

February 17, 2012

Amendment 1

Invitation to Bid ITB-2012-03-DPRK

I. Questions received regarding this Invitation to Bid (ITB). Please continue sending your questions as detailed in Section II.2 below. Answers will be provided in a following amendment.

1. In the requirement, it is said Fixedbed. But comparing them here is the advantage of fluidbed. Please check both characteristics of fluidbed and fixed bed:

Characteristics of fluidbed Power Generation System:

1. Using the hot gas, the efficiency of gasification is 80-85%;
2. Outdoor decorated, small amount of infrastructure;
3. Wide adaptability of biomass, can be straw, wood chips and other agriculture waste, and have simpler requirement on biomass particle, biomass below 4cm can be gasified;
4. High degree of automatic, need smaller labor; because there is no driving part and most structure of internal gasifier is stainless steel, that makes the plant life longer and lower maintenance cost.

Characteristics of using fixedbed Power Generation System:

1. Using the hot gas, efficiency is 65-70%;
2. Indoor layout, need larger amount of infrastructure;
3. Can only use the material of kind of rice husk as biomass;
4. More labor asked;
5. The ash can be sold only if there is somebody can use it.

Our question is: Can we supply the system with fluidbed instead of Fixedbed?

2. While we are checking at our end can you please let us know if exports from India to North Korea need any licenses/ clearances?
3. It is mentioned on Page no. 4 that the Bidder shall furnish as part of its Bid a Bid Security to the Purchaser to the amount of USD \$6,000. Annex II on Page No. 9 says that a Bid Security is Not required. Please clarify what is to be done. We would like to submit that most gasifier manufacturer are small players and thus this bid security may force some to not quote.
4. Tender Doc mentions that if the Total Purchase Order is above USD \$500,000 than Bidder needs to furnish a Performance security. Can this clause be waived for all? If we have a past track record of work with the UN can this be waived?
5. Would a CIF quotation be considered? Getting DDU costs from India to North Korea is difficult.
6. If the quote is made on DDU basis, all the documents as needed for clearance and to get a tax free status will be provided by you. Please confirm.
7. Below is list of drawings we will be submitting with the Bid:
 - Process Flow Diagram (Schematic Drawing)

- Heat & Mass Balance
 - Plan Layout
 - Schematic
 - Single Line Diagram of Grid Connection
- Please advise if any other drawings are required

8. Start-up power will be required for the system. This can be taken from the local grid or through a separate Diesel Genset. Do we need to quote for the genset? Please advise.
9. Earthing will be needed for the entire system and the same will be done by the purchaser as per local norms. Please confirm
10. On page No. 27 point No. 3.5.GAS BLOWER/FAN – It is mentioned that once the system is stable then the Blower/Fan should shut down and Gas suction will be through Engine suction. We would like to inform that this is not possible in such a large system. The blower will thus continue to work at all times. Please confirm if this will be ok.
11. Our company will provide the Hoper and Conveying system from the hopper to the gasifier. Please confirm that the Rice Husk feeding up to Hopper will be in Purchaser's scope. If there are any special conditions for the same, please confirm.
12. Payment terms are not clear in the offer. Can you please clarify? Can we get an advance?

II. Modifications to the ITB.

1. **Deadline to submit offers is amended to read as follows:**

Deadline to submit your offer: no later than 5:00 pm (DPRK time) on March 28, 2012.

2. **Clause c) in Section I, is amended to read as follows:**

*Interested Bidders may submit any question regarding this Invitation to Bid (ITB) to the e-mail address **operations.dprk@undp.org** not later than **March 11, 2012**. The answers or any modification to these tender documents will be published in UNDP Procurement Notices Website¹ and United Nations Global Marketplace Website² **no later than 11 pm on March 13, 2012**.*

3. **Clause f) in Section I, is amended to read as follows:**

*Please submit the form Acknowledge Letter (Annex IX) **by March 18, 2012** to indicate whether or not you intend to submit an offer.*

4. **Clause 5 in Annex I, is amended to read as follows:**

Clarification of Solicitation Documents: A prospective Bidder requiring any clarification of the Solicitation Documents may notify the procuring entity in writing to the e-mail address **operations.dprk@undp.org** **not later than March 11, 2012**. The answers or any modification to these tender documents will be published in UNDP Procurement Notices Website and United Nations Global Marketplace Website **no later than 11 pm on March 13, 2012**.

