

# Terms of reference (ToRs) for the procurement of services below the EU threshold

<b>Development of detailed project reports for five lakes in Jammu and Kashmir</b>	<b>Project number/ cost centre:</b> 20.2221.8-001.00
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## **0. List of abbreviations**

AVB	General Terms and Conditions of Contract (AVB) for supplying services and work 2018
AC	Alternating Current
BOM	Bill of Material
BOQ	Bill of Quantity
CAPEX	Capital Expenditure
CERC	Central Electricity Regulatory Commission
DC	Direct Current
DISCOM	Distribution Company
DPR	Detailed Project Report
EPC	Engineering Procurement and Construction
FPV	Floating Photovoltaic
FSP	Floating Solarpark
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GW	Gigawatt
IGSP	Indo-German Solar Energy Partnership
IN Solar	Innovative New Solar Areas
IRR	Internal Rate of Return
JAKEDA	Jammu and Kashmir Energy Development Agency
J&K	Jammu and Kashmir
LCMA	Lake Conservation and Management Authority
LCOE	Levelized Cost of Electricity
MNRE	Ministry of New and Renewable Energy
MW	Mega Watt
PPA	Power Purchase Agreement
PV	Photovoltaics
RE	Renewable Energy
REC	Renewable Energy Certificate
RESCO	Renewable Energy Service Company
ROE	Return of Equity
SFR	Site Feasibility Report
ToRs	Terms of reference

## 1. Context

On behalf of the Federal Ministry for Economic Cooperation and Development, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is supporting the Ministry of New and Renewable Energy (MNRE) through the Indo-German Solar Energy Partnership – Innovative New Solar Areas (IGSP IN-Solar) Project. The primary aim of the IGSP IN-Solar Project is to identify and develop innovative areas for photovoltaic (PV) applications, to meet the ambitious national renewable energy (RE) target of 500 Gigawatt (GW) by 2030. The project specifically targets the enhancement of conditions for utilizing innovative PV applications on underutilized land areas to expand PV capacities.

Within the framework of the project, MNRE has identified Floating PV (FPV) as one of the innovative applications with significant potential to contribute to India's RE objectives and promote sustainable practices. The aim of this project is the development of five Detailed Project Reports (DPRs) for five lakes in Jammu and Kashmir (J&K) for the implementation of FPV systems to support the Jammu and Kashmir Energy Development Agency (JAKEDA) in its target to proof the feasibility of FPV for J&K. These DPRs will offer recommendations covering the necessary approvals for the FPV plant establishment, the design layout and installation processes, and the operational aspects of FPV systems. Furthermore, the DPRs will model technical standards and financial analysis for the respective FPV plants.

The overarching goal of this initiative is to establish guidelines that facilitate the successful implementation of FPV technologies in the five lakes of J&K. The specific objective is to produce DPRs for the setup of five FPV plants across the five lakes in the region. These reports will be shared with JAKEDA and serve as valuable references for Engineering, Procurement, and Construction (EPC) firms engaged in FPV project installations. The DPRs will detail approval requirements for implementing FPV systems in J&K, industry best practices for plant design, financial assessments, equipment standards, environmental and social impacts associated with FPV installation in lakes, and power evacuation strategies. Furthermore, they will incorporate recommendations on floaters' quality, mooring techniques, anchors, and other equipment used in FPV projects. This comprehensive approach underscores the project's dedication to advancing innovative and sustainable solutions within India's RE landscape.

## 2. Tasks to be performed by the contractor

The contractor is responsible for developing at least **five DPRs for FPV Plants** for five selected lakes in J&K. This involves offering technical and financial insights following a techno-financial assessment of different FPV system options. The selection of sites for these five DPRs will be determined based on the Site Feasibility Reports (SFRs) conducted by the contractor for the specified lakes listed below. All activities will be carried out under the supervision and direction of JAKEDA and GIZ.

Names of lakes are mentioned below:

1. Dal Lake – Srinagar, Kashmir
2. Wular Lake - Bandipora, Kashmir
3. Nigeen Lake - Srinagar, Kashmir

4. Manasbal Lake - Ganderbal, Kashmir
5. Baglihar Dam- Ramban, Jammu
6. Mansar Lake - Jammu
7. Ranjeet Sagar Dam - Jammu

### **Work Packages:**

The scope of the assignment is categorised under the following Work Packages (WPs). The contractor shall develop a detailed work plan including progress monitoring, evaluation, and reporting for each WP and respective tasks in coordination with JAKEDA and GIZ:

