

# **TERMS OF REFERENCE FOR CONDUCTING WATER USE EFFICIENCY STUDIES OF COMPLETED MAJOR/ MEDIUM IRRIGATION PROJECTS**

## **1.0 OBJECTIVE OF THE STUDY**

### **1.1 Water Use Efficiency**

The main objective of the study is evaluation of water use efficiency of completed major/ medium irrigation projects comprising following efficiencies of projects:

- (i) Reservoir Efficiency/Diversion Efficiency;
- (ii) Conveyance Efficiency;
- (iii) On Farm Application Efficiency;
- (iv) Drainage Efficiency and
- (v) Overall Project Water Use Efficiency.

The efficiencies of various components of project so estimated shall be compared with the efficiencies considered at project formulation (i.e. DPR) stage. The reasons for differences in two efficiencies (i.e. estimated and considered at DPR stage) shall be identified, analyzed and suitable remedial measures to improve the efficiencies shall be recommended so as to bring the efficiencies of various components of project to the level considered at project formulation stage.

Besides collecting the secondary data of a decade, primary data for one agriculture year - Kharif, Rabi & Hot weather/summer shall be observed & used. The consultant shall observe the methodology as prescribed under CWC guideline on Water Use Efficiency for working the overall efficiency of a project.

Before submitting the proposal, interested consultants are advised to study the methodology, visit the Project to be studied, explore the extent of secondary data available with the various agencies, extent of man-power/hours required etc. This will help in having fair idea about quantum of works involved in the study & in quoting appropriate rates for the study.

### **1.2 Findings and Recommendations**

The consultant shall come out with his findings and recommendations in detail. As stated in the objective “the efficiencies of various components of project so estimated shall be compared with the efficiencies considered at project formulation (i.e. DPR) stage. The reasons for differences in two efficiencies (i.e. estimated and considered at DPR stage) shall be identified, analyzed and suitable remedial measures to improve the efficiencies shall be recommended so as to bring the efficiencies of various components of project to the level considered at project formulation stage”. For this the findings shall specifically cover the following:

- (i) Identification of canal reaches with their lengths which have become damaged and need for repair/ restoration to original section / lining etc.
- (ii) Identification of structures that need repair or replacement.
- (iii) Length of canals with bank failure that needs repair.
- (iv) Any other structural /non-structural measures required.

The consultant shall also bring out his findings on irrigation potential created & utilized & assessment of the changes in the cropping pattern. The recommendations for improving the over all performance of project to the level envisaged at project formulation stage shall also be made.

## 2.0 PROGRAMME OF WORK AND PAYMENT SCHEDULE

The study shall be completed within a period of 18 (eighteen) months from the date of signing of agreement. The consultant shall be required to prepare the following reports.

- Inception Report
- Draft Final Report
- Final Report

The consultant shall be paid 20% of the cost of studies after signing of agreement.

All reports shall be examined in CWC and then place before core Group or Technical Advisory Committee (TAC) for review and approval. Only draft final report shall be put up to Technical Advisory committee for approval. Inception Report and Final Report shall be approved by Core Group.

The composition of TAC is as under :

- |     |   |   |                  |
|-----|---|---|------------------|
| 1.  | Member (WP&P), CWC                                      | - | Chairman         |
| 2.  | Commissioner (CAD & WM), MOWR                           | - | Vice Chairman    |
| 3.  | Financial Advisor, MOWR                                 | - | Member           |
| 4.  | Commissioner (PP), MOWR                                 | - | Member           |
| 5.  | Chief Engineer (POMIO), CWC                             | - | Member           |
| 6.  | Deputy Commissioner (WM)<br>Ministry of Agriculture     | - | Member           |
| 7.  | Assistant Director General ICAR                         | - | Member           |
| 8.  | Joint advisor (water Resources),<br>Planning commission | - | Member           |
| 9.  | Member (SML)<br>Central Ground Water Board              | - | Member           |
| 10. | Chief Engineer of Project                               | - | Member           |
| 11. | Director Irrigation Planning (North/ South)             | - | Member           |
| 12. | Director (IPO), CWC                                     | - | Member Secretary |

The composition of the Core Group constituted by Technical Advisory Committee (TAC) is given below:

- |    |  |   |                  |
|----|--|---|------------------|
| 1. | Chief Engineer (POMIO), CWC                  | - | Chairman         |
| 2. | Member Secretary, INCID                      | - | Member           |
| 3. | Senior Joint Commissioner (CAD & WM)<br>MoWR | - | Member           |
| 4. | Superintending Hydro- geologist, CGWB        | - | Member           |
| 5. | Director (IPO), CWC                          | - | Member Secretary |
- (A representative of ICAR may also be called as special invitee in the core group meetings)