¹ <http://procurement-notices.undp.org/index.cfm>

² <http://www.ungm.org/Notices/Notices.aspx>

5. Clause 8 b) in Annex I, is amended to read as follows:

a Price Schedule (Annex VIII) completed in accordance with the Annexes V and VI and clause 12 of Instructions to Bidders;

6. Clause 8 d) in Annex I, is amended to read as follows:

documentary evidence established in accordance with clause 11 of Instructions to Bidders that the goods and ancillary services to be supplied by the Bidder are eligible goods and services and conform to the Bidding Documents;

7. Clause 13 in Annex I, is amended to read as follows:

***Period of Validity of Bids:** Bids shall remain valid for 60 days after the date of Bid Submission prescribed by the procuring UN entity pursuant to clause 17 of Instructions to Bidders. A Bid valid for a shorter period may be rejected as non-responsive pursuant to clause 21 of Instructions to Bidders. In exceptional circumstances, the procuring UN entity may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. Bidders granting the request will not be required nor permitted to modify their Bids.*

8. Clause 14 b) in Annex I, is amended to read as follows:

The Bid Security is to protect the Purchaser against the risk of the Bidder's conduct, which would warrant the security's forfeiture, pursuant to Clause 14(g) below.

9. Clause 14 d) in Annex I, is amended to read as follows:

Any Bid not secured in accordance with Clauses 14 a) and 14 c) above will be rejected by the Purchaser as non-responsive pursuant to clause 19 of Instructions to Bidders.

10. Clause 14 e) in Annex I, is amended to read as follows:

Unsuccessful Bidder Bid Security will be discharged or returned as promptly as possible but not later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Purchaser pursuant to clause 13 of instructions to Bidders.

11. Clause 14 f) in Annex I, is amended to read as follows:

The successful Bidder's Bid Security will be discharged or returned upon the Bidder signing the Purchase Order, pursuant to clause 27 of Instructions to Bidders, and furnishing the Performance Security, pursuant to clause 28 of Instructions to Bidders.

12. Clause 14 g) 2), in Annex I, is amended to read as follows:

In the case of a successful Bidder, if the Bidder fails:

- i. to sign the Purchase Order in accordance with Clause 27 of Instructions to Bidders, or,*
- ii. to furnish Performance Security in accordance with Clause 28 of Instructions to Bidders.*

13. Clause 16.2 b) in Annex I, is amended to read as follows:

make reference to the “subject” indicated in section I of these Solicitation Documents, and a statement: “DO NOT OPEN BEFORE”, to be completed with the time and the date specified in section I of these Solicitation Documents for Bid Opening pursuant to clause 19 of Instructions to Bidders.

14. Clause 16.4 in Annex I, is amended to read as follows:

If the outer envelope is not sealed and marked as required by clause 16.2 of Instructions to Bidders, the Purchaser will assume no responsibility for the Bid’s misplacement or premature opening.

15. Clause 19.2 in Annex I, is amended to read as follows:

The bidders’ names, Bid Modifications or withdrawals, bid Prices, discounts, and the presence or absence of requisite Bid Security and such other details as the purchaser, at its discretion, may consider appropriate, will be announced at the opening. No Bid shall be rejected at Bid Opening, except for Late Bids, which shall be returned unopened to the Bidder pursuant to clause 17 of Instructions to Bidders.

16. Clause 19.3 in Annex I, is amended to read as follows:

Bids (and modifications sent pursuant to clause 18 of Instructions to Bidders) that are not opened and read out at Bid Opening shall not be considered further for evaluation, irrespective of the circumstances. Withdrawn Bids will be returned unopened to the Bidders.

17. Clause 20.4 in Annex I (under clause 21), is amended to read as follows:

21.4 A Bid determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

18. Clause 28, second paragraph, in Annex I, is amended to read as follows:

Failure of the successful Bidder to comply with the requirement of clause 27 or clause 28 of Instructions to Bidders shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security, in which event the Purchaser may make the award to the next lowest evaluated Bidder or call for new Bids.

III. The remaining clauses and Annexes of this Invitation to Bid ITB-2012-03-DPRK stay unchanged. For ease of reference, the complete amended ITB is shown below.

Thank you for your kind interest in our procurement procedures.

UNDP DPRK Procurement Unit.

February 17, 2012
Section I

Invitation to Bid

Reference: ITB-2012-03-DPRK

Deadline to submit your offer: no later than 5:00 pm³ on March 28, 2012.

