

Package 1 20 TPD BIOGAS PLANT

Implemented By:



BHUTAN ECOLOGICAL SOCIETY

Funded By:



BHUTAN ECOLOGICAL SOCIETY

2025



PREFACE

This Bidding Document (BD) has been prepared in accordance with the SAARC Development Fund (SDF) Procurement Guidelines and the Bhutan Ecological Society (BES) Procurement Rules 2023. It is applicable exclusively for the procurement of works under BES, covering all categories of Works Contracts.



INVITATION FOR BID (IFB)

Ref: BES/Commercial-BioCNG/2025/311

Date: 25-11-2025

INVITATION FOR INTERNATIONAL COMPETITIVE BIDS (ICB)

The Bhutan Ecological Society (BES) invites sealed bids from eligible **Indian firms** for *the 20* TPD Food-Waste to Biogas Plant (Anaerobic Technology) at Memelakha, Thimphu.

For details and bidding documents, **please visit www.bes.org.bt**.

Submission : Sealed bids must be delivered to the following address on or before [05-01-2026, 2:30 PM BST]. Late bids will not be accepted.

Bhutan Ecological Society.
House No 8, Thori Lam, Lower Changangkha, Thimphu
P.O.Box No. 2013

BES reserves the right to accept or reject any or all bids.

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SECTION 1: INSTRUCTIONS TO BIDDER (ITB)

A. General

1. Scope of Tender

- 1.1. The Procuring agency, as indicated in the BDS issues this Bidding Document for the procurement of Works. The name, identification and identification of this Bidding are provided in the BDS.
- 1.2. The successful Bidder will be required to complete the Works within the Time for Completion stated in the Special Conditions of Contract (SCC).
- 1.3. Throughout this Bidding Documents;
 - (a) The term “in writing means communicated in written form with proof of receipt”;
 - (b) If the context so requires, singular means plural and vice versa; and
 - (c) “day” means calendar day.

2. Corrupt, Fraudulent, Collusive or Coercive Practices

- 2.1. The Royal Government of Bhutan requires that Procuring Agency and the Bidders shall observe the highest standard of ethics during the implementation of procurement proceedings and the execution of Contracts under public money.
- 2.2. In pursuance of this requirement, the Procuring Agency shall
 - (a) exclude the Bidder from participation in the procurement proceeding concerned or reject a proposal for award; and
 - (b) declare a Bidder in eligible, either in definitely or for a stated period of time, from participation in procurement proceedings under public money; If it, at any time, determines that the Bidder has engaged in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing, a Contract under the public money.
- 2.3. The Government defines, for the purposes of this provision, the terms set forth below as follows:
 - (a) “corrupt practice”¹ is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
 - (b) “fraudulent practice”² is any intentional act or omission including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
 - (c) “collusive practice”³ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;



- (d) “Coercive practice”⁴ is impairing or harming or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.
- 2.4. The Bidder shall be aware of the provisions on fraud and corruption stated in GCC Clause 3 and GCC Sub-Clause 36.2(d).
- 2.5. The RGoB requires that the Procuring Agency’s personnel have an equal obligation not to solicit, ask for and/ or use coercive methods to obtain personal benefits in connection with the said proceedings.
- 3. Eligible Bidders**
- 3.1. Bidders of the categories **specified in the BDS** are eligible to participate in this Bidding process.
- 4. Site Visit**
- 4.1. The Bidders, at their own responsibility and risk, is encouraged to visit and examine the Site and obtain all information that may be necessary for preparing the Bid and entering into a Contract for performance of the Works. The costs of visiting the Site shall be at the Bidder’s own expense.

B. Content of Bidding Document

1. Contents of Bidding Documents

- 5.1. The sections comprising the Bidding Document are listed below and should be read in conjunction with any amendment issued in accordance with ITB Clause 7:

PART 1 Bidding Procedures

- Section1: Instructions to Bidders (ITB)
- Section2: Bidding Data Sheet (BDS)
- Section3: Evaluation and Qualification Criteria
- Section4: Bidding forms
- Section5: General Conditions of Contract (GCC)
- Section6: Special Conditions of Contract (SCC)
- Section7: Contract Forms
- Section8: Bill of Quantities & Specifications
- Section9: Drawings



5.2. The Procuring Agency is not responsible for the completeness of the Bidding Document and any addendum, if they were not obtained directly from the source stated by the Procuring Agency in the Invitation for Bids.

5.3. The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Documents may result in the rejection of the Bid.

6. Clarification of Bidding Documents

6.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Procuring Agency in writing at the Procuring Agency's address indicated in the BDS.

7. Amendment of Bidding Documents

7.1 At any time prior to the deadline for submission of Bid, the Procuring Agency may amend the Bidding Document by issuing addenda and extend the deadline for the submission of Bids at its discretion. Any amendment issued shall become an integral part of the Bidding Document and shall be communicated in writing to all those who have purchased the Bidding Document.

C. Preparation of Bids

8. One Bid per Bidder

8.1 A Bidder shall submit only one (1) Bid. A Bidder who submits or participates in more than one (1) Bid shall cause all the proposals with the Bidder's participation to be disqualified.

9. Bid Preparation Costs

9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bids, and the Procuring Agency shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

10. Language of Bid

10.1 All documents relating to the Bid shall be in the language specified in the BDS.

11. Documents comprising the Bid

11.1. The original and copy(ies) of Bid submitted by the Bidder shall comprise the following:

(a) The Bid form (in the format indicated in Section 4);

(b) License and certificate;

(c) Bid Securing Declaration in accordance with ITB 19;

(d) Priced Bill of Quantities;

(e) Qualifications: documentary evidence in accordance with ITB 17



the Bidder's qualifications to perform the Contract;

- (f) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB sub-clause 20.2; and
 - (g) and any other materials required to be completed and submitted by Bidders, as specified in the BDS.
- 11.2. The Instruction to Bidders, Bidding Data Sheet, General Conditions of Contract, Special Conditions of Contract, Specifications and drawings are for the information of the Bidders and is not required to be submitted by the Bidder.

12. Form of Bid

- 12.1 The Form of Bid, Schedules, and all documents listed under Clause 11, shall be prepared using the relevant forms in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

13. Alternative Bid

- 13.1 Alternative Bid shall not be considered in small works.

14. Bid Price and Discount

- 14.1. The prices and discounts quoted by the Bidder in the form of Bid and in the Schedules shall confirm to the requirements specified in ITB 14.2 and 14.3.
- 14.2. The Bidder shall submit a Bid for the whole of the works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section 4, Bidding Forms. In case of admeasurements contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid by the Procuring Agency when executed and shall be deemed to covered by the rates for other items and prices in the Bill of Quantities.
- 14.3. The Bid price shall take into account the cost of materials, transportation, labour, taxes, levies, overheads and profit and any other cost. The Bid price shall be applicable for the whole works described in the Drawings, Specifications and Schedule of Works.

15. Currencies of Bid and Payment

- 15.1 All prices shall be quoted in Bhutanese Ngultrum (BTN) and shall be paid in BTN.



16. Documents comprising the Technical Proposal

16.1 The Bidder shall furnish a work plan in simple bar chart and other information if provided in BDS, to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

17. Documents establishing the Qualification of the Bidder

17.1 To establish its qualification to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).

18. Bid Validity

18.1 Bids shall remain valid up to the date specified in the BDS. Any Bids which does not meet the validity requirement shall be rejected by the Procuring Agency as non-responsive.

19. Bid Security

19.1. In lieu of Bid Security, the Bidder shall furnish as a part of its Bid, a Bid-Securing Declaration using the form included in Section 4, Bidding Forms. The Bid-Securing Declaration shall be agreed to by the bidder before submission of a bid.

19.2. Any Bid not accompanied by a Bid-Securing Declaration in the prescribed format shall be rejected by the Procuring Agency as non-responsive.

19.3. The Bid-Securing Declaration shall be executed:

(a) If the Bidder withdraws the Bid after Bid opening during the period of Bid validity;

(b) If the Bidder does not accept the correction of the Bid price, pursuant to ITB 30;
or

(c) In the case of a successful Bidder, if the bidder fails within the specified time limit to sign the Agreement; or furnish the required Performance Security.

19.4. In case Bid Securing Declaration is executed in pursuant to ITB sub- clause 19.3 the Bidder shall deposit the Bid Security amount specified in the BDS within five (5) days from date of notification by Procuring Agency.

19.5. In case the Bidder fails to comply with ITB sub-clause 19.4, Bidder shall be debarred from being eligible for Bidding or submitting Bid with all government procuring agencies for a period prescribed in Debarment Rules.



20. Format and Signing of Bid

- 20.1. The Bidder shall prepare one (1) original of the documents comprising the Bid as described in ITB Clause 11 and clearly mark it "ORIGINAL." In addition, the Bidder shall prepare the number of copies of the Bid, as specified in the BDS and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 20.2. The original and each copy of the Bid shall be typed or written in indelible ink and shall be signed by the person duly authorized to sign on behalf of the Bidder.
- 20.3. Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person(s) signing the Bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1. Envelope 1 Should be Marked "Technical" and should contain separate inner envelope for "Original" and "Copy", containing the following:
 - (a) Bid Security
 - (b) Tax Clearance for relevant tax authority
 - (c) Valid Trade license
 - (d) Supporting documents mentioned in the evaluation criteria
 - (e) Signed Bidding Document
 - (f) Any other technical document
- 21.2. Envelope 2 Should be marked "Financial" and contain the following:
 - (a) Form of Bid
 - (b) Bill of Quantities
- 21.3. The inner envelopes shall:
 - (a) Be signed across the seals by the person authorised to sign the Bid on behalf of the Bidder;
 - (b) Be marked "ORIGINAL" and "COPY"; and
 - (c) Bear the name and address of the Bidder.
- 21.4. The outer envelope shall;
 - (a) Be sealed with adhesive or other sealant to prevent reopening;
 - (b) be addressed to the Procuring agency at the address specified in the BDS; bear a statement "DO NOT OPEN BEFORE" the time and date for Bid opening as specified in the BDS.
- 21.5. If all or any envelopes are not sealed and marked as required by ITB Sub-Clause 21, the Procuring Agency shall not reject the Bids but assume no responsibility for the misplacement or premature opening of the Bid



22. Bid Submission Deadline

- 22.1. Bids must be received by the Procuring Agency at the address and no later than the date and time specified in the BDS.
- 22.2. Bids may be hand delivered, posted by registered mail or sent by courier. **E-bids shall not not be accepted.**
- 22.3. The Procuring Agency may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB Clause 7, in which case all rights and obligations of the Procuring agency and Bidders previously subject to the deadline shall thereafter be subject to the new deadline as extended.

23. Late Bids

- 23.1. Late Bids shall not be considered and shall be returned unopened.

24. Modification, Substitution or Withdrawal of Bids

- 24.1. A Bidder may modify, substitute or withdraw their Bids after it has been submitted by sending a written notice before the deadline for submission of Bids.

25. Bid Opening

- 25.1. The Procuring Agency shall open the Bids in the presence of the Bidders attending the Bid opening, including modifications or substitutions made pursuant to ITB Clause 24. Bidders or their representatives shall be allowed to attend and witness the Bid opening and shall sign a register evidencing their attendance.
- 25.2. The name of the Bidder, Bid modifications, substitutions or withdrawals, total amount of each Bid, number of corrections, discounts, and the presence or absence of Bid Securing Declaration, and such other details as the Procuring Agency, at its discretion, may consider appropriate, shall be read out aloud and recorded.
- 25.3. The Procuring Agency shall prepare minutes of the Bid opening. The minutes shall include, as a minimum, the name of the Bidders and whether there has been a withdrawal, substitution or modification; the Bid Price including any discounts and the presence or absence of a Bid Securing Declaration, if required.



E. Tender Opening and Evaluation

26. Confidentiality

- 26.1. After the opening of Bids, information relating to the examination, clarification, and evaluation of Bids and recommendations for award shall not be disclosed to Bidders or other persons not officially concerned with the evaluation process until after the issuance of Letter of Intent to award the Contract.

27. Clarification

- 27.1. The Procuring Agency may ask Bidders for clarification of their Bids in order to facilitate the examination and evaluation of Bids. The request for clarification and the response shall be in writing, and any changes in the prices or substance of the Bid shall not be sought, offered or permitted, except to confirm the correction of arithmetical errors discovered by the Procuring Agency in the evaluation of the Bids, in accordance with ITB Clause 30.

28. Bidder Contacting the Procuring Agency

- 28.1. Following the opening of Bids and until the letter of Intent to award the Contract is issued no Bidder shall make any unsolicited communication to the Procuring Agency or try in any way to influence the Procuring Agency's examination and evaluation of Bids which may result in the rejection of Bids. If any Bidder wishes to contact the Procuring Agency on any matter related to the Bidding process, it should do so in writing.

29. Determination of Responsiveness

- 29.1. Prior to detailed evaluation of Bids, the Procuring Agency shall determine whether each Bid (a) meets the eligibility criteria defined in ITB clause 3; (b) has been properly signed; (c) is accompanied by the Bid Securing Declaration; and (d) is substantially responsive to the requirements of the Bidding Documents.
- 29.2. A substantially responsive Bid is one that conforms in all respects to the requirements of the Bidding Document without material deviation, reservation or omission. A material deviation, reservation or omission is one that:
- a) affects in any substantial way the scope, quality, or performance of the Works specified in the Contract;
 - b) limits in any substantial way, or is inconsistent with the Bid Document, the Procuring Agency's rights or the Bidder's obligations under the Contract; or
 - c) if rectified would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.



29.3. If a Bid is not substantially responsive to the Bidding Document it shall be rejected by the Procuring Agency and shall not subsequently be made responsive by the Bidder by correction of the material deviation, reservation or omission.

30. Non-Conformities, Errors and Omissions

30.1. The Procuring Agency may regard a Bid as responsive even if it contains minor deviations that do not materially alter or depart from the characteristics, terms, conditions and other requirement set forth in the Bidding Document or if it contains errors or oversights that are capable of being corrected without affecting the substance of the Bid.

30.2. Where there is a discrepancy between the amounts in figures and words, the amount in words will govern. If a Bidder refuses to accept the correction, its Bids shall be rejected. The Procuring Agency shall correct arithmetical errors on the following basis:

(a) if there is a discrepancy between the unit price and the line item total, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Procuring Agency there is an obvious misplacement of the decimal point in the unit price, in which case the total price, as quoted, shall govern and the unit price shall be corrected.