### 2.1 Inception Report

The inception report shall highlight project details, objective and scope of the study as per Term of Reference (TOR), detailed methodology to be adopted by the consultant, outcome of initial interaction with project authority and officials from concerned departments of state government. The report may also include (a) names of the experts , sub-consultants and the works to be assigned to them (along with the allotted time frame) (b) man- month chart for

experts/ sub- consultant and (c) Schedule of work etc as per details submitted with the proposal by the consultant. The inception report shall include the requirement of primary and secondary data on the basis of which the studies are proposed to be undertaken and shall include the following:

- (a) Quantum of data requirement – Primary & Secondary
- (b) Assessment for requirement of primary data: and
- (c) Source of secondary data and period of data availability.

The above information shall be compiled as per **IPO-1**.

Seven copies of inception report covering various aspects as indicated under objectives of the study and supported by relevant drawing, maps, sketches and other details shall be submitted to IPO Directorate, CWC, New Delhi for examination and arranging the approval of Core Group.

The inception report shall be placed before Core Group constituted by Technical Advisory Committee (TAC) for its consideration and approval. The consultant shall be required to make a power point presentation on Inception Report in the meeting of Core Group and shall comply with the observation (if any) of the Core Group on the inception report. Revised inception Report after incorporating the observations of Core Group (if any) shall be submitted to CWC by the consultant, which shall be approved by the Core Group. The studies shall be carried out as per approved Inception Report.

On the approval of Inception Report, the Core Group shall recommend for release of the payment of 2<sup>nd</sup> installment amounting to 30% of total consultancy fee to the consultant.

## **2.2 Draft Final Report:**

This report shall be developed on the basis of the inception report and shall cover all aspects in detail as indicated in the Terms of Reference of studies. The consultant shall submit 15 copies of the Draft Final Report within 15 (fifteen) months of signing of agreement to Director (IPO), CWC for examination and arranging the approval of TAC. The Draft Final Reports shall be placed before Technical Advisory Committee (TAC) for its consideration and approval. The consultant shall be required to present the Draft Final Report and make a power point presentation on the report in the meeting of TAC and shall comply with all the observations of the TAC on the Draft Final Report.

After approval of Draft Final Report by the TAC, 3<sup>rd</sup> installment of payment amounting to 40% of total consultancy fee shall be released to the consultant.

## **2.3 Final Report:**

Seven copies of the report after incorporating the comments/ observations of TAC on Draft Final Report shall be submitted to Director (IPO), CWC for examination and arranging the approval of Core Group.

The Final Report shall be placed before Core Group constituted by TAC for its consideration and approval. The consultant shall be required to present the Final Report and make a power point presentation on the report in the meeting of Core Group and shall comply with all the observation of the Core Group on the Final Report.

Once Final Report is approved by the Core Group, 25 Copies of Final Report after incorporating the observations (if any) of Core Group on report shall be submitted to Director (IPO), CWC. The final report shall also be furnished in electronic form i.e. on CD. Final installment shall be released thereafter.

On approval of Final Report by Core Group and submission of 25 (Twenty Five) copies of Final Reports, 4<sup>th</sup> & final installment of payment amounting to 10% of total consultancy fee shall be released to the consultant.

### 3.0 Abstract of consultancy fee for conducting Water Use Efficiency Studies

SI No.	Particulars	Amount (Rs in Lakh)
1	Pay & allowances of experts/consultants/ supporting staff	
2	Honorarium to outside experts/ consultants	
3	Collection of primary & secondary data	
4	Hire Charges of equipments/ Instruments like Computers & Peripherals, Survey equipments Altimeter, Current meter, GPS, Camp Equipments etc.	
5	TA & DA to Experts/ Consultants & working teams.	
6	Office Expenses on stationery, Computer consumables, Telephone, Fax, Internet office contingencies, Postage etc.	
7	Preparation, printing & binding of reports.	
8	Miscellaneous expenditure.	
9	Over heads.	
10	Service tax (if payable).	
	<b>Total (In figures &amp; words)</b>	

#### 4. Reporting of progress:

The Consultant shall furnish monthly physical & financial progress reports to CWC & the nodal officer of concerned State Government. The consultant will also submit the interim report to CWC as and when required.

#### 5. Terms & Conditions:

**5.1 Team of experts:** The consultant organizations shall employ a team comprising multidisciplinary experts from all relevant disciplines. In case, the experts of a particular discipline are not available with the organization, they shall hire the same from out-side.