Subject: **Procurement of complete equipment and materials, for the installation of a 100 kW Rice Husk Gasification Power Plant in Yaksu Cooperative Farm, in the DPR of Korea.**

- a) We hereby solicit your bid for the supply of the equipment and materials duly described in **Annexes V and VI.**
- b) To enable you to submit a bid, please find enclosed:

Annex I. Instructions to Bidders

Annex II. Bid Data Sheet

Annex III. General Terms and Conditions

Annex IV. Special Conditions

Annex V. Schedule of Requirements

Annex VI. Technical Specifications

Annex VII. Bid Submission Form

Annex VIII. Price Schedule

Annex IX. Acknowledgement Letter

- c) Interested Bidders may submit any question regarding this Invitation to Bid (ITB) to the e-mail address **operations.dprk@undp.org** **not later than March 11, 2012.** The answers or any modification to these tender documents will be published in UNDP Procurement Notices Website⁴ and United Nations Global Marketplace Website⁵ **no later than 11 pm on March 13, 2012.**
- d) Bids in sealed envelope must be sent by DHL⁶ and delivered to the following address **no later than 5 pm on March 28, 2012** (please mark the envelope with the reference number **ITB-2012-03-DPRK**):

United Nations Development Programme (UNDP). Procurement Unit.

PO BOX 27. 21 Munsudong Daedonggang, Pyongyang.

Democratic People's Republic of Korea. 80807

- e) Bids will be opened in the presence of Bidders' Representatives⁷, who chose to attend at the address, date and time indicated in the Bidding Documents.
- f) Please submit the form Acknowledge Letter (**Annex IX**) **by March 18, 2012** to indicate whether or not you intend to submit an offer.
- g) This letter is not to be construed in any way as an offer to contract with your firm.

Kind regards,

UNDP Procurement Unit.

³ All time and date references in this document are made considering Pyongyang, Democratic People's Republic of Korea current local time. (<http://www.timeanddate.com/worldclock/city.html?n=205>).

⁴ <http://procurement-notices.undp.org/index.cfm>

⁵ <http://www.ungm.org/Notices/Notices.aspx>

⁶ DHL World Express is a courier service available in DPRK.

⁷ The offeror may authorize a local agent or the concerned Embassy as a representative.

Annex I
Instruction to bidders.

A. Introduction

1. **General:** The Purchaser invites Sealed Bids for the supply of goods to the UN system.
2. **Eligible Bidders:** Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting services for the preparation of the design specifications, and other documents to be used for the procurement of goods to be purchased under this Invitation to Bids.
3. **Cost of Bid:** The Bidder shall bear all costs associated with the preparation and submission of the Bid, and the procuring UN entity will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the solicitation.

B. Solicitation Documents

4. **Examination of Solicitation Documents:** The Bidder is expected to examine all corresponding instructions, forms, terms and specifications contained in the Solicitation Documents. Failure to comply with these documents will be at the Bidder's risk and may affect the evaluation of the Bid.
5. **Clarification of Solicitation Documents:** A prospective Bidder requiring any clarification of the Solicitation Documents may notify the procuring entity in writing to the e-mail address **operations.dprk@undp.org not later than March 11, 2012**. The answers or any modification to these tender documents will be published in UNDP Procurement Notices Website⁸ and United Nations Global Marketplace Website⁹ **no later than 23 pm on March 13, 2012**.
6. **Amendments of Solicitation Documents:** No later than two weeks prior to the Deadline for Submission of Bids, the procuring entity may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, amend the Solicitation Documents. **All prospective Bidders that have acknowledged receipt of this ITB (Annex IX) will be notified in writing of any amendments.** In order to afford prospective Bidders reasonable time in which to take the amendments into account in preparing their offers, the procuring entity may, at its discretion, extend the Deadline for the Submission of Bids.

C. Preparation of Bids

7. **Language of the Bid:** The Bid prepared by the Bidder and all correspondence and documents relating to the Bid exchanged by the Bidder and the procuring entity shall be written in the language indicated on the Bid Data Sheet.
8. **Documents Comprising the Bid:**

The Bid must comprise the following documents:

- (a) a Bid Submission form (**Annex VII**) duly signed and stamped by the legal representative of your company;

⁸ <http://procurement-notice.undp.org/index.cfm>

⁹ <http://www.ungm.org/Notices/Notices.aspx>

- (b) a Price Schedule (**Annex VIII**) completed in accordance with the Annexes V and VI and clause 12 of Instructions to Bidders;
- (c) documentary evidence established in accordance with clause 9 of Instructions to Bidders that the Bidder is eligible to and is qualified to perform the contract if its Bid is accepted,
- (d) documentary evidence established in accordance with clause 11 of Instructions to Bidders that the goods and ancillary services to be supplied by the Bidder are eligible goods and services and conform to the Bidding Documents;

9. Documents Establishing Bidder's Eligibility and Qualifications:

The Bidder shall furnish evidence of its status as qualified Supplier. The documentary evidence of the Bidder's qualifications to perform the contract if its Bid is accepted shall be established to the Purchaser's satisfaction:

- (a) that, in the case of a Bidder offering to supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorised by the goods' manufacturer or producer to supply the goods in the country of final destination. Please include all supporting documents (e.g. authorized dealer/reseller letter).
- (b) that the Bidder has the financial, technical, and production capability necessary to perform the contract. Please include all relevant information of your company (e.g. articles of incorporation, business license, financial statements for 2010-2011, etc.)