31. Evaluation of Bids

31.1. The Procuring Agency shall evaluate and compare only those Bids determined to be substantially responsive to the requirements of the Bidding Document.

31.2. To evaluate a Bid, the Procuring Agency shall consider the following:

(a) making appropriate adjustments to reflect discounts if any;

(b) Correction of arithmetic errors; and

(c) Where applicable, using the evaluation factors specified in Section 3, Evaluation and Qualification Criteria.

31.3. An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid, in which event the Procuring Agency may proceed to the next substantially responsive Bid which offers the best evaluated Bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.



32. Abnormally Low Bids

- 32.1. An Abnormally Low Bid is one where the Bid price, in combination with other constituent elements of the Bid, appears unreasonably low to the extent that the Bid price raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid price. Before proceeding to further analysis, the Procuring Agency shall revisit their departmental estimate to ensure its realistic compared to the prevailing market rates.
- 32.2. After revisiting the departmental estimate as provided in clause 32.1, if the Procuring Agency determines that the Bid offered by the Bidder is 20% below or above the agency estimate, the Procuring Agency shall eliminate the Bid(s) before proceeding towards Bid evaluation.

33. Seriously unbalanced Bids or Front Loaded

- 33.1. If the Bid that is evaluated as the lowest evaluated cost is, in the Procuring Agency's opinion, seriously unbalanced or front loaded the Procuring Agency may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid prices with the scope of works, proposed methodology, schedule and any other requirements of the Bidding Document.
- 33.2. After the evaluation of the information and detailed price analyses presented by the Bidder, the Procuring Agency may as appropriate:
- (a) accept the Bid and increase the performance security from ten percent (10%) up to maximum of 30% of the initial contract price/ Alternatively, the Procuring Agency may ask the successful Bidder to deposit the difference between departmental estimate and contract amount in the form of cash warrant in addition to 10% performance security. However, the total performance security amount shall be limited to maximum of 30% of initial contract price; or
 - (b) reject the Bid.

34. Procuring Agency's Right to Accept or Reject any or all Bids

- 34.1. The Procuring Agency reserves the right to accept any Bid, to annul the Bid proceedings, or to reject any or all Bids, at any time prior to Contract award, without thereby incurring any liability to Bidders but the Bidder(s) should be informed with the justified reason(s) for cancellation.

F. Contract Award

35. Award Criteria

- 35.1. The Procuring Agency shall award the Contract to the Bidders whose offer is substantially responsive to the Bidding Document and that has been determined to be the best evaluated Bid, provided that the Bidder is determined to be qualified to perform the Contract and upon fulfilment of works in hand ceiling prescribed by the Bhutan Construction and Transport Authority or any other competent authority.



36. Letter of Intent to Award the Contract/ Letter of Acceptance

- 36.1. The Procuring Agency shall notify the concerned Bidder whose Bid has been selected in accordance with ITB 35.1 in writing (in the format in Section 4- hereafter called the "Letter of Intent to Award) that the Procuring Agency has intention to accept its Bid and the copy of the Letter of Intent shall be given to all other Bidders who submitted the Bid. Such notification should be communicated in writing, including by cable, facsimile, telex or electronic mail to all the Bidders on the same day of dispatch. The Procuring Agency shall ensure that the same information is uploaded on their website on the same day of dispatch.
- 36.2. If no Bidder submits an application pursuant to ITB 38 within a period of five (5) days of the notice provided under ITB 36.1, prior to the expiration of Bid validity, the Procuring Agency shall notify the successful Bidder, in writing that its Bid has been accepted. Until a formal contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.
- 36.3. Within fifteen (15) days of the receipt of the Letter of Acceptance from the Procuring Agency, the successful Bidder shall furnish the Performance Security, in the amount specified in the BDS.
- 36.4. The Performance Security provided by the successful Bidder in the form of a Bank Guarantee shall be issued, at the Bidder's option, by a financial institution registered within Bhutan.
- 36.5. Within fifteen (15) days of receipt to the Letter of Acceptance, the successful Bidder shall sign the contract, date and return it to the Procuring Agency.

37. Debriefing by Procuring Agency

- 37.1. On receipt of the Procuring Agency's Notification of Intention to Award referred to in ITB 36.1, an unsuccessful Bidder has three (3) working Days to make a written request to the Procuring Agency for a debriefing. The Procuring Agency shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline.
 - (a) point-by-point comparisons with another Bid; and
 - (b) information that is confidential or commercially sensitive to other Bidders.
- 37.2. Where a request for debriefing is received within the deadline, the Procuring Agency shall provide a debriefing within five (5) working days.
- 37.3. The Procuring Agency shall discuss only such Bid and not the Bids of other competitors. The debriefing shall not include:
- 37.4. The Purpose of debriefing is to inform the aggrieved Bidder of the reasons for lack of success, pointing out the specific shortcomings in its Bid without disclosing contents of other Bids.

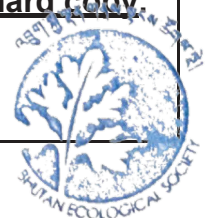


38. Complaints

- 38.1. The Bidder shall submit the complaint in writing within five (5) days from the date of Letter of Intent to award the contract pursuant to ITB 36.1 to the Procuring Agency.
- 38.2. The Head of Agency shall, within seven (7) days after the submission of the complaint, issue a written decision.
- 38.3. The Bidder may appeal to the Independent Review Body within five (5) days of the decision of the Head of the Procuring Agency or, where no such decision has been taken, within 15 days of the original complaint and the copy of the appeal shall be given to Procuring Agency on the same day.
- 38.4. Once the appeal copy is received by the Procuring agency, it shall not proceed further with the procurement process until receipt of notification from the Independent Review Body Secretariat.



SECTION 2 - BIDDING DATA SHEET	
Instructions for completing the Bidding Data Sheet are provided, as needed, in the notes in italics mentioned for the relevant ITB Clauses	
A. General	
ITB Clause	Amendment of, and Supplements to, Clauses in the Instructions to Bidders
ITB 1.1	<p>The Procuring Agency is Bhutan Ecological Society The Name and Identification of the Contract is/are Construction of Name: <u>Package 1 – 20 TPD Biogas Plant, Ref no.311</u></p> <p><u>Design & engineering, supply, erection, testing and commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant. Feed capacity 20 TON /DAY. Biogas generation plant including all mechanical & electrical equipment, supervision of civil works at site with performance guarantee of different capacities as required. The treatment process shall be based on Anaerobic digestion. followed by Gas holding, gas purification process & gas bottling process along with solid liquid separation Unit..</u></p>
ITB 3.1	The category of contractor is: <u>Registered Contractor/Vendor/ Manufacturer of Biogas Plant in India</u>
B. Bidding Documents	
ITB 6.1	<p>For clarification of Tenders purposes only, the Procuring Agency's Address is: Attention: <u>Damber Ghemiray</u> Address: <u>Bhutan Ecological Society</u> <u>Thori Lam, Lower Changangkha</u> Mobile/Telephone: <u>+975 17848918</u> Facsimile number: email address: <u>procurement6@bes.org.bt</u></p>
C. Preparation of Bids	
ITB 14.3	The Bid price shall or shall not be adjustable: <u>Shall not be Adjusted</u>
ITB 16.1	<u>Detailed Work Plan for Design, Manufacture, Supply, Install and Commission.</u>
ITB 18.1	The Bid shall be valid up to: <u>180 days</u>
ITB 19.5	The Bid Security Amount is Nu. BTN 850,000.00
ITB 20.1	In addition to the original, <u>One copy is required if submitted in hard copy.</u>



SECTION 3 – EVALUATION AND QUALIFICATION CRITERIA

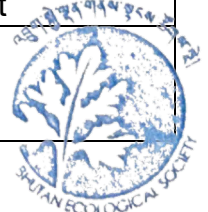
This section contains all the criteria that the Procuring Agency shall use to evaluate Bids and qualify Bidders. The Procuring Agency may apply basic minimum technical qualification requirement (key personnel and equipment) if there is a project specific need.

1. Evaluation

1.1. Evaluation shall be done to determine if the bidders meet the required qualifications to be considered for award of work.

2. Qualification Criteria

Criteria	Scoring Guidance (Bands)	Maximum Points	Remarks
CAPABILITY (80 points)			
1. Relevant Experience (years in biogas/CBG projects)	≥15 yrs = 20; 10–14 yrs = 15; 5–9 yrs = 10; <5 yrs = 0 (disqualifying for technical)	20	Company profile; certs
2. Similar Projects Executed (≥5 TPD; turnkey basis)	≥10 plants = 15; 6–9 = 10; 3–5 = 5; <3 = 0	15	Completion certs; client letters
3. O&M Experience on biogas/CBG plants (continuous)	≥5 yrs = 10; 3–4 yrs = 5; <3 yrs = 0	10	O&M contracts; performance certs
4. Design & Engineering Capability	Dedicated in-house team + process design notes, P&ID, QA/QC plan = 10; Outsourced/partial docs = 5; Insufficient = 0	10	Org chart; CVs; design notes
5. Compliance with Technical Specifications/BOQ & Process	Full compliance with offered makes/specs & process flow = 10; minor deviations = 5; major deviations = 0	10	BoQ compliance matrix; datasheets
6. Team Qualifications (supervisors/operators/experts)	All key staff with relevant quals & 5+ yrs = 5; partial = 3; weak = 0	5	CVs; licenses
7. Project Execution Plan & Timeline	Detailed Gantt + logistics + risk & mitigation = 5; partial = 3; weak = 0	5	Method statement; Gantt
8. After-Sales Service & 5-year O&M Commitment	5-yr comprehensive O&M with spares & response SLA = 5; limited O&M = 3; none = 0	5	O&M draft; SLA; spares list
Subtotal — Capability		80	



CAPACITY (20 points)			
1. Annual Average Turnover (last 3 FY; audited)	≥ BTN 20.00 million = 5; 15–<20 million = 3; <20 million, = 0	5	Audited FS; CA cert
2. Net Worth (latest audited)	Positive = 5; Marginal/near-zero = 3; Negative = 0	5	Audited FS; CA cert
3. Competitiveness of Quoted Price	Score = 5 × (LEP / Bidder Price), capped at 5	5	Commercial bid
4. Financial Stability & Completeness of Documents	All required financial documents submitted & consistent = 5; partial = 3; weak = 0	5	Turnover/UDIN/regis trations
Subtotal — Capacity		20	
TOTAL SCORE (Capability + Capacity)		100	



SECTION 4: BIDDING FORMS

Table of Standard Forms

Form of Bid
Bid Securing Declaration
Qualification Information
Letter of Intent



Bid-Securing Declaration

Date: _____

IFB No.: _____

To: _____

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we are required to pay the Bid Security amount specified in the Bidding Data Sheet within 5 days of your instruction and failure to do so will automatically debar us from being eligible for Bidding in any contract with the government Procuring Agencies from being eligible for Bidding for the period prescribed in the Debarment Rules, if we are in breach of our obligation(s) under the Bid conditions, because we:

- (a) Have withdrawn our Bid during the period of Bid validity specified by the Bidder in the Form of Bid;
- (b) Having not accepted the correction of errors in accordance with the Instructions to Bidders ITB 30.2; or
- (c) Having been notified of the acceptance of our Bid by the Procuring Agency during the period of Bid validity, (i) fail or refuse to furnish the performance security in accordance with the ITB, or (ii) fail or refuse to execute the Contract in accordance with the ITB 36.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) thirty (30) days after the expiration of our Bid.

Signed: _____

In the capacity of _____

Name: _____

Duly authorized to sign the Bid for and on behalf of: _____

Dated on _____ day of _____,
Corporate Seal (where appropriate)

Affix Legal Stamp



Qualification Information

Notes on Form of Qualification Information: The following information is to be filled in by Bidders which will be used for purposes of evaluation

1. Individual Bidders

1.1. Constitution of legal status of Bidder: [attach copy]

Place of registration:

Principal place of business:

1.2. Power of attorney of signatory of Bid [attach copy]

Forms for Key Personnel

Form – 1A: Proposed Key Personnel

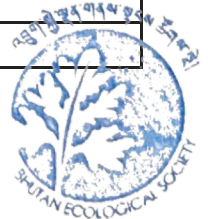
Bidders should provide the names of suitably qualified key personnel to meet the specified requirements for each of the positions listed in Section 3 (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position
	Name
2.	Title of position
	Name
3.	Title of position
	Name

Form -1B: CV of Proposed Manpower

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel information	Name *	Date of birth
	Qualifications:	
Present employment	Name of Procuring Agency:	
	Address of Procuring Agency:	



Experience		
From	To	Company, Project, Position, and Relevant Technical and Management Experience

Summarize experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Documents Required:

The Bidder shall provide following supporting documents for the above the proposed manpower:

1. Original signed CVs of technical manpower committed.
2. Copies of Citizenship ID Cards or work permit/ Passport/ Election/Voter ID cards (for foreign workers) of all manpower committed.
3. Copies of contract agreements with all personnel if they have been hired on contract by the contractor.

1.3. Forms for Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section 3 (Evaluation and Qualification Criteria).

Sl.No	Equipment Name & Type	Total No. committed
1.		
2.		

Documents Required:

The Bidder shall provide following supporting documents for the above proposed equipment:

1. Copy of the registration certificate of each equipment committed.
2. Copy of Insurance policy for each equipment where applicable.
3. In case of hiring, copy of the lease agreement in addition to 1 & 2 above.
4. In case of equipment that do not require registration with BCTA, copy of cash memos/invoice stamped by RRCO if newly imported (within 1 year from the date of purchase) or verification letter issued by a Government Engineer or Competent institution.



Letter of Intent
(Letterhead of the Procuring Agency)

Notes on standard form of letter of Intent

This issuance of Letter of Intent (always before letter of acceptance) is the information of the selection of the Bid of the successful Bidder by the Procuring Agency and for providing information to other unsuccessful Bidders who participated in the Bid as regards the outcome of the procurement process.

The Procuring agency shall allow five (5) days as described in ITB 36 between this Letter of Intent and Letter of Acceptance to allow aggrieved Bidders to challenge your decision if they feel they have treated unfairly.