#### **Work Package 1: Technical assessment**

1. Site assessment.
  - 1.1. Physical visit to seven proposed sites in coordination with GIZ.
  - 1.2. Assessment of site parameters - ground control points, depth of lakes, type of bathymetry, parcel topography for mooring, lake characteristics, climatic study of the project site, local geological site parameters (wind, insolation) etc.
  - 1.3. Developing a stakeholder map for the seven designated lakes. Providing recommendations regarding the approval process with stakeholders/local authorities for the establishment of the FPV plants.
    - 1.3.1. The DPRs must address key aspects including environmental impact assessment, regulatory compliance, and engagement with relevant stakeholders such as the community, Distribution Companies (DISCOMs), Lake Conservation and Management Authority (LCMA), etc.
    - 1.3.2. A streamlined approval process and support are imperative for the plant's successful implementation.
    - 1.3.3. The consultants are tasked with identifying the appropriate authority, understanding the approval procedures, and providing recommendations to developers to efficiently navigate the regulatory landscape and ensure the FPV plant's successful establishment.
  - 1.4. Prepare SFRs for the seven lakes mentioned above. Recommend five lakes for DPR preparation using a decision matrix and finalize the DPRs in collaboration with GIZ.
2. System design which includes complete understanding of EPC, power evacuation and other components involve in the five FPV plants.
  - 2.1. Calculate the size of the FPV plant to be installed on the designated lakes, considering the following parameters:
    - 2.1.1. Environmental - Ensure minimal impact on biodiversity.
    - 2.1.2. Social - Consider factors such as tourism and local livelihood.
    - 2.1.3. Technical - Evaluate electricity demand from nearby off-takers, grid infrastructure, and evacuation points.
    - 2.1.4. Economical - Size the plant based on economic viability and energy yield analysis.
  - 2.2. Develop the project layout for the FPV plant, including mounting structure design, floaters, mooring, anchors, and standards based on a decision matrix. Present a best-case study of similar sites with different FPV plants in India and globally for reference.

- 2.3. Develop wiring layout for DC and AC, including technical specifications, and ensure grid connectivity for the FPV plant.
- 2.4. Provide recommendations for cleaning systems, including design, solutions, and cost analysis of various options available in the market for the FPV plant.
- 2.5. Environmental and social impact assessment of installing an FPV plant on the lakes, including a study on solutions to prevent birds nesting and droppings on the FPV panels in such environments.
- 2.6. Develop a comprehensive FPV plant system design and layout for the five lakes.
- 2.7. The contractor shall provide more suggestions to ensure the completeness of the WP.

## **Work Package 2: Financial assessment**

1. Conduct economic analysis.
  - 1.1. Evaluation of different business models including financing options, comparison of economical attractiveness.
  - 1.2. Set up of economic models.
    - 1.2.1. Internal Rate of Return (IRR) of the project, expected Return of Equity (ROE), Levelized Cost of Electricity (LCOE), equity / financing leveraging options, operating statement, balance sheet, sensitivities for key inputs (e.g. yield fluctuation, revenue sources), local fees, taxes, and different depreciation (accelerated) rates to be considered.
    - 1.2.2. Capital Expenditure (CAPEX), Renewable Energy Service Company (RESCO) and hybrid business model and calculations need to be discussed with key stakeholders such as DISCOMs and the project owner and shared with GIZ. Provide Bills of Materials (BOM) and Bills of Quantities (BOQ) for each plant.
2. Comparison of business models i.e. captive, Renewable Energy Certificates (RECs) sales and Power Purchase Agreements (PPAs) for optimized combination of revenue sources as far as legally feasible.
  - 2.1. Pure captive / partial use of electricity.
  - 2.2. Pure electricity sales, PPA (Power Purchase Agreements).
  - 2.3. Suggestion of further feasible models / revenue sources.
3. The contractor shall provide more insights and suggestions to ensure the completeness of the WP.

## **Work Package 3: Detailed Project Report (DPR)**

1. The consultant shall submit detailed project report inclusive of all the section as mentioned above in the WP 1 and 2 with executive summary and recommendations.
2. The consultant shall organize one meeting with the stakeholders to present the findings from the technical and financial analyses for each lake, in order to gather feedback and input from stakeholders. A minimum of five meetings should be scheduled with the appropriate stakeholders, and any feedback incorporated should be shared with stakeholders for review.

3. The consultant shall organise two workshops with the state nodal agency JAKEDA (LCMA, DISCOM etc) on FPV to present findings, one workshop in Jammu and one in Kashmir.

#### **Work Package 4: Implementation support**

1. Support during the implementation of project by providing technical inputs during the contract period.
2. Prepare tender document for the five FPV plants with detailed technical specifications, etc. to invite bids.

#### **Outputs/ Deliverables:**

##### **Output 1**

- I. Specific SFRs for the seven lakes mentioned.  
Including:
  - Stakeholder map for the seven lakes.
  - Process map for taking the approvals and propose recommendations to the developers to navigate the regulatory landscape efficiently.
  - Decision matrix to select five lakes out of seven to prepare the five DPRs.
- II. Environmental and social impact analyses for five FPV plants, including a study on cleaning systems recommendations and solutions to mitigate bird droppings.
- III. Recommendations on technical, social, and environmental aspects.

