facilitate interaction and exchange of information between the consultant and the SPU, DPU and the other project supported agencies / staff/ Consultants and the CBOs.
5.	The consultant, however, will be responsible for all travel, local transport to field and accommodation throughout the period of the contract.
6.	The State Project Unit's Manager-Monitoring and Evaluation will act as a link between OCTMP, the consultant and other relevant stakeholders.
7.	The MIS agency will be responsible for all costs related to its assigned staff, including his/her salary, allowance, field accommodation, travel, transport and logistical support.
8.	OCTMP will make available OCTMP documents that may be required for the success of the Consultancy.
9.	OCTMP will ensure timely review of the stages of the consultancy to ensure that the project falls within the scheduled and agreed time lines.

10. Qualifications of the Consultancy Firm and Key Personnel:

The consultant firm should have prior experience in designing, developing and supporting implementation of a computerized and web-enabled MIS system in World Bank/externally supported projects and/or large concerns. The consultants firm must have considerable experience in design and operationalization of MIS system in similar projects.

List of Key Professional Positions whose CV and experience would be evaluated:

The Consultant will provide a team of experts with the following skill sets who shall be adequately qualified and experienced in both Development projects and IT related Field to satisfactorily and timely deliver the expected outputs.

Name of Position	Key qualification	Experience
Team Leader	Post Graduate in IT/Computer Science	Minimum of 10 years experience in systems and software development which includes at least 6 years of experience in web enabled MIS development of comparable projects
Tank Information Management Expert	Post Graduate in Civil Engineering or related field	Minimum of 10 years experience in management of tank systems, with some relevant experience in information management
GIS Expert	Post Graduate in Geospatial technologies, GIS, Remote Sensing or similar area	Minimum of 5 years experience in modern spatial information systems. Experience with GIS systems for rural projects
Web Developer	Graduate in Computer Engineering, Web Design, or related area	Minimum of 5 years experience in development of internal and external secure web based systems for large projects and added experience in creative designing and art would be desirable
Programmers	BCA or MCA	Minimum 3 years of experience in software development.
Communications Specialist	Masters in Communication/ Sociology/ Anthropology	Minimum 3 years of experience in working on communication, facilitating stakeholder discussions, and documentation projects in the Rural Development Sector

- The Consultant will make provisions for his/her own transport and related costs.
- Notwithstanding the qualifications to deliver the tasks listed above, the Consultant shall remain fully responsible to deliver the described project output.
- The consultant will work with OCTMP to develop training and support material for the MIS after installation support.

11. Review Committee to Monitor Consultants Work

The State Project Manager-Monitoring and Evaluation will review and monitor the work of consultants under the guidance of Project Director, OCTMP. OCTMP will constitute a review/steering committee to monitor the progress and interact with the consultant. The review committee shall consist of the following persons:

1. Special Secretary cum Project Director, OCTMP, DoWR
2. Director, Monitoring and Evaluation Cell, DoWR
3. Joint Secretary cum PIO, DoWR
4. Manager/Team Leader M, E & L
5. Manager/Team Leader Institution Strengthening
6. Manager/Team Leader Technical Unit
7. Manager / Team Leader Livelihoods
8. Manager/ Team Leader Finance and Procurement
9. Manager/Team Leader Communication, Information Dissemination and Disclosure

12. Payment Schedule:

Deliverable	Timing (from Contract signing)	Payment %
Inception Report	1 month	10%
Systems Requirement Study	2 months	10%
Tank Information System	Final: 6 months	10%
Project Management and Monitoring System	Design: 4 months Pilot: 6 months Full Roll-out: 9 months Post Roll-out support all through till end of assignment	Pilot Completion:10% Full Roll-out Completion: 20%
Website Development	Final: 12 months	10%
Documentation and Training	All through the assignment Workshops at all key project stages and for all key deliverable stages – draft and final versions.	10% (After Final workshop)
Final Report	Final: 15 months	20%