(Insert date)

To-----*[Name and address of the Contractor]*

This is to notify you that, it is our intention to award the contract for your Bid dated-----

[Insert date] for execution of the -----

--

----- [Insert name of the contract and identification number, as given in the BDS/ SCC] for the Contract Price of-----

--

----- [Insert amount in figure and words and name of currency] as corrected and modified [if any corrections] in accordance with the Instructions to Bidders.

Authorized Signature: -----

Name and Title of Signatory:-----

Name of Agency:-----

CC:

[Insert name and address of all other Bidders who submitted the Bid]



SECTION 5. GENERAL CONDITIONS OF CONTRACT

1. Definitions

- 1.1. The following words and expressions shall have the meaning hereby assigned to them. Boldface type is used to identify the defined terms:
- (a) Completion Certificate means the Certificate issued by the Project Manager as evidence that the Contractor has executed the Works in all respects as per drawing, specifications, and Conditions of Contract.
 - (b) The Completion Date is the date of completion of the Works as certified by the Procuring agency, in accordance with GCC Clause 18.
 - (c) Contract means the Agreement entered into between the Procuring Agency and the Contractor to execute, complete and maintain the Works.
 - (d) Contractor means the person or corporate body who's Tender to carry out the Works has been accepted by the Procuring Agency and is named as such in the SCC.
 - (e) Contract Price is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.
 - (f) The Contractor's Bid is the completed Bid Document including the priced offer submitted by the Contractor to the Procuring Agency.
 - (g) Days mean calendar days.
 - (h) A Defect is any part of the Works not completed in accordance with the Contract.
 - (i) The Intended Completion Date is the date specified in the SCC on which the Contractor shall complete the Works and may be revised if extension of time or an acceleration order is issued by the Project Manager.
 - (j) The Procuring Agency is the party named in the SCC who employs the Contractor to carry out the Works.
 - (k) The Project Manager is the person named in the SCC (or any other competent person appointed by the Procuring Agency and notified to the Contractor, to act in replacement of the Procuring Agency) who is responsible for supervising the execution of the Works and administering the Contract.
 - (l) The Site is the area defined as such in the SCC.
 - (m) A Variation is an instruction given by the Project Manager which varies the Works.



- (n) The Works are what the Contract requires the Contractor to construct, install, and hand over to the Procuring Agency, as defined in the SCC.

2. Interpretation & Documents forming the Contract

- 2.1 In interpreting the GCC, singular also means plural, male also means female or neuter, and the other way around. Headings in the GCC shall not be deemed part thereof or be taken into consideration in the interpretation of the Contract. Words have their normal meaning under the language of the Contract unless specifically defined.
- 2.2. The following documents forming the Contract shall be interpreted in the following order of priority:
 - (a) The signed Contract Agreement;
 - (b) The Letter of Acceptance;
 - (c) The completed Bid form as submitted by the Bidder;
 - (d) The Special Conditions of Contract;
 - (e) The General Conditions of Contract;
 - (f) Specification;
 - (g) The Drawings; and
 - (h) Any other document listed in the SCC as forming part of the Contract.

3. Corrupt, Fraudulent, Collusive or Coercive Practices

- 3.1. The Government requires that Procuring Agency, as well as Contractors shall observe the highest standard of ethics during the implementation of procurement proceedings and the execution of Contracts under public money.
- 3.2. In pursuance of this requirement, the Procuring Agency shall
 - (a) exclude the Contractor from participation in the procurement proceedings concerned or reject a proposal for award; and
 - (b) declare a Contractor ineligible, either in definitely or for a stated period of time, from participation in procurement proceedings under public money;

If at any time, determines that the bidder has engaged in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing, a Contract under the public money.



- 3.3. The Government defines, for the purposes of this provision, the terms set forth below as follows:
- a) Corrupt practice”⁵ is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value⁶ to influence improperly the actions of another party;
 - b) “fraudulent practice”⁷ is any intentional act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
 - c) “collusive practice”⁸ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; and
 - d) “Coercive practice”⁹ is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.
- 3.4. The Government requires that the Client’s personnel have an equal obligation not to solicit, ask for and/or use coercive methods to obtain personal benefits in connection with the said proceedings.

4. Governing Language and Law

- 4.1 The Contract as well as all correspondence and documents relating to the Contract exchanged by the Contractor and the Procuring Agency, shall be written in English unless otherwise stated in the SCC. The Contract shall be governed by and interpreted in accordance with the laws of the Kingdom of Bhutan.

5. Project Manager’s Decision

- 5.1 Except where otherwise specifically stated in the SCC, the Project Manager will decide Contractual matters between the Procuring Agency and the Contractor in the role as representative of the Procuring Agency.

6. Delegation

- 6.1 The Project Manager may delegate any of his duties and responsibilities to his representative, after notifying the Contractor, and may cancel any delegation, without retroactivity, after notifying the Contractor.



7. Communications and Notices

- 7.1 Communications between Parties pursuant to the Contract shall be in writing to the address specified in the SCC. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

8. Sub-Contracting

- 8.1 The Procuring Agency may define the mechanism for Sub-Contracting of parts of works to Specialized firms registered with Bhutan Construction and Transport Authority or any other competent authority for specialized categories of works provided in the guidelines for registration of such firms.
- 8.2 Payments shall be made directly to the principal contractor, not to the Specialized firms unless explicitly agreed otherwise between the Procuring Agency and the principal contractor with the specific mechanism to do so.
- 8.3 The principal contractor shall execute a contract with the Specialized firm which shall bind the parties throughout the contract including the defect liability period.

9. Contractor's Personnel & Equipment

- 9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred in the SCC, to carry out the functions stated in the Schedule, or other personnel approved by the Project Manager. Similarly, the contractor shall deploy all committed equipment at site as and when required by the Procuring Agency.

10. Welfare of Labourers & Child Labour

- 10.1 The Contractor shall provide proper accommodation to his labourers and arrange proper water supply, conservancy and sanitation arrangements at the site in accordance with relevant regulations, rules and orders of the government.
- 10.2 The Contractor shall comply with the applicable minimum age, labour laws and requirements of (including applicable treaties which have been ratified by) the Government of Bhutan regarding hazardous forms of child labour.

11. Safety Security and Protection of the Environment

- 11.1 The Contractor and the procuring agency shall comply with Occupational Health and Safety related regulations for the safety of all activities on the Site.
- 11.2 The Contractor shall comply with all applicable safety regulations for the adequacy and safety of site operations and methods of construction and he shall adopt measures to prevent injuries to persons or damage to properties or utilities. He shall avoid undue interference with private business, public travel, or with the work of other contractors. He shall take steps to protect the environment and to minimize noise, pollution or other undesirable effects resulting from his method of operation.



12. Access to the Site

12.1 The Contractor shall allow the Engineer and any person authorised by the Project manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

13. Documents & Information

13.1 The Contractor shall furnish to the Project manager all information, schedules, calculations and supporting documents that may be requested.

14. Property

14.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Procuring Agency if the contract is terminated because of a Contractor's default:

(a) Plants and equipment will be released after due payment of compensations prescribed in GCC clause 37.1.

15. Insurance

15.1 The Contractor shall provide, in the joint names of the Procuring Agency and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the SCC for the following events which are due to the Contractor's risks:

(a) loss of or damage to the Works, Plant and Materials to be built into the works.

15.2 The Contractor shall deliver policies and certificates of insurance to the Project Manager, for the Engineer's approval, before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred. Payments received from insurers shall be used for the rectification of loss or damage.

15.3 If the Contractor does not provide any of the policies and certificates required, the Procuring Agency may affect the insurance which the Contractor should have provided and recover the premiums the Procuring Agency had paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

16. Possession of the Site

16.1 The Procuring Agency shall give possession of the Site, or parts of the Site, to the Contractor on the date(s) specified in the SCC.

17. Commencement of Works

17.1 The Contractor may commence execution of the Works on the Start Date, or other such date as specified in the SCC, and shall carry out the Works in an expeditious manner.



17.2 If the Contractor fails to commence the works within the above stated period, the Procuring Agency may, at his sole discretion, terminate the Contract and may use the proceeds of the Performance Security to compensate for any losses thereof, if any.

18. Completion of Works

18.1 The Contractor shall complete the Works within the number of days stated in the SCC from the date of commencing the Works on the Site.

19. Programme of Works

19.1 Within the time stated in the SCC, which shall not be more than fifteen (15) days, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval of a Work Plan showing the general methods, arrangements, order and timing for all the activities in the Works. Contractor shall submit to the Project Manager for approval an updated Programme at intervals no longer than the period stated in the SCC.

20. Early Warning

20.1 Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work result in increase to the Contract Price or delay in the execution of the Works.

21. Compensation Events

21.1 The following shall be Compensation Events:

(a) the Procuring Agency does not give access to the Site or part of the Site by the Site Possession Date stated in the SCC clause 15; and

(b) if the payment is delayed pursuant to Clause 24.1.

21.2 If a Compensation Event would prevent the work being completed before the Intended Completion Date, the Intended Completion Date shall be extended, as appropriate, by the Engineer.

22. Non-Scheduled Items of Works

22.1 The Contractor shall be paid for non-scheduled items of works only when the Project Manager approves such works at the rates and in the manner stated in the SCC.

23. Schedule of Works

23.1 The Schedule of Works will contain rates for all items for the construction including temporary works, installation, testing, and commissioning work to be done by the Contractor.

23.2 The Contractor shall be paid for the quantity of the work done at the rate in the Contract Agreement for each item.



23.3. The Contractor shall be entirely responsible for all taxes, duties, license fees, and other such levies imposed outside and inside Bhutan.

24. Payment Certificates

- 24.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously. The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor latest by twenty five (25) days from the date of receipt of contractor's monthly statement in correct and complete form.
- 24.2 The value of work executed shall be determined by the Project Manager.
- 24.3 The value of work executed shall comprise the value of the quantities of the items in the Schedule of Works completed.
- 24.4 The value of work executed shall include the valuation of Variations, Certified Day works and Compensation Events.
- 24.5 The Project Manager may exclude any item certified in previous certificates or reduce the proportion of any item previously certified in any certificate in the light of later information.

25. Payments

- 25.1 The Procuring Agency shall pay the Contractor the amounts certified by the Project Manager within ten (10) days of the date of each payment certificate issued by the Project Manager.
- 25.2 The Procuring Agency shall make Advance Payment (mobilization and secured advance) to the Contractor of the amounts and by the dates stated in the SCC. The mobilization advance shall be backed up by equivalent amount of unconditional Bank Guarantee (Form 4).
- 25.3 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilisation expenses required specifically for the execution of the Contract. The Contractor shall demonstrate that the advance payment has been used in this way by submitting copies of invoices or other documents to the Procuring Agency.
- 25.4 The advance payment shall be recovered by deducting proportionate amounts from payments due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, variations, claims or any amount payable due to failure to complete the works.



26. Changes in Quantities¹⁰

- 26.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than twenty percent (20%), provided the cost of variation beyond twenty percent (20%) limit exceeds one percent (1%) of the Initial Contract Value the Procuring Agency shall adjust the quoted rate up or down to allow for the change. Only when both conditions are met then the quoted rate shall be changed:
- (a) If the quantity of work executed exceeds the quantity of the item in BOQ beyond the higher specified limit the Procuring Agency shall fix the market rate (which may be lower or higher than the quoted rate) to be applied for the additional quantity of the work executed; and
 - (b) If the quantity of work executed is less than the quantity of the item in BOQ lesser than the lower specified limit, the Procuring Agency shall fix the market rate based on the submission of the contractor (which may be lower/higher than the quoted rate) to be applied for whole of the quantity of the work so executed for that particular item.
- 26.2 The rates shall not be adjusted from changes in quantities if thereby the Initial Contract Price is exceeded by more than five percent (5%), except with the prior approval of the Procuring Agency in consultation with the Tender Committee.
- 26.3 For works up to Nu. 50 M, when quantity deviation exceeds twenty percent (20%) from the quantity in BOQ and the total cost of such deviations exceeds twenty percent (20%) of the initial contract price, the Procuring Agency shall seek prior approval of the Competent Authority (Finance Committee constituted in their respective Agency).
- 26.4 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost break down of any rate in the Bill of Quantities.



27. Variations

- 27.1 The Project Manager shall order any variation of the form, quality Or quantity of the Works or any part thereof that may, in his opinion, be necessary. Each variation may include, but is not limited to, any of the following:
- (a) increase or decrease in the quantity of any work included in the Contract;
 - (b) omission of any item of work;
 - (c) change in the character or quality or kind of any such work;
 - (d) change in the levels, lines, position and dimensions of any part of the works;
 - (e) additional work of any kind (not exceeding twenty percent (20%) of the original contract amount, or the maximum threshold value for the use of Limited Tender whichever is lower); or
 - (f) change in any specified sequence or timing of construction activities.
- 27.2 All Variations shall be included in updated Programs produced by the Contractor.
- 27.3 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.
- 27.4 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.
- 27.5 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.
- 27.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.



- 27.7 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 25.1 or the timing of its execution do not cause the cost per unit of the quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.
- 27.8 For works up to Nu. 50 Million, if the value of additional work exceeds twenty percent (20%) of the initial contract price, the Procuring Agency shall seek prior approval of the Competent Authority (Finance Committee Constituted in respective Agencies).

28. Retention

- 28.1 The Procuring Agency shall retain from each payment due to the Contractor the proportion stated in the SCC until the completion of the whole of the Works.
- 28.2 The Retention Money shall be returned to the contractor on completion of Defect Liability Period.
- 28.3 Withstanding GCC 27.2, in case of contracts of duration more than 12 months, fifty percent (50%) of the Retention Money may be returned to the contractor upon completion of work against the submission of an unconditional guarantee issued by a reputed financial institution and acceptable to the Procuring Agency. Such a guarantee shall be valid until the issue of a No Defects Liability Certificate.
- 28.4 If the contractor fails to remedy any reported defect within the Defects Liability Period, the Procuring Agency shall withhold the payment or realize claims from the guarantee, of an amount, which in the opinion of the Procuring Agency, represent the cost of the defects to be remedied.
- 28.5 Subject to GCC 27.4, the Retention Money or the balance of it shall be discharged and returned to the contractor within 14 days of the issue of the No Defects Liability Certificate.
- 28.6 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defect liability period shall be remedied by the Contractor at the Contractor's cost, if the loss or damage arises from the Contractor's act or omission.