##### **Output 2**

- I. Comprehensive economic analysis of each FPV plant, including cost estimation of components, BOM, and BOQ for each plant.
- II. Comparison of different business models for FPV plant.

##### **Output 3**

- I. Final five DPRs for the five FPV plants, including complete system design, layout, plant size recommendations as per WP, findings and recommendations for each plant. DPRs should cover headings but not necessarily limited to WPs.
- II. At least five meetings for the presentation of findings to key stakeholders organized to receive feedback on DPRs (attendance list and picture).
- III. Two workshops on the topic FPV plant, one in Jammu and one in Kashmir (attendance list and picture).
- IV. Draft tender document for the five FPV plants with detailed technical specifications, etc. to invite bids.

The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term, and at particular locations:

<b>Milestone</b>	<b>Deadline (Days) (D0- Date of signing contract)</b>
Inception meeting	D0+ 7

Inception report	D0 + (21-28)
Submission of SFRs	D0 + (30-90)
Submission of technical assessment report	D0 + (90-150)
Submission of financial assessment report	D0 + (90- 180)
Submission of DPRs	D0 + (90- 240)
Tender document for the five FPV plant	D0 + (240-360)

Period of assignment: The total period of assignment shall be from **May 2024 to 31st April 2025**.

### 3. Concept

In the bid, the bidder is required to show how the objectives defined in Chapter 2 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept). In addition, the bidder must describe the project management system for service provision.

#### Technical-methodological concept:

(Please check technical assessment grid)

**Strategy:** The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter 2). The bidder's strategy is a requirement for the detailed approach to the award of the project.

The bidder is required to present the actors relevant for the services for which it is responsible and describe the **cooperation** with them. Please identify and present comprehensive strategy on cooperation between the multiple stakeholders.

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Chapter 2 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter 2.

#### Project management of the contractor

The bidder is required to explain its approach for coordination with the GIZ project.

- The contractor is responsible for selecting, preparing, training and steering the experts (international and national, short and long term) assigned to perform the advisory tasks.
- The contractor makes available equipment and supplies (consumables) and assumes the associated operating and administrative costs.
- The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.  
The contractor reports regularly to GIZ in accordance with the AVB of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from 2018

In addition to the reports required by GIZ in accordance with AVB, the contractor submits the following reports:

- Contributions to reports to GIZ's commissioning party.
- Inception report
- Biweekly meeting with GIZ, including minutes.
- Brief quarterly reports on the implementation status of the project (5-7 pages)

The bidder is required to draw up a **personnel assignment plan** with explanatory notes that lists all the experts proposed in the bid; the plan includes information on assignment dates (duration and expert days) and locations of the individual members of the team complete with the allocation of work steps as set out in the schedule.

The bidder is required to describe its backstopping concept. The following services are part of the standard backstopping package, which (like ancillary personnel costs) must be factored into the fee schedules of the staff listed in the bid in accordance with section 5.4 of the AVB:

- Service-delivery control.
- Managing adaptations to changing conditions
- Ensuring the flow of information between GIZ and field staff
- Contractor's responsibility for seconded personnel
- Process-oriented technical-conceptual steering of the consultancy inputs.
- Securing the administrative conclusion of the project
- Ensuring compliance with reporting requirements
- Providing specialist support for the on-site team by staff at company headquarters
- Sharing the lessons learned by the contractor and leveraging the value of lessons learned on site.

#### 4. Criteria for Eligibility of firms

The bidder shall meet the following conditions to be eligible for participating in the tender.

- i. The institute should be a registered entity in India under the Companies Act.
- ii. **Consortiums are allowed** to participate in the tender.
- iii. Average turn-over for the last three years should not be less than EUR 100,000.
- iv. The consultant must have an average of 10 managers and employees from the past 3 calendar years.
- v. The agency must submit a declaration on GWB clauses – refer Annex "Legal Inferences".
- vi. The consultant must have a minimum of 3 reference projects in the technical field of designing FPV. Technical evaluation will be solely based on the reference projects provided, with a minimum commission value of EUR 20,000 or more within the last 5 years in India.
- vii. The consultant should provide experience of at least one project in the technical field of providing consulting/policy support to state/central government.
- viii. The firm must have followed technical experience:
  - Simulation studies for FPV systems
  - Structural design, including mooring and floating systems for FPV.
  - DPR and tender preparation for state/PSU



- Financial analysis and business model preparation

**Note: Bidders have to submit the documentary evidence for the criteria's specified above.**

#### **4A. Personnel concept**

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points.