**5.2 Cost of study:** The cost of study as accepted shall remain firm and no enhancement therein shall be allowed under any circumstances.

**5.3 Payment:** The payment for studies as per Terms of Reference shall be made as per payment schedule indicated in clause 2.0 above.

**5.4 Utilization Certificate:** For release of payments except at the time of signing of agreement, the Consultant shall be required to submit Utilization Certificate in respect of the fund already released to them in prescribed format.

The amount released shall be spent for the purpose for which it has been sanctioned. Any part of the sanctioned amount, which is not utilized, shall be refunded to the Central Government immediately after the submission of accounts along with the utilization certificate & final statement of expenditure.

The equipments if any, purchased with these funds shall remain the property of the Government of India who shall have the right to transfer such equipments from the Consultant when these are no longer required for studies & allot them to another Institute/ Agency/ Department under Ministry of Water Resources.

**5.5 Duration of Study:** The duration of study shall be 18 (eighteen) months. The Inception Report, Draft Final Report, Final Report and 25 copies of Final Reports (after incorporation of observations of Core Group on Final Report) shall be submitted by 6 months, 15 months, 17 months and 18 months respectively from the date of signing of agreement / MoU.

**5.6 Date of commencement:** The date of signing the agreement/ MoU shall be taken as the date of commencement of the study.

**5.7 Date of completion:** The date of completion shall be taken as the day after the period of 18 months from the date of commencement.

**5.8 Modifications/ alterations:** Central Water Commission shall have right to make modification in the scope & objective of studies that may be necessary or considered desirable keeping in view the objectives of the study & ask the consultant to incorporate the same in the overall scope of the study & report.

**5.9 Default by consultant:** Any deviation from the Terms of Reference of the study shall be considered as default by the consultant.

**5.10 Force majeure:** An event beyond the control of the consultant & not involving consultant's fault or negligence & which is not foreseeable will be termed as force majeure. Such events may include but are not restricted to, wars or revolutions, hostility, acts of Public Enemy, Civil Commotions, Sabotage, fire, Explosions, Epidemics, Quarantine restrictions, Strikes etc.

If the performance in whole or in part or any obligation under agreement is prevented or delayed by any reason of force majeure for a period exceeding sixty days, either party may at its option, review the situation and decide the future course including the termination of the agreement in a mutually agreed manner.

**5.11 Responsibilities/ rights/duties of Consultants:** (i) The Consultant shall provide the Central Water commission all relevant deliverables that are mentioned in the Terms of Reference. (ii) The consultant shall exercise all reasonable skill, care and diligence in carrying out the study and shall carryout all his responsibilities in accordance with recognized professional standards/ ethics.

**5.12 Extension of Time:** All efforts shall be made by the consultant to complete the study with in the stipulated duration and no request for time extension shall normally be entertained. In case of circumstances beyond the control of consultant and in cases where complete justification of delay is submitted, TAC may considered reasonable time extension. However no escalation of the cost shall be allowed in case of such time extension. The Decision of TAC in the matter shall be final and binding on the Consultant.

**5.13 Penalty for delay:** The penalty for delay in the completion of study shall be imposed when extension of time for delay is not granted to the Consultant. The penalty shall be @ 0.5% of the agreed cost of the study per month of delay subject to a maximum of 5% and shall be deducted from the bill of the consultant.

**5.14 Ownership of Data:** All raw data and document collected for the purpose of Water Use Efficiency studies of the Project shall be the property of Central water Commission and must be submitted to CWC after completion of studies.

**5.15 Copyright of Report:** The copyright of all reports prepared by the consultant in connection with the assigned work shall rest with Central Water Commission. The report of Water use Efficiency Studies of irrigation project shall not be used/ reproduced in any shape, partially or fully, by the consultant for any purpose without prior approval of Central Water Commission.

Central Water Commission shall not be liable for any damage or compensation payable in respect or in consequence of any accident or injury to any personnel deployed by the consultant and the consultant shall indemnify and keep Central Water Commission indemnified against all such damages and compensation and against all claims towards proceedings, court charges and expenses whatever in respect thereof in relation thereto.

The consultant shall be responsible for the correctness of data, calculations and results of analysis.

**5.16 Settlement of disputes:** In case of any disputes or differences relating to the interpretation/ application of the provision of agreement, the matter would be settled mutually.

The Study shall be coordinated and monitored with respect to its physical and financial progress by Director (IPO), Central Water Commission, New Delhi.

**6. Findings and Recommendations:** Consultants will give findings and suggest recommendations for improving overall efficiency of the system.