29. Liquidated Damages

29.1 The Contractor shall pay liquidated damages to the Procuring Agency at the rate per day stated in the SCC for each day that the Completion Date is later than the Intended Completion date for the works or for any part thereof.

30. Performance Security

30.1 Upon receipt to Letter of Acceptance, a Performance Security shall be provided to the Procuring Agency in the amount and form stated in the Contract Forms (Form 3). The Performance Security shall be valid until a date thirty (30) days from the date of issue of the Certificate of Completion.

30.2 The proceeds of the Performance Security shall be payable to the Procuring Agency unconditionally upon first written demand as compensation for any loss resulting from the Contractor's failure to complete its obligations under the Contract.

31. Price Adjustment

31.1 The price adjustments shall be mandatorily applicable for contract duration of more than twelve (12) months. No price adjustments shall be allowed within first twelve (12) months of any contract.

31.2 The adjustment shall be based on the cost of materials as Reflected by the Material Index Numbers published by the National Statistical Bureau¹¹ (NSB), calculated for every successive period of 3 months after the 12th month of the Contract using the following formulae.

$$V = W \times 0.80 \times 0.75 \times (M - M_0) / M_0$$

Where:

V = amount of variation for materials payable to/recoverable from the contractor for the period under review;

W = value of the work done during the period under review minus (amount of secured advance recovered in the same period + value of works executed under variations for which the variations are paid in the new rate);

M₀ = Material Index for the month in which the tender was submitted;

M = the average value of the above Index Number for the 3 months period under review; Price adjustment formula for Labour shall be calculated as follows:

$$V_L = W \times 0.80 \times 0.25 \times (L - L_0) / 5 \times L_0$$

V = amount of variation for labour payable to/recoverable from the contractor for the period under review;



W = value of the work done during the period under review minus (amount of secured advance recovered in the same period + value of works executed under variations for which the variations are paid in the new rate);

L0= Nu. 275.83 (Average labour rate in latest BSR);

L= Nu. 544.54 (Average labour rate in latest BSR).

- 31.3 Price Adjustment shall apply only for work carried out within the stipulated time or extensions granted by the Procuring Agency and shall not apply to work carried out beyond the stipulated time for reasons attributable to the Contractor.

32. Completion

- 32.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the work is completed. After completion certificate is issued by the Project Manager, the contract will formally end and the work shall be updated as completed in relevant systems.

33. Correction of Defects

- 33.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the SCC. The Defects Liability Period shall be extended for as long as the Defects remain to be corrected.
- 33.2 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

34. Taking Over

- 34.1 The Procuring Agency shall take over the Site and the Works within seven (7) days of the Engineer issuing a Certificate of Completion.

35. Final Account

- 35.1 The Contractor shall supply the Project Manager a detailed account of the total amount that the Contractor considers payable under the Contract. The Project Manager shall certify any final payment that is due to the Contractor within fifteen (15) days of receiving the Contractor's account if it is correct and complete.
- 35.2 The Procuring Agency shall effect payment of the final account within ten (10) days from the date of certification by the Project Manager.

36. Termination

- 36.1 The Procuring Agency or the Contractor by giving thirty (30) days written notice of default to the other party may terminate the Contract in whole or in part if the other party causes a fundamental breach of Contract.

- 36.2 Fundamental breaches of the Contract shall include, but shall not be limited to, the following:



- (a) The Contractor stops work for more than thirty (30) days when no stoppage of work is shown on the current Programme and the stoppage has not been authorised by the Project Manager;
 - (b) the Project Manager gives notice that failure to correct a particular defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
 - (c) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of Liquidated Damages can be paid;
 - (d) the Contractor, in the judgment of the Procuring Agency, has engaged in corrupt or fraudulent practices, as defined in GCC Clause 3, in competing for or in executing the Contract; and
 - (e) a payment certified by the Project Manager is not paid to the Contractor by the Procuring agency within sixty (60) days of the date of the Project Manager's certificate.
- 36.3 The Procuring Agency and the Contractor may at any time terminate the Contract by giving notice to the other party if either of the parties becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to any party provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue to the other party.
- 36.4 Notwithstanding the above, the Procuring Agency may terminate the Contract for convenience.
- 36.5 If the Contract is terminated, the Contractor is to stop work immediately, make the Site safe and secure and hand over the Site to the Procuring Agency as soon as reasonably possible.
- 36.6 Following the termination of contract, the Procuring Agency may retender or execute the works departmentally.

37. Payment upon Termination

- 37.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done and Plant and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the SCC. If the total amount due to the Procuring Agency exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Agency.



37.2 If the Contract is terminated for the Procuring Agency's convenience or because of a fundamental breach of Contract by the Procuring Agency, the Contractor shall be entitled to payments for completed works and the materials that have been brought to the site for the purpose of the works, but not used as certified by the Engineer after adjusting any payments received by the Contractor.

38. Release from Performance

38.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Procuring Agency or the Contractor, the Project manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible, after receiving this certificate. The Contractor shall be paid for all works carried out before stoppage of work and any work carried out afterwards to which a commitment was made.

39. Force Majeure

39.1 For the purpose of this Contract, "Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control;
- (b) which such Party could not reasonably have provided against before entering into the Contract
- (c) which, having arisen, such Party could not reasonably have avoided or overcome; and
- (d) which is not substantially attributable to the other Party.

39.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies;
- (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war;
- (c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel;
- (d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity; and
- (e) natural catastrophes such as earthquake, Glacial Lake Outburst, Floods, hurricane, typhoon or volcanic activity.



- 39.3 However, force majeure shall not include the following unless determined as exceptional event or circumstances;
- (a) rainfall;
 - (b) snowfall;
 - (c) strikes in other countries;
 - (d) non-availability of labourer and materials such as timbers, boulders, sand, and other material; and/or
 - (e) difficulty and risky terrain and remoteness of site.
- 39.4 The exceptional event or circumstances provided in GCC clause 39.1 which do not come within purview of Force Majeure requires approval of the Tender committee with justification for the approval of compensation.

40. Settlement of Disputes

- 40.1 The Procuring Agency and the Contractor shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.
- 40.2 Any dispute between the parties to the Contract that may not be settled amicably will be referred to Arbitration at the initiative of either of the parties.
- 40.3 The Arbitration shall be conducted in accordance with the prevailing Alternative Dispute Resolution Act of the Kingdom of Bhutan and its implementing rules and regulations in force or any other law of arbitration specified in the contract.
- 40.4 The dispute resolution shall not prohibit continuation of execution of the work unless injunction order is issued by the court of law.
- 40.5 In the event that a dispute between the Contractor and the Bhutan Ecological Society (BES) is escalated and requires the involvement of the SAARC Development Fund (SDF), such dispute shall be handled in accordance with the SDF Internal Control Guidelines, as stipulated under Schedule VII of the Project Financing Agreement (PFA).



SECTION 6. SPECIAL CONDITIONS OF CONTRACT	
Instructions for completing the Special Conditions of Contract are provided, as needed, in the notes in italics mentioned for the relevant GCC Clauses.3	
Clause Ref	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
GCC 1.1(d) GCC 1.1(i) GCC 1.1(j) GCC 1.1(k) GCC 1.1(l) GCC 1.1(m)	<p>The Contractor is <u>Winning Bidder</u></p> <p>The Procuring Agency is <u>Bhutan Ecological Society</u> <u>Thori Lam, Lower Changangkha</u> Mobile/Telephone: <u>+975 17848918</u> Email address: <u>procurement@bes.org.bt</u></p> <p>The Project Manager is <u>Namey Samey Studios (PMC)</u></p> <p>The Intended Completion Date for the whole of the Works shall be <u>4 Months</u></p> <p>The Site is located at <u>Memelhaka, Thimphu</u></p> <p>The Works are <i>Design & engineering, supply, erection, testing and commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant. Feed capacity 20 TON /DAY. Biogas generation plant including all mechanical & electrical equipment, supervision of civil works at site with performance guarantee of different capacities as required. The treatment process shall be based on Anaerobic digestion. followed by Gas holding, gas purification process & gas bottling process along with solid liquid separation Unit.</i></p>
GCC 2.2(h)	The additional documents forming part of this Contract are: <u>none</u>
GCC 5.1	The Project Manager shall obtain specific approval of the Procuring Agency before taking any of the following actions:
GCC 7.1	<p>The addresses for Communications shall be: <u>Bhutan Ecological Society</u> <u>Thori Lam, Lower Changangkha</u> Mobile/Telephone: <u>+975 17848918</u> Electronic mail address: <u>procurement@bes.org.bt</u></p> <p>For the Contractor: <u>As Mentioned in the Form of Bid of the Winning Bidder</u></p>
GCC 9.1	The Key Personnel of the Contractor are: As mentioned in the evaluation criteria



GCC 15.1	For insurance purposes the type of cover required shall be: The contractor shall be responsible for the insurance
GCC 16.1	Possession of the site shall be within 7 days from the date of signing of the Contract.
GCC 17.1	Commencement of work shall be within 7 days from the date of handing over possession of the Site.
GCC 18.1	Completion of works shall be within 4 Months from the date of commencing the works on the site.
GCC 19.1	The Contractor shall submit the Updated work plan 7 days after signing the Contract, and shall update the work plan every two weeks during the period of the Contract.
GCC 22.1	None

GCC 25.2	The mobilization advance payment is 10% of the contract price. The secured advance shall be upto 100% of the value of materials brought at site.
GCC 28.1	The Retention shall be 10% of the Contract Price.
GCC 29.1	The liquidated damages for the whole of the Works are 0.10% per day. The maximum amount of liquidated damages for the whole of the Works is 10% of the initial Contract Price.
GCC 33.1	The Defects Liability Period shall be 12 months
GCC 37.1	The percentage to apply to the value of the work not completed, representing the Procuring Agency's additional cost for completing the Works, is 20% of the value of work not completed up to a maximum of 10% of the initial contract price.



SECTION 7. CONTRACT FORMS

This section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after Contract award.

Contract Forms

- Form - 1 Letter of Acceptance
- Form - 2 Contract Agreements
- Form - 3 Bank Guarantee for Performance Security
- Form - 4 Bank Guarantee for Advance Payment



Letter of Acceptance

Contract No:

Date:

To:

[name and address of Contractor]

This is to notify you that your Bid dated [insert date] for the execution of the Works for [name of project / Contract] for the Contract Price of Nu [amount in figures and in words], as corrected and modified in accordance with the Instructions to Bidder is hereby accepted by [name of the Procuring Agency].

You are requested to proceed with the execution of the Works on the basis that this letter of acceptance shall constitute the formation of a Contract, which shall become binding upon furnishing a Performance Security and signing the Contract Agreement within fifteen (15) working days, in accordance with ITB Clause36.

We attach the Contract Agreement and Special Conditions of Contract for your perusal and signature.

Signed

*Duly authorized to sign for and on behalf of
[name of Procuring Entity]*

Date:



Contract Agreement

THIS AGREEMENT, made the [day] of [month] [year] between [name and address of Procuring Agency] (hereinafter called “the Procuring Agency”) of the one part and [name and address of Contractor] (hereinafter called “the Contractor”) of the other part.

WHEREAS, the Procuring Agency invited Tenders for certain Works, viz, [brief description of the Works] and has accepted a Tender by the Contractor for the execution of those works in the sum of Ngultrum [insert amount in figures and words], hereinafter called “the Contract Price.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expressions shall have the same meanings as respectively assigned to them in the General Conditions of Contract hereinafter referred to.
2. The documents forming the Contract shall be interpreted in the following order of priority:
 - (a) The signed Contract Agreement;
 - (b) The letter of Acceptance;
 - (c) The completed Bid form as submitted by the Bidder;
 - (d) The Special Conditions of Contract;
 - (e) The General Conditions of Contract;
 - (f) Specifications
 - (g) The Drawings; and
 - (h) Any other document listed in the SCC as forming part of the Contract.
3. In consideration of the payments to be made by the Procuring Agency to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procuring Agency to execute and complete the Works and to remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Procuring Agency hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS where of the Parties thereto have caused this Agreement to be executed in accordance with the laws of Bhutan on the day month and year first before written.

For the Procuring Agency

Signature

Print Name

Title

In the presence of (Name)

Address

For the
Contractor



Performance Demand Bank Guarantee
(Unconditional)

[The bank/successful Bidder providing the Guarantee shall fill in this form in accordance with the instructions indicated in brackets.]

[Bank's name, and address of issuing branch or office]

Beneficiary: [name and address of Procuring Agency]

Date: [date]

PERFORMANCE GUARANTEE No.: [Performance Guarantee number]

We have been informed that [name of Contractor] (hereinafter called "the Contractor") has entered into Contract No. [reference number of the Contract] dated [date of Contract] with you, for the execution of [name of Contract and brief description of Works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a Performance Guarantee is required.

At the request of the Contractor, we [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [amount in figures] ([amount in words]),¹² such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without you needing to prove or to show grounds for your demand or the sum specified therein.

This Guarantee shall expire no later than 30 days from the date of issuance of the Certificate of Completion, calculated based on a copy of such Certificate which shall be provided to us, or on the [number] day of [month], [year]¹³, whichever occurs first. Consequently, any demand for payment under this Guarantee must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this Guarantee for a period as required by the Procuring agency, in response to the Procuring Agency's written request for such extension, such request to be presented to the Guarantor before the expiry of the Guarantee.