##### **Team leader**

###### Tasks of the team leader

- Overall responsibility for the advisory packages of the contractor (quality and deadlines)
- Coordinating and ensuring communication with GIZ, partners and others involved in the project.
- Personnel management, identifying the need for short-term assignments within the available budget, as well as planning and steering assignments and supporting local and international short-term experts.
- Regular reporting in accordance with deadlines
- Development of deliverables and providing technical inputs for the project

###### Qualifications of the team leader

- Education/training (2.1.1): University qualification (German 'Diplom'/Master) in Management or Engineering
- Language (2.1.2): A1 business language skills in English
- General professional experience (2.1.3): 8 years of professional experience in the energy sector
- Specific professional experience (2.1.4): 6 years in solar energy sector
- Leadership/management experience (2.1.5): 6 years of management/leadership experience as project team leader or manager in a company with minimum 4-person reporting
- Other (2.1.8): experience in working with state government agencies

##### **Expert (Short-term expert pool- 1 with minimum two experts)**

###### Tasks of the short-term expert pool 1

- Site visits for the proposed locations
- Site feasibility assessment
- System design including mooring and floating systems for FPV.
- Structural design
- Wiring and layout
- Simulation and yield study

#### Qualifications of the short-term expert pool 1

- Education/training (2.6.1): one expert with university qualification (German 'Diplom'/Master) in Energy Engineering, one expert with university qualification in Renewable Energy Engineering (German 'Diplom'/Master)
- Language (2.6.2): A1 language skills in English as per European legal framework
- General professional experience (2.6.3): both experts with at least 8 years of experience in the solar energy sector
- Specific professional experience (2.6.4): one expert with at least 3 years of experience in FPV systems designing, one expert with at least 6 years of professional experience in solar system designing.

#### **Expert (Short-term expert pool- 2 with minimum two experts)**

##### Tasks of short-term expert pool 2

- Economic analysis
- Techno-economic study
- Environmental and social aspects
- Approval authorities
- Business models
- Tendering support

#### Qualifications of the short-term expert pool 2

- Education/training (2.7.1): One expert with university qualification (German 'Diplom'/Master) in economics/MBA, one expert with university qualification in bachelor's in law/political science (Bachelors)
- Language (2.7.2): A1 language skills in English as per European legal framework
- General professional experience (2.7.3): All experts with at least 8 years of experience in the solar sector
- Specific professional experience (2.7.4): One expert with at least 6 years of experience in financing solar projects and business models, one expert with at least 6 years of professional experience in contracting, approval processes and tendering support

#### Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Sociocultural competence
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

The bidder must provide a clear overview of all proposed short-term experts and their individual qualifications.

## **5. Costing requirements**

### **Assignment of personnel**

Team leader: On-site assignment for 50 expert days

Expert Pool1: Assignment in country of assignment for 100 expert days

Expert Pool 2: Assignment in country of assignment for 80 expert days

## **Travel**

The bidder is required to calculate the travel by the specified experts and the experts it has proposed based on the places of performance stipulated in Chapter 2 and list the expenses separately by daily allowance, accommodation expenses, flight costs and other travel expenses.

GIZ expects at least two travels per site for two experts during the term of the contract.

## **Workshops, training**

The contractor implements the following workshops/study trips/training courses:

- Two workshops to be organized by the consultants in coordination with the stakeholders and GIZ with approximately 30 participants in hotel which shall be inclusive of refreshments and at least one meal.
- Five physical roundtables with stakeholders have to be organized. For each lake one, for taking the feedback on FPV DPRs.

## **Other costs**

- Budget for flexible remuneration: INR 500,000
- The fixed, unalterable budget given above is earmarked in the price schedule for flexible remuneration. Flexible remuneration is intended to facilitate the flexible management of the contract by the officer responsible for the commission at GIZ. The contractor can make use of the funds in accordance with the General Terms and Conditions.

*This assignment falls under the GIZ Negotiated Competitive bidding, therefore GIZ reserves the right to invite the highest-ranking agency/winning agency for financial negotiations, if deemed necessary.*

## **6. Inputs of GIZ or other actors**

GIZ and/or other actors are expected to make the following available:

- GIZ will coordinate with JAKEDA and MNRE to support organizing the inception meeting.

## **7. Requirements on the format of the bid**

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) is to be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English (language).

The complete bid shall not exceed 30 pages (excluding CVs & other supporting company documents)

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs. The CVs shall not exceed 30 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long. The CVs should be submitted in English (language) only.

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

As the contract to be concluded is a contract for works, please offer a fixed lump sum price that covers all applicable costs (fees, travel expenses etc.). The price bid will be evaluated based on the specified lump sum price. For our internal costing and any further commissions, please also provide the daily rate which the prices are based on. A breakdown of costs is required.

**8. Option**

Not applicable

**9. Annexes**

Not applicable