[signature(s) of an authorized representative(s) of the bank]



Section 8. Bill Of Quantities – Attached

Section 9. Drawings – NA

Section 10. Terms of Reference - Attached



SECTION 8. BILL OF QUANTITIES

20 TPD Biogas Plant, Memelakha, Thimphu

Package 1

Implemented By:



Bhutan Ecological Society

Funded By:



BHUTAN ECOLOGICAL SOCIETY

2025



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOQ FOR WEIGH BRIDGE

GRAND TOTAL ABSTRACT

	Sub Head	Amount in BTN
1	SUB HEAD I Bio Gas Plant	
2	SUB HEAD II Water Treatment Plant of Capacity- 3000 LPH.	
3	SUB HEAD III Hot Water Generation Plant	
4	SUB HEAD IV Clarifier unit plant Capacity- 3000LPH.	
5	SUB HEAD V Weighbridge Unit Load Capacity- 25 TON	
GRAND TOTAL in BTN		



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOO FOR BIO GAS PLANT

SUB HEAD - I

1.00	BIOGAS PLANT
1.1A	Design & engineering, supply, erection, testing and commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant. Feed capacity 20 TON /DAY. Biogas generation plant including all mechanical & electrical equipment, supervision of civil works at site with performance guarantee of different capacities as required. The treatment process shall be based on Anaerobic digestion. followed by Gas holding, gas purification process & gas bottling process along with solid liquid separation Unit.
1.1B	REQUIRED BASIC DESIGN PARAMETERS
	Total Design Feed capacity - 20 ton/day
1.1.C	DESIGN REQUIREMENT.
1.1.C.I	Biogas Plant with accessories Feed Handling System -> Sorting Table for Waste Segregation -> Mechanical Shredder/ Grinder -> Feed Tank -> pH and solid liquid ratio maintain -> Feed Pump system -> Anaerobic Digester -> Gas purification unit -> Online gas analyzer -> Biogas Holding unit -> Compressor for gas pressure boosting -> Cascade -> Digested Slurry Collection Tank -> Solid liquid separation unit.
1.1.C.II	GENERAL CONDITIONS FOR BIOGAS UNIT
	Food waste collected from municipal, commercial, and institutional sources is transported to the processing facility. The waste undergoes sorting, grinding, and homogenization in an equalization tank, where pH and solid-liquid ratio is carefully controlled to ensure stable digestion conditions. The prepared slurry is then pumped into an anaerobic digester via a feed pump. Inside the digester, microorganisms break down the organic matter under anaerobic conditions, producing biogas. This biogas is upgraded to purified biomethane, Gas analyzer for Measures CH ₄ , CO ₂ , H ₂ S, and O ₂ Concentrations; typically uses NDIR and electrochemical sensors; continuous monitoring. After stored in a gas buffer balloon before being compressed into cascade cylinders. The compressed biomethane (CBM) is suitable for use as compressed natural gas (CNG) for domestic applications. The residual digestate (sludge) is transferred to a sludge holding tank for temporary storage. It is then dewatered using a screw press, producing dry sludge. The dry sludge is collected and disposed of as required or may be further processed for beneficial uses such as composting or soil amendment, depending on regulatory approvals.



1.D	DECLARATION BY BIDDER	
1.D.1	Operating cost	
1.D.2	Total connected KW	
1.D.3	Total KWH / Day	
1.D.4	Cost of Consumable / day	
1.D.5	Cost of comprehensive operation & maintenance/Month	
1.D.6	Cost of operation / day	
1.D.7	Total Cost / day	
1.D.8	Total Operating cost /Kg of pure Biogas (Guaranteed for 5 years)	
1.E	UTILITIES	
1.E.1	Chemicals Required/ Frequency	
1.E.2	Manpower Required- Supervisor/Operator/Labour.	
1.E.3	Power Required – Connected & operation	



2.00	20 TPD Biogas Itemwise BOQ			
	Equipment Details	Specification	Unit	QTY
2.1	Feed Preparation Unit:			
2.1.1	Conveyor belt for feeding:	1) Belt strength : 800/4. 2) Belt width : 600 mm. 3) Class of duty : Medium duty. 4) Carcass thickness : 1.6 mm (minimum). 5) Type of fabric : Nylon/ Nylon 6) No. of plies : 4 (Four). 7) Top cover thickness : 5 mm. 8) Bottom cover thickness : 2 mm. 9) Cover grade : M24. 10) Edge construction : Cut edge. 11) Roll length : 200 meters.	Set	1.00
	Motor for conveyor belt with VFD and gear box:	5 HP 4 Pole motor with gear box and VFD		
2.1.2	Sorting table:	1) Dimension: 3 m (L) X 1 m (W) X 1 m (H) 2) MOC: SS	Set	2.00
2.1.3	Mechanical Shredder/ Grinder / Pulverizer:	Capacity: 2 TPH (Food Waste), Type: Heavy-duty, twin-shaft or hammer mill type grinder with anti-wrapping design, Feed Size: ≤ 150 mm, Output Particle Size: 10–15 mm adjustable, Drive Motor: 15–20 HP, 3-phase, 415 V, 50 Hz, TEFC, Cutting Mechanism: Hardened steel blades / wear-resistant alloy cutters, Rotor Speed: 800–1,200 RPM (optimized for wet organic waste), Material of Construction (MOC): SS-304 for contact parts; MS with epoxy coating for frame, Moisture Handling: Capable of handling waste with 70–85% moisture content, Hopper: 300–500 litre capacity with safety grate, Discharge: Direct chute to slurry preparation tank or conveyor system, Safety Features: Overload protection, emergency stop switch, interlocks, Lubrication: Automatic grease/oil lubrication system, Service Life: 5–7 years with routine maintenance. 2 nos (1W+1S)	Set	1.00
2.1.4	Screw conveyor at hopper:	1) dimension: 300 mm dia, 3m (L), 2) Motor: 2 HP, 3 phase, 3) MOC: SS. 2Nos (1W+1S)	Set	1.00
2.1.5	Feed agitator: circulation through pump	4 HP, SS cutter pump.	Set	2.00
2.1.6	pH and solid liquid ratio maintain unit	Automatic with interlock.	Set	1.00
2.1.7	Dosing pump and tank:	100 LPH Dosing pump with suitable 100 L PP tank.	Set	1.00
2.1.8	Fresh water pump:	Flow - 3 m ³ /hr, Head 20 - 25 meter, SS impeller, body CI 2 Nos pump. (1W+1S)	Set	1.00



2.20	Anaerobic Digester System:			
2.2.1	Feed pump	Capacity: 1.7 m ³ /h nominal (capable range 1.0–2.5 m ³ /h). Design head: up to 25 m (vendor to quote performance curve at 5, 10, 15, 20, 25 m). Solids handling: up to 30 mm nominal particle size (with upstream 20–30 mm coarse screen recommended). Maximum operating temperature: 60 °C. Fluid characteristics: slurry, 6–10% TS solids, pH 6–8, non-explosive. Pump type: Progressive cavity pump, single rotor/stator stage, self-priming. Rotor material: hardened stainless steel (SS 316 / 17-4 PH) with nitride or hard-faced options for abrasion.	Set	2.00
2.2.2	Biogas Balloon: Double membrane	500 m ³	Nos	1.00
2.2.3	Scum Breaker / Remover & Agitator for Digesters	Type - Chain Scraper, Material - Stainless Steel/MS, Design - LONG LIFE & EFFECTIVE, Operation Mode - Automatic, Oil Recycle Rate- 5000litre/hr	Set	1.00
2.2.4	Slurry & Biogas Grids		Set	1.00
2.2.5	Agitator with gear motor & accessories	5 KW, SS	Set	2.00
2.2.6	Digester Heating System Piping Inside Digester	SS PIPES	Set	1.00
2.2.7	Slurry & gas Recirculation Pump & blower:	PCP	Set	1.00
2.30	Digestate Handling System:			
2.3.1	Digestate feed pump:	3 HP, PCP	Set	2.00
2.3.2	Solid Liquid Separation Unit	Nominal throughput: 3.0 m ³ /h (capacity margin; peak flow coverage). This covers 1.67 m ³ /h average easily — vendor will size screens/shaft accordingly. Expected cake: ~9.25 m ³ /day at ~25% TS (design). Drive: 7.5 kW motor, VFD; stainless steel 316 contact parts, hardened screw. Perforated screen: removable, 2–5 mm holes depending on cake dryness tests. CIP ports / inspection covers. Inlet: flange for feed pump; outlet: conveyor/chute for cake; centrate outlet to pump.	Set	1.00
2.3.3	Compost containers:		Set	1.00
2.3.4	Recirculation pump:	3 hp	Set	1.00
2.3.5	Nitrogen fixation unit:	Nitrification reactor (MBBR): 12–15 m ³ , filled 50–60% media. Air blower: capacity ~300–500 m ³ /hr, motor ~2.2–5.5 kW with VFD, coarse estimate 3 kW typical. DO control loop with solenoid valve / VFD control. Diffusers: fine-bubble disc diffusers sized to area. Return sludge handling: minimal if MBBR; provide small sludge holding tank and occasional wasting. Instrumentation: DO probe, pH, NH ₄ online sensor (if desired), flowmeter, temperature. Mixers: not required; aeration provides mixing. Outlet: MBBR effluent goes to storage tank or directly to land application.	Set	2.00



2.40	Biogas purification and bottling unit:			
2.4.1	H ₂ S Scrubber System	(100 Cum./Hr. Cap.)	Set	1.00
2.4.2	CO ₂ Scrubber System:	(100 Cum./hr)	Set	1.00
2.4.3	Gas analyzer - online	Measures CH ₄ , CO ₂ , H ₂ S, and O ₂ Concentrations; typically uses NDIR and electrochemical sensors; continuous monitoring	Set	1.00
2.4.4	Four stage Piston type Booster Compressor	60 m ³ /hr @ 200 Bar	Set	1.00
2.4.5	Biogas Cascades	500 Kg	Set	2.00
2.4.6	Bottle filling stations:	Multiple filling points; operates at 200 Bar; includes safety relief valves and pressure gauges	Set	1.00
2.4.7	Gas flaring unit.	3 kw	Set	1.00
2.50	Miscellaneous Work:			
2.5.1	Control Panel & Electrical Work with cable & cable tray.		Set	1.00
2.5.2	Plumping work:	PVC / UPV / MS / SS as applicable.	Set	1.00
2.5.3	Installation & Commissioning		Set	1.00
2.5.4	Insulation for digester:		Set	2.00



2.60	Approved make list of equipment			
2.6.1	Bio- Gas Plant	Design and customized. Reputed and experienced installer.		
2.6.2	Pump	Grundfos / Willo / Eqv.		
2.6.3	Pressure gauge	Bumar / Leader / Eqv.		
2.6.4	Air Blower	Airvac / KPT / Everest		
2.6.5	Motor	ABB / SG / Marathon ? Eqv.		
2.6.6	Valve	Leader / BDK / Kartar / Zoloto		
2.6.7	MCB / MCCB	L&K / Legrand / Schneider / ABB		
2.6.8	OLR	Siemens / L&K / ABB / Schneider		
2.6.9	Contactor	Siemens / L&K / ABB / Schneider		
2.6.10	SPP	Siemens / L&K / ABB / Schneider		
2.6.11	Meters	Siemens / L&K / ABB / Schneider		
2.6.12	Wires and Cables	Polycab / RR / Havells		
2.6.13	MS Pipe	TATA / Apollo		
2.6.14	Dosing Pump	Milton Roy/Grundfos Eqv		
2.6.15	UPVC / CPVC Pipes	Astral / Ashirvad		
2.6.16	Ani other Make	On Confirmation from Consultant only		



3.00	BID QUALIFICATION CRITERIA (BQC)
3.1.1	Technical Criteria
3.1.1.a	The bidder company should have at least 15 years of experience in Design & Engineering, Supply, Installation, Commissioning of Biomethanation Plants, handling Segregated Organic Municipal Solid Waste
3.1.1.b	The bidder should have successfully executed at least 10 Nos. of Biomethanation-cum-CBG OR Biomethanation-cum-Power Generation Plants on Turnkey basis, having cumulative capacity 50 TPD during last 10 years, with single plant capacity should not be less than 5 TPD.
3.1.1.c	The bidder should have successfully carried out minimum of 5 years Operation & Maintenance of aforesaid plants on continuous basis.
3.1.1.d	The bidder should have experience in execution of at least one biomethanation Plant, not less than 5 TPD, either in Bhutan OR in similar continent / neighbouring country.
3.1.1.e	The bidder having experience as a Consultant / PMC for setting up CBG Projects either in Bhutan OR in similar continent / neighbouring country, will get added advantage.
3.1.2	Definition of Bidder
3.1.2.a	Bidder means the firm responsible for Design, Engineering, Construction, Procurement, Installation, and Commissioning of the Biogas / CBG Project based on segregated organic MSW plant
3.1.3	Definition of Similar Work
3.1.3.a	Design, Engineering, Construction, Procurement, Installation, Commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant, not less than 5 TPD (Feed Quantity) capacity along with carrying out at least 5 years Comprehensive O&M.
3.1.4	Documents Required for Technical Criteria
3.1.4.a	All documents shall be in the name of bidder.
3.1.4.b	Copy of Concession Agreement or contract document or work order documents showing details of work and plant capacity. and Completion Certificate showing gross value of the job/service, description of job/service, plant capacity, and duration of the contract.
3.1.5	Financial Criteria
3.1.5.a	Annual Turnover
	The bidder to participate in the tender must have achieved an annual average turnover of BTN 20.000 Million. as per Audited Balance sheet and P&L Statement in the last three* accounting years prior to due date of bid submission
3.5.1.b	Net Worth
	The bidders should have positive net worth as per the latest audited financial statement.
	Bidder shall furnish Annual Report/ audited balance sheets including Profit and Loss Accounts along with the Bid to establish Bidder's conformance to Qualification Criteria



3.5.1.c	Financial Criteria Documents Required
	Audited Balance Sheet and Profit and Loss Statements duly certified by Statutory Auditors for immediate last three accounting years.
	Bidder shall furnish Annual Report/ audited balance sheets including Profit and Loss Accounts for previous three financial years along with the Bid to establish Bidder's conformance to financial criteria and prove existence in the last three years.
3.60	BQC Document Verification
3.6.1	All Bidders will require submitting self-certified copies of above-mentioned documents pertaining to the Technical Criteria & Financial Criteria. Additionally, the Bidders need to provide undertaking to submit Attested True Copies (Scanned Copies) documents in case they emerge as successful bidders
3.6.2	Bidders shall ensure that any certificate/ reports issued / attested by a practicing-chartered accountant in Bidders Country and submitted in Bid shall mandatorily include the Registration Number. Certificate/ reports issued / attested without Registration Number of practicing chartered account in Bidders Country shall not be considered for evaluation.
3.6.3	The Bid, all correspondence and documents relating to the bid, between Bidder and Bhutan Ecological Society, shall be written in English language only. Any supporting document furnished by Bidder may be written in other language provided that this literature is accompanied by an authenticated English translation in which case for purpose of the interpretation of Bid, the English translation shall govern
3.6.4	All charges of CA Certificate (if applicable) shall be borne by the Bidder.
3.70	Bids May Be Submitted By
3.7.1.a	The bids may be submitted by an entity (domestic bidder) and should have completed 10 financial years of existence as on original due date of tender since date of commencement of business and shall fulfil each BQC eligibility criteria
3.7.1.b	JV/Consortium bids will be accepted (i.e., Qualification on the strength of the JV Partners/Consortium Members (Only Two Partners – One qualifying Technical Criteria & other one qualifying Financial Criteria) will be accepted)
3.80	Bid Security
	<p>Bid Security shall be: BTN 850,000.00 in the following forms:</p> <ul style="list-style-type: none"> i. Cash Warrant/Demand Draft/Banker's Cheque ii. Unconditional Bank Guarantee issued by a financial institute of Bhutan or any foreign bank acceptable and enforceable in any financial institution of Bhutan iii. Under exceptional case of not meeting i & ii, Bidders shall be allowed to deposit Bid Security in the form of cash deposit through bank transfer to Company's (Bhutan Ecological Society) Account.



2.80	TERMS AND CONDITIONS:
2.8.1	They bidder may visit the site before submitting the bid but its optional.
2.8.2	Detailed scopes of work with civil tanks details, dimension, equipment's, plants and machineries, vessels, digesters details, foundation and industrial shade requirements etc., to be submitted by vendor in the form of offer.
2.8.3	The offer submitted will be detailed in all respect and client scope/vendor scope shall be mentioned clearly. MOC/ Make of materials/ specifications/ quantity of various units shall be mentioned distinctly.
2.8.4	Plant must be supplied and commissioned within four months' time after placement of LOI/Order. The entire plant will be taken over after successful commissioning and testing and 5% Payment retained as DLP will be released after successful trouble free operation period of six month.
2.8.5	Payment terms may be mentioned clearly which will be discussed and finalized during negotiation and placement of order.
2.8.6	Plant shall be guaranteed for a period of at least 12 Months after commissioning and under maintenance contract for running & maintenance for a period of five years from the date of handing over.
2.8.7	All spare and consumable including chemical for erection, commissioning and operation up to six months shall be supplied by the vendor. Beyond six month all requirement shall be borne by the client.
2.8.8	Technical guideline/manual/as-built drawings/P&I drawings of each and every unit shall be submitted during handing over and proper training shall be imparted to the operator for regular operation and periodic maintenance.
2.8.9	All test reports shall be submitted in support of guaranteed test parameters.
2.8.10	The completed offer shall be submitted by-----



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOQ FOR BIO GAS PLANT - WATER TREATMENT PLANT

SUB HEAD - II

BASIS OF DESIGN

■ Capacity	3 m3/hour
■ Working pressure	3.5 Kg/Sq.cm
■ Test pressure	10.0 Kg/Sq.cm

(ASUMPTION)

	SOURCE	PERMISSIBLE
A. PH	TO BE CHECKED	6.5 TO 8.5
B. HARDNESS	TO BE CHECKED	UPTO 200
C. IRON AS Fe	TO BE CHECKED	UPTO 0,3 ppm
D. TURBIDITY	TO BE CHECKED	ACC-1NTU
E. TSS	TO BE CHECKED	<5
F. COLOUR	TO BE CHECKED	ACC - 5HZ
G. BACTERIA (TOTAL COLIFOAM / FECAL COLIFOAM)	TO BE CHECKED	BDL
H. BOD	TO BE CHECKED	<2
I. COD	TO BE CHECKED	<10

S.No.	Description	Unit	Qty	Rate	Amount in BTN
	<u>Water Treatment Plant of Capacity- 3000 LPH.</u>				
1.00	Providing, fixing, testing and commissioning of vertical self supporting Multi Grade filter, in FRP/MS vessels 450 mm dia approx, filtration rate 20.0 m3/hr/m2) approx. Pressure gauges at inlet & outlet, sample cock, air vent valve with UPVC/CPVC/MS piping, for face piping distribution pipe with diffuser on top, Manual Multiport/Control Valve and all accessories, with initial charge of filter media for multi-grade filter, complete. (Vendor has the responsibility to check the quality of water from actual water analysis report before procuring the equipments)	Set	1.00		



2.00	Providing, fixing, testing & commissioning vertical self supporting Activated Carbon Filter (ACF, Carbon IDV 850) in FRP/MS vessels 500 mm dia approx, filtration rate 15 m3/hr/m2 approx. Pressure gauge at inlet & outlet, sample cock, UPVC/CPVC/MS for face piping, Manual Multiport/Control Valve and all accessories, air vent valve with piping, with initial charge of filter media for activated carbon filter, complete. (Contractor has the responsibility to check the quality of water from actual water analysis report before procuring the equipment)	Set	1.00		
3.00	Water Treatment Feed Pumps - Horizontal, Centrifugal type; With Motor-Base Frame-MOC-CI Base+ Suction-Discharge Manifold & Internal Chamber + Shaft - SS316. FLOW-3000LPH; HEAD 35 Mtrs.2 Nos. pump (1 working+1 standby), cascade operation, approx 1.2KW each, located at adjacent to WTP. Both the pumps shall be equal running hours for proper use controlled by intelligent control panel with all protection.	Set	1.00		
4.00	Providing, fixing, testing & commissioning of metering pump type chemical (NaOCl/SMBS/NaHCO3) doser Pump (2 Nos) with 100 (2 nos) lits.HDPE/FRP solution tank with Required, injection fitting assembly, suction and delivery hose/pipe upto the point of injection, capacity 0-5 lph, complete in all respects. (Chemical and process of dosing to be furnished by the vendor as per design and requirement) .	Set	2.00		
GRAND TOTAL					



<u>TERMS AND CONDITIONS.</u>	
1	Water Analysis Report from any Reputed/NABL Certified LAB to be submitted by the Vendor in support of their Quotation without which the Offer may not be considered for Technical discussion.
2	Rates quoted must be inclusive of all taxes and duties as per the BST, and FOR site.
3	Any other charges on account of installation, testing, commissioning, etc over and above the scope of BOQ, must be mentioned clearly.
4	Warranty terms of various items shall be mentioned clearly. Test Certificate of all equipment, gadgets, pumps, valves etc shall be submitted along with the invoice.
5	Payment terms and any other terms and conditions of bidder may be mentioned clearly in the offer.
6	Loading/unloading, movement, placing in position in terrace, safety and security of materials, plant and equipment, tools and tackles etc shall be responsibility of the working contractor. Only covered space shall be provided for stores till the work is in progress.
7	MAKE OF WATER TREATMENT PLANT : ION EXCHANGE / THERMAX / NALCO
8	ELECTRICAL : L&T/SCHNEIDER/LEGRAND/SIEMENS, WIRES AND CABLES : POLYCAB / RR / FINOLEX / LAPP
9	PLUMBING: ASTRAL/ASHIRWAD/KARTAR/ZOLOTO/LEADER/UNISON/SPIRAX/EQV. GI : TATA "C"
10	MAKE OF PUMPS : WILO / GRUNDFOS
11	Bidder shall submit schematic drawing along with the offer in minimum A3 size in support of their proposal. Detailed BOQ and drawings of all items shall be submitted for approval by the successful bidder before execution.



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOQ FOR BIOGAS PLANR- HOT WATER GENERATION PLANT

SUB HEAD - III		UNIT	QUANTITY	RATE	AMOUNT in BTN
Sl. No.	HOT WATER GENERATION PLANT				
1.00	Heat pump Model: As per supplier Make: As per supplier Refrigerant : R134A Type of Compressors: Multiple Scroll Type of Evaporator: Braze Plate Delta t (temperature) in Winter: 70°C Hot water inlet/outlet temp: 5/75°C Approx. Heating Capacity: 67000 kcal/hr (2nos Heat Pump together) Approx Power required: ----- KW (To be filled by vendor) No. of Compressors : 2 No/Heat Pump No. of Circuits :2 No/Heat Pump Dimension (L x W x H): As per supplier and model selected Operating Weight: To be mentioned by supplier in kg _____				
	Supply Installation, Testing and Commissioning of Heat Pump Output Heating capacity - As per above (1 working)	Set	1.00		
1.10	PLC based CONTROL PANEL IP65 for the HEAT PUMP , capable to handle all respective HEAT PUMP equipments, Fan/Compressor /pumps, etc.(Vendor to confirm the Design /Logic /Flow / head & get approved from consultant before supply (ALL INTERNAL POWER SUPPLY FROM CONTROL PANEL TO ALL PUMPS, HEAT PUMP UNITS, ELECTRIC VALVES ETC SHALL BE INCLUDED IN THE OFFER. POWER SUPPLY UP TO THE CONTROL PANEL SHALL BE PROVIDED BY THE CLIENT)	No	1.00		



	Logic for Operations of Heat Pumps & related accessories :				
	1) If Mixing tank Water temp falls to 75°C, heat pump will start with related accesosiers & stop when temp in mixing tank is achived at 75°C				
1.20	Secondary Circulation pumps 2nos/Heat Pump (1 Working) as suitable complete with all kind of Valve station & piping assembly (GI) including SS 304 isolation valve, NRV, Stainer, TG, PG, flang ,union etc, Flow AS REQD, Head AS REQD as per Heat Pump Specification, (Vendor to confirm the Flow / head & get approved from consultant before supply)	Set	1.00		
1.30	Mixing Tank Supply Installation, Testing and Commissioning of Hot water cylindrical VERTICAL / HORIZONTAL mixing tank with 75MM LRV MATRESS insulation & Properly covered with Aluminium Sheet 22 SWG; Working pressure 5 bar (Testing shall be as per Standard 1.5 times of working pressure), Moc - SS304 (Shell - 4MM & Dish - 6 MM), capacity 3000 liters excluding disc volume; With all required connection (Threaded) port i.e.- Drain/Cold Water Inlet/Hot Water Outlet/Return Recirculation/Airvent/RTD/Temp Meter. Tank will contain 50 KW three phase heating element flange type((manual operated with built in thermostat) with necessary protection complete in all respect. (VENDOR IS REQUIRED TO ACCOUNT AND ACCOMMODATE ALL INTERNAL CONNECTING PIPES (CPVC SDR 11/SCH-40 WITH NITRILE RUBBER INSULATION WITH PROTECTIVE COVERING), PN10 GRADE 120 D CELCIUS GRADE FOR HOT LINE BRASS BUTTERFLY VALVES, BALL VALVES, NRV, AND ALL MECHANICAL SUPPORT)	No	1.00		
1.40	Supply Installation, Testing and Commissioning of Hot Water Circulation Pump by temperature sencing, 415V, 50Hz, 10000 LPH and 30-35 mtrs head. Built in/external timer enables the pump to start/stop automatically at a set interval of 6Hrs. The built in thermostat can be set to stop the pump at a preset liquid temperature. Pump should be (1W+1S) basis.	Set	1.00		
1.50	Supply Installation, Testing and Commissioning of makeup Water filling Pump by mixing tank level sencing, 415V, 50Hz, 10000 LPH and 30-35 mtrs head. Built in/external timer enables the pump to start/stop automatically at a set interval of 6Hrs. The built in thermostat can be set to stop the pump at a preset liquid temperature. Pump should be (1W+1S) basis.	Set	1.00		
	GRAND TOTAL				



TERMS AND CONDITIONS.

1	Rates quoted must be inclusive of all taxes and duties as per the provisions in GST, and FOR site.
2	Any other charges on account of installation, testing, commissioning, etc and any item required over and above the scope of BOQ, must be mentioned clearly in the offer. Power supply up to control panel of respective units shall be in the scope of client. Rest all internal electrical connections shall be included in the offer. Pipeline required for Cold water supply and drawing hot up to and from the mixing tank respectively shall be in clients scope, rest all internal piping for heat pump and solar assembly including all valves and accessories complete in all respect will be in vendors scope.
3	Warranty terms of various items shall be mentioned clearly. Test Certificate of all equipments, gadgets, pumps, valves etc shall be submitted along with the invoice.
4	Payment terms and any other terms and conditions of bidder may be mentioned clearly in the offer.
5	LOADING, UNLOADING, SHIFTING all the equipments from trucks, shifting them at terrace level then positioning on respective locations for all the items, safety and security of materials, plant and equipments, tools and tackles etc shall be responsibility of the vendor. Only covered space shall be provided for stores till the work is in progress.
7	MAKE OF HEAT PUMP: BOSCH/EMERSON/UNITEC/THERMAX
8	MAKE OF PUMPS : WILO / GRUNDFOS /EBARA
9	ELECTRICAL : L&T/SCHNEIDER/LEGRAND/SIEMENS, WIRES AND CABLES : POLYCAB / RR / FINOLEX / LAPP
10	PLUMBING: ASTRAL/ASHIRWAD/KARTAR/ZOLOTO/LEADER/UNISON/SPIRAX/EQV. GI : TATA "C"
11	Bidder shall submit a conceptual schematic drawing along with the offer in minimum A3 size in support of their proposal. Detailed BOQ and drawings of all items shall be submitted for approval by the successful bidder before execution.
12	Bidder must mention make of each and every Ancillary / Associated items, controllers, meters, contactors, headers, etc. in the offer. No change in make of materials shall be accepted after finalization.
13	Bidder must visit site for proper verification of installation area and calculation of required accessories.



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOQ FOR BIO GAS PLANT - CLARIFIER PLANT

SUB HEAD - IV			
■ BASIS OF DESIGN			
Capacity	- 3 m ³ /hour		
(ASUMPTION)		SOURCE	PERMISSIBLE
A. TDS in water		TO BE CHECKED	UPTO 500
B. PH		TO BE CHECKED	6.5 TO 8
C. BOD		TO BE CHECKED	<30
D. COD		TO BE CHECKED	<100
E. TURBIDITY		TO BE CHECKED	<5
F.TSS		TO BE CHECKED	<5
G. COLOUR		TO BE CHECKED	ACC 5 HZ
H. FECAL COLIFOAM)		HIGH	BDL
G.TOTAL COLIFOAM		HIGH	BDL

S.No.	Description	Unit	Qty	Rate in BTN	Amount in BTN
1.00	<u>Clarifier unit plant Capacity- 3000LPH.</u>				
1.10	Providing, fixing, testing and commissioning of 3 M ³ /Hr CLARIFIER consisting of pre-fabricated FLOCCULATER & TUBE SETTLER unit followed by dual media filter & activated carbon filter. Including all mechanical & electrical equipment, of different capacities as required. The treatment process shall be based on Flocculation & Coagulation method followed by Proper Settling Process along with Tertiary Filtration Unit.	Set	1.00		

2.00	Tertiary Filtration Unit				
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2.10	Providing, fixing, testing and commissioning of vertical self supporting Multi Grade filter , in MS vessels 500 mm dia approx, filtration rate 20.0 m3/hr/m2 Flow approx. Pressure gauges at inlet & outlet, sample cock, air vent valve with MS piping, for face piping distribution pipe with diffuser on top, Control Valve and all accessories, with initial charge of filter media for dual media filter, complete. (Vendor has the responsibility to check the quality of water from actual water analysis report before procuring the equipments)	Set	1.00		
2.20	Providing, fixing, testing and commissioning of vertical self supporting Activated Carbon Filter (ACF, Carbon IDV 850) , in MS vessels 500 mm dia approx, filtration rate 15.0 m3/hr/m2 Flow approx. Pressure gauges at inlet & outlet, sample cock, air vent valve with MS piping, for face piping distribution pipe with diffuser on top, Control Valve and all accessories, with initial charge of filter media for dual media filter, complete. (Vendor has the responsibility to check the quality of water from actual water analysis report before procuring the equipments)	Set	1.00		
3.00	Supply Installation Testing and Commissioning of Submersible type clarifier feed pump, discharge 3 m3 per Hr., Head 8 - 12 Mtrs (1W+1S)) two pole motor with CI casting, DI/CI impeller, SS Shaft, mechanical seal suitable for solid handelling 20 mm particles. Auto operation based on low and high level of treated water tank.	Set	1.00		
4.00	Water Treatment Feed pumps - Openwell submersible, Centrifugal type; With Motor- Base Frame-MOC-CI Base+ Suction-Discharge Manifold & Impeller -Bronze/CI+ Shaft - SS304. Flow - 3 M3/Hr & Head 35 Mtrs.2 Nos. pump (1 workingm +1 standby), cascade operation, approx 1.2 KW each, located at adjacent to WTP. Both the pumps shall be equal running hours for proper use controlled by intellegent control panel with all protection.(Make-Wilo/Grundfos/Aramstrong) (Electrical- L&T/Schneider/Siemens)	Set	1.00		
5.00	Controller Panel For Total Unit:- 2.5MM- CRCA Pwder Coated IP55 Enclosure, MCB Incomer, SPP/OV/UV/Motor Stalled Protection/Transient Surge Protection in Power curcuit, Separate MCB for each feeder, OLR, Cascade operation with Digital Timer, Dry Run protection, AUTO-MANUAL operation (Dry Run will activate always). Pump Operation based on Tank Water Level, Alarm system for Extra Low level. Panel should operate against raw water tank level & three nos dosing pump.	Set	1.00		
	GRAND TOTAL				



TERMS AND CONDITIONS.	
1	Water Analysis Report from any Reputed/NABL Certified LAB to be submitted by the Vendor in support of their Quotation without which the Offer may not be considered for Technical discussion.
2	Rates quoted must be inclusive of all taxes and duties as per the provisions in GST, and FOR site.
3	Any other charges on account of installation, testing, commissioning, etc over and above the scope of BOQ, must be mentioned clearly.
4	Warranty terms of various items shall be mentioned clearly. Test Certificate of all equipments, gadgets, pumps, valves etc shall be submitted along with the invoice.
5	Payment terms and any other terms and conditions of bidder may be mentioned clearly in the offer.
6	Loading/unloading, movement, placing in position in terrace, safety and security of materials, plant and equipments, tools and tackles etc shall be responsibility of the working contractor. Only covered space shall be provided for stores till the work is in progress.
7	MAKE OF WATER TREATMENT PLANT : ION EXCHANGE / THERMAX / NALCO
8	ELECTRICAL : L&T/SCHNEIDER/LEGRAND/SIEMENS, WIRES AND CABLES : POLYCAB / RR / FINOLEX / LAPP
9	PLUMBING: ASTRAL/ASHIRWAD/KARTAR/ZOLOTO/LEADER/UNISON/SPIRAX/EQV. GI : TATA "C"
10	MAKE OF PUMPS : WILO / GRUNDFOS
11	Bidder shall submit schematic drawing along with the offer in minimum A3 size in support of their proposal. Detailed BOQ and drawings of all items shall be submitted for approval by the successful bidder before execution.



REQUEST FOR QUOTATION
PROJECT - BHUTAN ECOLOGICAL SOCIETY
20 TONS PER DAY FOOD WASTE-TO-BIOGAS PLANT THROUGH ANAEROBIC TECHNOLOGY
BOQ FOR WEIGH BRIDGE

SUB HEAD - V

S.No.	Description	Unit	Qty	Rate BTN	Amount BTN
	<u>Weighbridge Unit Load Capacity- 25 TON</u>				
1.00	Providing, Designing, installation, testing and commissioning of pit type, Surface Mounted all weather, Electronic Weigh Bridge 25 ton with all accessories, complete in all respect. Basic details of weight bridge are furnished below: i) Weighbridge Length - 7 meter ii) Weighbridge width - 3 meter iii) Load cell - Galvanized body 4 nos ball, each load cell capacity - 10 ton iv) MS Plate, Joists & accessories - 10mm thick, Length - 7 meter, width - 3 meter. with required joists & others fittings v) Digital IT - 1 NO Key Board - 1 no, vi) Monitor - 1 no, vii) Printer - 1 no, viii) Extra Display - 1 NO (2 inch) ix) Communication cable - as require x) Junction box - As require. Power supply - As OEM design,	Set	1.00		
	GRAND TOTAL				



TERMS AND CONDITIONS.

- 2 Rates quoted must be inclusive of all taxes and duties as per the provisions in GST, and FOR site.
- 3 Any other charges on account of installation, testing, commissioning, etc over and above the scope of BOQ, must be mentioned clearly.
- 4 Warranty terms of various items shall be mentioned clearly. Test Certificate of all equipments, gadgets, pumps, valves etc shall be submitted along with the invoice.
- 5 Payment terms and any other terms and conditions of bidder may be mentioned clearly in the offer.
- 6 Loading/unloading, movement, placing in position in terrace, safety and security of materials, plant and equipments, tools and tackles etc shall be responsibility of the working contractor. Only covered space shall be provided for stores till the work is in progress.
- 7 MAKE OF Weighbridge unit : **Essae / Mettler Toledo /Eqv**
- 8 ELECTRICAL : **L&T/SCHNEIDER/LEGRAND/SIEMENS, WIRES AND CABLES : POLYCAB / RR / FINOLEX / LAPP**
- 9 PLUMBING: **ASTRAL/ASHIRWAD/KARTAR/ZOLOTO/LEADER/UNISON/SPIRAX/EQV. GI : TATA "C"**
- 10 MAKE OF PUMPS : **WILO / GRUNDFOS**
- 11 Bidder shall submit schematic drawing along with the offer in minimum A3 size in support of their proposal. Detailed BOQ and drawings of all items shall be submitted for approval by the successful bidder before execution.



SECTION 10. Terms of Reference

Package 1 - Plant

Implemented By:



BHUTAN ECOLOGICAL SOCIETY

Funded By:



20 TPD Biogas Plant, Memelakha,
Thimphu
BHUTAN ECOLOGICAL SOCIETY
2025



1. Introduction

1.a Project Overview – 20 TPD Biogas Plant, Memelakha, Thimphu

The 20 TPD Biogas Plant is being planned at **Memelakha, Thimphu (27.4428° N, 89.6945° E)** — the primary site for the city’s municipal waste collection and disposal. This project represents a major milestone for Bhutan, aiming to transform **around 20 tons of organic waste per day** into **clean energy and organic fertilizer**, rather than sending it all to the landfill.

By establishing this facility, Thimphu will take a significant step toward **sustainable waste management, clean energy production, and environmental protection**. The project will help reduce open dumping, control unpleasant odors, and minimize the emission of harmful greenhouse gases. At the same time, it will generate renewable energy that can be used for **electricity, cooking, or transportation**, and produce **nutrient-rich organic compost** to support local agriculture.

For Bhutan, this initiative is more than just a waste treatment plant — it is a **state-of-the-art demonstration of the country’s commitment to sustainability and self-reliance**. As one of the first modern facilities of its kind in the nation, the Memelakha Biogas Plant will serve as a **model for other towns and districts**, showcasing how Bhutan can blend its **traditional reverence for the environment** with **modern technological solutions**. Ultimately, the project will contribute to a **cleaner city, healthier surroundings, and a stronger circular economy** for the future.

1.b Scope of Work

Design & engineering, supply, erection, testing and commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant. Feed capacity 20 TON /DAY. Biogas generation plant including all mechanical & electrical equipment, supervision of civil works at site with performance guarantee of different capacities as required. The treatment process shall be based on Anaerobic digestion. followed by Gas holding, gas purification process & gas bottling process along with solid liquid separation Unit.

Food waste collected from municipal, commercial, and institutional sources is transported to the processing facility. The waste undergoes sorting, grinding, and homogenization in an equalization tank, where pH and solid–liquid ratio is carefully controlled to ensure stable digestion conditions.

The prepared slurry is then pumped into an anaerobic digester via a feed pump. Inside the digester, microorganisms break down the organic matter under anaerobic conditions, producing biogas. This biogas is upgraded to purified biomethane, Gas analyzer for Measures CH₄ , CO₂, H₂S, and O₂ Concentrations; typically uses NDIR and electrochemical sensors; continuous monitoring. After stored in a gas buffer balloon before being compressed into cascade cylinders. The compressed biomethane (CBM) is suitable for use as compressed natural gas (CNG) for domestic applications.



The residual digestate (sludge) is transferred to a sludge holding tank for temporary storage. It is then dewatered using a screw press, producing dry sludge. The dry sludge is collected and disposed of as required or may be further processed for beneficial uses such as composting or soil amendment, depending on regulatory approvals.

2. Specification

	Equipment Details	Specification	Unit	QTY
2.1	Feed Preparation Unit:		-	-
2.1.1	Conveyor belt for feeding:	1) Belt strength : 800/4. 2) Belt width : 600 mm. 3) Class of duty : Medium duty. 4) Carcass thickness : 1.6 mm (minimum). 5) Type of fabric : Nylon/ Nylon 6) No. of plies : 4 (Four). 7) Top cover thickness : 5 mm. 8) Bottom cover thickness : 2 mm. 9) Cover grade : M24. 10) Edge construction : Cut edge. 11) Roll length : 200 meters.	Set	1.00
2.1.2	Motor for conveyor belt with VFD and gear box:	5 HP 4 Pole motor with gear box and VFD		
2.1.2	Sorting table:	1) Dimension: 3 m (L) X 1 m (W) X 1 m (H) 2) MOC: SS Capacity: 2 TPH (Food Waste), Type: Heavy-duty, twin-shaft or hammer mill type grinder with anti-wrapping design, Feed Size: ≤ 150 mm, Output Particle Size: 10–15 mm adjustable, Drive Motor: 15–20 HP, 3-phase, 415 V, 50 Hz, TEFC, Cutting Mechanism: Hardened steel blades / wear-resistant alloy cutters, Rotor Speed: 800–1,200 RPM (optimized for wet organic waste), Material of Construction (MOC): SS-304 for contact parts; MS with epoxy coating for frame, Moisture Handling: Capable of handling waste with 70–85% moisture content, Hopper: 300–500 litre capacity with safety grate, Discharge: Direct chute to slurry preparation tank or conveyor system, Safety Features: Overload protection, emergency stop switch, interlocks, Lubrication: Automatic grease/oil lubrication system, Service Life: 5–7 years with routine maintenance. 2 nos (1W+1S)	Set	2.00
2.1.3	Mechanical Shredder/ Grinder / Pulverizer:	1) dimension: 300 mm dia, 3m (L), 2) Motor: 2 HP, 3 phase, 3) MOC: SS. 2Nos (1W+1S)	Set	1.00
2.1.4	Screw conveyor at hopper:	4 HP, SS cutter pump.	Set	1.00
2.1.5	Feed agitator: circulation through pump	Automatic with interlock.	Set	2.00
2.1.6	pH and solid liquid ratio maintain unit		Set	1.00



2.1.7	Dosing pump and tank:	100 LPH Dosing pump with suitable 100 L PP tank.	Set	1.00
2.1.8	Fresh water pump:	Flow - 3 m ³ /hr, Head 20 - 25 meter, SS impeller, body CI 2 Nos pump (1W+1S)	Set	1.00
2.20	Anaerobic Digester System:			
2.2.1	Feed pump	Capacity: 1.7 m ³ /h nominal (capable range 1.0–2.5 m ³ /h). Design head: up to 25 m (vendor to quote performance curve at 5, 10, 15, 20, 25 m). Solids handling: up to 30 mm nominal particle size (with upstream 20–30 mm coarse screen recommended). Maximum operating temperature: 60 °C. Fluid characteristics: slurry, 6–10% TS solids, pH 6–8, non-explosive. Pump type: Progressive cavity pump, single rotor/stator stage, self-priming. Rotor material: hardened stainless steel (SS 316 / 17-4 PH) with nitrided or hard-faced options for abrasion.	Set	2.00
2.2.2	Biogas Balloon: Double membrane	500 m ³	Nos	1.00
2.2.3	Scum Breaker / Remover & Agitator for Digesters	Type - Chain Scraper, Material - Stainless Steel/MS, Design - LONG LIFE & EFFECTIVE, Operation Mode - Automati, Oil Recycle Rate- 5000litre/hr	Set	1.00
2.2.4	Slurry & Biogas Grids		Set	1.00
2.2.5	Agitator with gear motor & accessories	5 KW, SS	Set	2.00
2.2.6	Digester Heating System Piping Inside Digester	SS PIPES	Set	1.00
2.2.7	Slurry & gas Recirculation Pump & blower:	PCP	Set	1.00
2.30	Digestate Handling System:			
2.3.1	Digestate feed pump:	3 HP, PCP Nominal throughput: 3.0 m ³ /h (capacity margin; peak flow coverage). This covers 1.67 m ³ /h average easily — vendor will size screens/shaft accordingly. Expected cake: ~9.25 m ³ /day at ~25% TS (design). Drive: 7.5 kW motor, VFD; stainless steel 316 contact parts, hardened screw. Perforated screen: removable, 2–5 mm holes depending on cake dryness tests. CIP ports / inspection covers. Inlet: flange for feed pump; outlet: conveyor/chute for cake; centrate outlet to pump.	Set	2.00
2.3.2	Solid Liquid Separation Unit		Set	1.00
2.3.3	Compost containers:		Set	1.00
2.3.4	Recirculation pump:	3 hp	Set	1.00



2.3.5	Nitrogen fixation unit:	Nitrification reactor (MBBR): 12–15 m ³ , filled 50–60% media. Air blower: capacity ~300–500 m ³ /hr, motor ~2.2–5.5 kW with VFD, coarse estimate 3 kW typical. DO control loop with solenoid valve / VFD control. Diffusers: fine-bubble disc diffusers sized to area. Return sludge handling: minimal if MBBR; provide small sludge holding tank and occasional wasting. Instrumentation: DO probe, pH, NH ₄ online sensor (if desired), flowmeter, temperature. Mixers: not required; aeration provides mixing. Outlet: MBBR effluent goes to storage tank or directly to land application.	Set	2.00
2.40	Biogas purification and bottling unit:			
2.4.1	H ₂ S Scrubber System	(100 Cum./Hr. Cap.)	Set	1.00
2.4.2	CO ₂ Scrubber System:	(100 Cum./hr)	Set	1.00
2.4.3	Gas analyzer - online	Measures CH ₄ , CO ₂ , H ₂ S, and O ₂ Concentrations; typically uses NDIR and electrochemical sensors; continuous monitoring	Set	1.00
2.4.4	Four stage Piston type Booster Compressor	60 m3/hr @ 200 Bar	Set	1.00
2.4.5	Biogas Cascades	500 Kg	Set	2.00
2.4.6	Bottle filling stations:	Multiple filling points; operates at 200 Bar; includes safety relief valves and pressure gauges	Set	1.00
2.4.7	Gas flaring unit.	3 kw	Set	1.00
2.50	Miscellaneous Work:			
2.5.1	Control Panel & Electrical Work with cable & cable tray.		Set	1.00
2.5.2	Plumping work:	PVC / UPV / MS / SS as applicable.	Set	1.00
2.5.3	Installation & Commissioning		Set	1.00
2.5.4	Insulation for digester:		Set	2.00

Approved make list of equipment

2.6.1	Bio- Gas Plant	Design and customized. Reputed and experienced installer.
2.6.2	Pump	Grundfos / Willo / Eqv.
2.6.3	Pressure gauge	Bumar / Leader / Eqv.
2.6.4	Air Blower	Airvac / KPT / Everest
2.6.5	Motor	ABB / SG / Marathon ? Eqv.
2.6.6	Valve	Leader / BDK / Kartar / Zoloto
2.6.7	MCB / MCCB	L&K / Legrand / Schneider / ABB
2.6.8	OLR	Siemens / L&K / ABB / Schneider
2.6.9	Contactora	Siemens / L&K / ABB / Schneider



2.6.10	SPP	Siemens / L&K / ABB / Schneider
2.6.11	Meters	Siemens / L&K / ABB / Schneider
2.6.12	Wires and Cables	Polycab / RR / Havells
2.6.13	MS Pipe	TATA / Apollo
2.6.14	Dosing Pump	Milton Roy/Grundfos Eqv
2.6.15	UPVC / CPVC Pipes	Astral / Ashirvad
2.6.16	Ani other Make	On Confirmation from Consultant only



3. Bid qualification criteria (BQC)

3.1.1	Technical Criteria
3.1.1.a	The bidder company preferably should have at least 15 years of experience in Design & Engineering, Supply, Installation, Commissioning of Biomethanation Plants, handling Segregated Organic Municipal Solid Waste
3.1.1.b	The bidder should have preferably executed at least 10 Nos. of Biomethanation-cum-CBG OR Biomethanation-cum-Power Generation Plants on Turnkey basis, having cumulative capacity 50 TPD during last 10 years, with single plant capacity should not be less than 5 TPD.
3.1.1.c	The bidder should have successfully carried out minimum of 5 years Operation & Maintenance of aforesaid plants on continuous basis.
3.1.1.d	The bidder should have experience in execution of at least one biomethanation Plant, not less than 5 TPD, either in Bhutan OR in similar continent / neighbouring country.
3.1.1.e	The bidder having experience as a Consultant / PMC for setting up CBG Projects either in Bhutan OR in similar continent / neighbouring country, will get added advantage.
3.1.2	Definition of Bidder
3.1.2.a	Bidder means the firm responsible for Design, Engineering, Construction, Procurement, Installation, and Commissioning of the Biogas / CBG Project based on segregated organic MSW plant
3.1.3	Definition of Similar Work
3.1.3.a	Design, Engineering, Construction, Procurement, Installation, Commissioning of Biogas-to-Power / CBG Project based on Segregated Organic MSW plant, not less than 5 TPD (Feed Quantity) capacity along with carrying out at least 5 years Comprehensive O&M.
3.1.4	Documents Required for Technical Criteria
3.1.4.a	All documents shall be in the name of bidder.
3.1.4.b	Copy of Concession Agreement or contract document or work order documents showing details of work and plant capacity. and Completion Certificate showing gross value of the job/service, description of job/service, plant capacity, and duration of the contract.
3.1.5	Financial Criteria
3.1.5.a	Annual Turnover
3.5.1.a	The bidder to participate in the tender must have achieved an annual average turnover of BTN 20.000 million . as per Audited Balance sheet and P&L Statement in the last three* accounting years prior to due date of bid submission
3.5.1.b	Net Worth
3.5.1.b	The bidders should have positive net worth as per the latest audited financial statement.
3.5.1.c	Bidder shall furnish Annual Report/ audited balance sheets including Profit and Loss Accounts along with the Bid to establish Bidder's conformance to Qualification Criteria
3.5.1.c	Financial Criteria Documents Required
3.5.1.c	Audited Balance Sheet and Profit and Loss Statements duly certified by Statutory Auditors for immediate last three accounting years.
3.5.1.c	Bidder shall furnish Annual Report/ audited balance sheets including Profit and Loss Accounts for previous three financial years along with the Bid to establish Bidder's conformance to financial criteria and prove existence in the last three years.
3.60	BQC Document Verification
3.6.1	All Bidders will require submitting self-certified copies of above-mentioned documents pertaining to the Technical Criteria & Financial Criteria. Additionally, the Bidders need to provide undertaking to submit Attested True Copies (Scanned Copies) documents in case they emerge as successful bidders
3.6.2	Bidders shall ensure that any certificate/ reports issued / attested by a practicing-chartered accountant in Bidders Country and submitted in Bid shall mandatorily include the Registration



	Number. Certificate/ reports issued / attested without Registration Number of practicing-chartered account in Bidders Country shall not be considered for evaluation.
3.6.3	The Bid, all correspondence and documents relating to the bid, between Bidder and Bhutan Ecological Society, shall be written in English language only. Any supporting document furnished by Bidder may be written in other language provided that this literature is accompanied by an authenticated English translation in which case for purpose of the interpretation of Bid, the English translation shall govern
3.6.4	All charges of CA Certificate (if applicable) shall be borne by the Bidder.
3.70	Bids May Be Submitted By
3.7.1.a	The bids may be submitted by an entity (SAARC Member State) and should have completed 10 financial years of existence as on original due date of tender since date of commencement of business and shall fulfil each BQC eligibility criteria
3.7.1.b	JV/Consortium bids will be accepted (i.e., Qualification on the strength of the JV Partners/Consortium Members (Only Two Partners – One qualifying Technical Criteria & other one qualifying Financial Criteria) will be accepted)
3.80	Bid Security Bid Security shall be: BTN 850,000.00 in the following forms:
3.8.1.a	i. Cash Warrant/Demand Draft/Banker's Cheque ii. Unconditional Bank Guarantee issued by a financial institute of Bhutan or any foreign bank acceptable and enforceable in any financial institution of Bhutan iii. Under exceptional case of not meeting i & ii, Bidders shall be allowed to deposit Bid Security in the form of cash deposit through bank transfer to Company's (Bhutan Ecological Society) Account.

4. Coordination and Interface Responsibilities

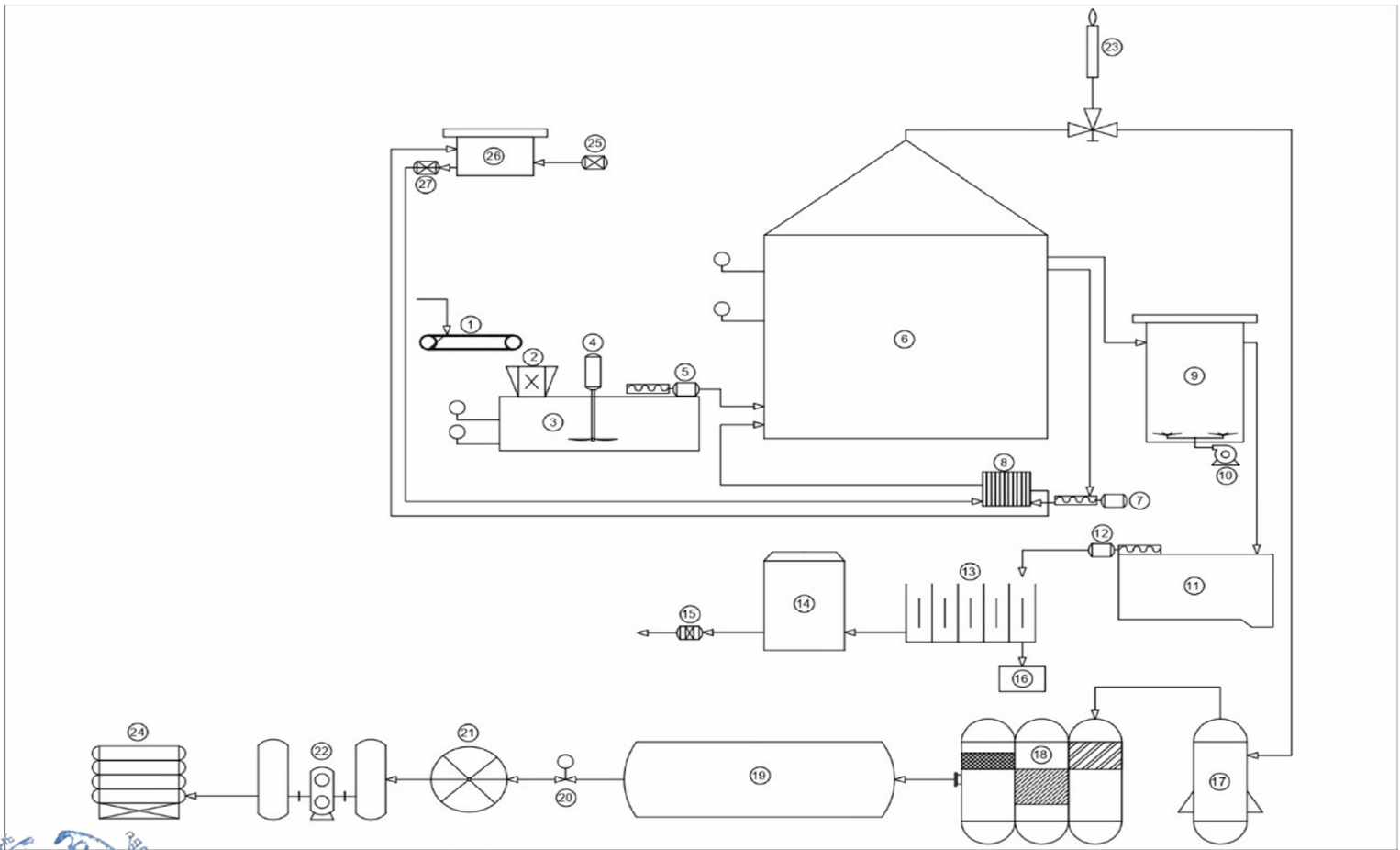
1. The project will be executed through **two separate contracts**:
 - o **Package-I**: Biogas-to-Power/CBG Plant (including all process, mechanical, electrical, and instrumentation works).
 - o **Package-II**: Civil and Structural Works (including foundations, tanks, buildings, trenches, and related infrastructure).
2. Both contractors shall work in close coordination to ensure seamless integration of all systems and structures.
3. The **Plant Contractor** shall:
 - o Provide all **design inputs, equipment load data, and foundation requirements** to the Civil Works Contractor.
 - o Furnish detailed **drawings and layouts** showing locations of major equipment, utilities, and service lines.
 - o Review and approve relevant civil drawings to ensure proper alignment with process and mechanical requirements.
4. The **Civil Works Contractor** shall:
 - o Execute all civil and structural components strictly in accordance with the final approved interface drawings.



- o Coordinate foundation levels, embedment details, and sleeves/openings required for mechanical and electrical installations.
 - o Provide access, lifting arrangements, and structural supports as required for equipment installation.
5. Both contractors shall jointly prepare and maintain an **Integrated Work Schedule**, highlighting all critical interfaces and milestones.
 6. Any delay or rework resulting from lack of coordination or non-compliance with the agreed interface plan shall be the **responsibility of the concerned contractor**.
 7. The **Employer or Project Management Consultant (PMC)** will facilitate coordination meetings and review interface drawings; however, **the primary responsibility for coordination shall rest with the two contractors**.



5. Scheme



DETAILS					
1. Conveyor Belt	2. Shredder	3. Feed Mixing Tank	4. Mixer	5. Feed Pump	6. Digester
7. Feed circular tank	8. Heat exchanger	9. Nitrogen fixation tank	10. Air blower	11. Digestate tank	12. S/L separator feed pump
13. Screw Press	14. Clarifier Unit	15. Water Lifting pump	16. Solid holding tank	17. H ₂ S scrubber	18. Gas enrichment unit
19. Enriched gas holding ballon	20. Online gas analyser	21. Odorizer	22. Compressor	23. Emergency flare	24. Cascade
25. Heat Pump	26. Hot Water storage Tank	27. Circulation Pump			





SITE COORDINATES
27°26'28.33" N
89°41'30.19" E
2658 M Elevation