10. Export License:

All bidders/vendors must aware that the goods and services are for the benefit of the Government under UNDP's development assistance framework and goods purchased will normally be transferred to the national partners, or to an entity nominated by it, in accordance with UNDP's policies and procedures.

The bidder/vendor shall include in their proposal:

- a) A statement whether any import or export licenses are required in respect of the goods to be purchased or service to be rendered including any restrictions on the country of origin, use/dual use nature of goods or services, including and disposition to end users.

Please note that the United States Department of Commerce regulates exports and re-exports of "dual-use" items, i.e., goods, software and technologies with commercial and proliferation/military applications, through its Export Administration Regulations (EAR). If you are outside the United States and wish to export or re-export an item incorporating, commingled with, or drawn from controlled U.S origin items exceeding 10% of the total value of the item or that has a U.S. connection, your product may require a license from the U.S. Department of Commerce's Bureau of Industry and Security (BIS). For more information, please go to: <http://www.bis.doc.gov/licensing/exportingbasics.htm>

Also, goods made in Japan must obtain export approval from the the Ministry of Economy Trade and Industry (METI) of Japan, as detailed in Article 48, Paragraph 3 of the Foreign Exchange and Foreign Trade Act. For more information, please visit the following website: http://www.meti.go.jp/english/press/2011/0405_03.html

In addition, you must confirm that the items offered are not included in the Lists of Items Prohibited for Export to and Import from the Democratic People's Republic of Korea pursuant to Security Council Resolution 1718 (2006). For more information on the list of items please visit: http://www.un.org/sc/committees/1718/xport_list.shtml

- b) Confirmation that he has obtained licenses of this nature in the past and have an expectation of obtaining all the necessary licenses should their bid be successful.

11. Documents Establishing Goods' Conformity to Bidding Documents:

The Bidder shall also furnish as part of its Bid, documents establishing the conformity to the Bidding Documents of all goods and related services, which the Bidder proposes to supply under the contract. The documentary evidence of conformity to the Bidding Documents may be in the form of literature, drawings, and data, and shall consist of:

- (a) A detailed description of the essential technical and performance characteristics of the goods;
- (b) A list giving full particulars, including available sources and current prices of spare parts, special tools, etc, necessary for the proper and continuing functioning of the goods for a period to be specified in the Bid Data Sheet, following commencement of the use of the goods.

12. Bid Currencies/Bid Prices: All prices shall be quoted in US dollars or any other convertible currency. The Bidder shall indicate on the appropriate Price Schedule the unit prices (where applicable) and total Bid Price of the goods it proposes to supply under the contract.

For evaluation purposes, all quotes expressed in convertible currency other than the US dollar will be converted to US dollars using the United Nations Operational Rate of Exchange¹⁰ valid on the date specified in Section I of these Solicitation Documents as deadline for submission of Bids.

13. Period of Validity of Bids: Bids shall remain valid for 60 days after the date of Bid Submission prescribed by the procuring UN entity pursuant to clause 17 of Instructions to Bidders. A Bid valid for a shorter period may be rejected as non-responsive pursuant to clause 21 of Instructions to Bidders. In exceptional circumstances, the procuring UN entity may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. Bidders granting the request will not be required nor permitted to modify their Bids.

14. Bid Security (non applicable):

- (a) The Bidder shall furnish as part of its Bid a Bid Security to the Purchaser in the amount of USD \$6,000.00 (six thousand US dollars).
- (b) The Bid Security is to protect the Purchaser against the risk of the Bidder's conduct, which would warrant the security's forfeiture, pursuant to Clause 14(g) below.
- (c) The Bid Security shall be denominated in the currency of the Purchase Order or in a freely convertible currency and shall be in one of the following forms:

¹⁰ <http://treasury.un.org/operationalrates/OperationalRates.aspx>

- i. bank guarantee or irrevocable letter of credit, issued by a reputable bank located in the purchaser's country or abroad, and in the form provided in these Solicitation Documents, or,
 - ii. cashier's cheque, or certified cheque.
- (d) Any Bid not secured in accordance with Clauses 14 a) and 14 c) above will be rejected by the Purchaser as non-responsive pursuant to clause 19 of Instructions to Bidders.
- (e) Unsuccessful Bidder Bid Security will be discharged or returned as promptly as possible but not later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Purchaser pursuant to clause 13 of instructions to Bidders.
- (f) The successful Bidder's Bid Security will be discharged or returned upon the Bidder signing the Purchase Order, pursuant to clause 27 of Instructions to Bidders, and furnishing the Performance Security, pursuant to clause 28 of Instructions to Bidders.
- (g) The Bid Security may be forfeited:
- 1) If a Bidder withdraws its offer during the period of the Bid Validity specified by the Bidder on the Bid Submission Form, or,
 - 2) In the case of a successful Bidder, if the Bidder fails:
 - i. to sign the Purchase Order in accordance with Clause 27 of Instructions to Bidders, or,
 - ii. to furnish Performance Security in accordance with Clause 28 of Instructions to Bidders.

D. Submission of Bids

15. Format and Signing of Bid: The Bidder shall prepare two copies of the Bid, clearly marking each "Original Bid" and "Copy of Bid" as appropriate. In the event of any discrepancy between them, the original shall govern. The two copies of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorised to bind the Bidder to the contract. A Bid shall contain no interlineations, erasures, or overwriting except, as necessary to correct errors made by the Bidder, in which case such corrections shall be initialled by the person or persons signing the bid.

16. Sealing and Marking of Bids:

16.1 The Bidder shall seal the original and each copy of the Bid in separate envelopes, duly marking the envelopes as "ORIGINAL" and "COPY". The envelopes shall then be sealed in an outer envelope.

16.2 The inner and outer envelopes shall:

- (a) be addressed to the Purchaser at the address given in section I of these Solicitation Documents; and
- (b) make reference to the "subject" indicated in section I of these Solicitation Documents, and a statement: "DO NOT OPEN BEFORE", to be completed with the time and the date specified in section I of these Solicitation Documents for Bid Opening pursuant to clause 19 of Instructions to Bidders.

16.3 The inner and outer envelopes shall also indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared “late”.

16.4 If the outer envelope is not sealed and marked as required by clause 16.2 of Instructions to Bidders, the Purchaser will assume no responsibility for the Bid’s misplacement or premature opening.

17. Deadline for Submission of Bids/Late Bids:

17.1 Bids must be delivered to the office on or before the date and time specified in section I of these Solicitation Documents.

17.2 The Purchaser may, at its discretion, extend this deadline for the submission of the bids by amending the Bidding Documents in accordance with clause 6 of Instructions to Bidders, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

17.3 Any Bid received by the Purchaser after the Deadline for Submission of Bids will be rejected and returned unopened to the Bidder.

18. Modification and Withdrawal of Bids: The Bidder may withdraw its Bid after submission, provided that written notice of the withdrawal is received by the procuring UN entity prior to the deadline for submission. No Bid may be modified after passing of the Deadline for Submission of Bids. No Bid may be withdrawn in the interval between the Deadline for Submission of Bids and the expiration of the Period of Bid Validity.

E. Opening and Evaluation of Bids

19. Opening of Bids:

19.1 The Purchaser will open all Bids in the presence of Bidders’ Representatives who choose to attend, at the time, on the date, and at the place specified in section I of this Solicitation Document. The Bidders’ Representatives who are present shall sign a register evidencing their attendance.

19.2 The bidders’ names, Bid Modifications or withdrawals, bid Prices, discounts, and the presence or absence of requisite Bid Security and such other details as the purchaser, at its discretion, may consider appropriate, will be announced at the opening. No Bid shall be rejected at Bid Opening, except for Late Bids, which shall be returned unopened to the Bidder pursuant to clause 17 of Instructions to Bidders.

19.3 Bids (and modifications sent pursuant to clause 18 of Instructions to Bidders) that are not opened and read out at Bid Opening shall not be considered further for evaluation, irrespective of the circumstances. Withdrawn Bids will be returned unopened to the Bidders.

19.4 The Purchaser will prepare minutes of the Bid Opening.

20. Clarification of Bids: To assist in the examination, evaluation and comparison of Bids the procuring UN entity may at its discretion ask the Bidder for clarification of its Bid. The request for clarification and the response shall be in writing and no change in price or substance of the Bid shall be sought, offered or permitted.

21. Preliminary Examination:

21.1 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness of each Bid to the Invitation to Bid (ITB). A substantially responsive Bid is one, which conforms to all the terms and conditions of the ITB without material deviations.

21.2 The Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether the documents have been properly signed, and whether the bids are generally in order.

21.3 Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the Bidder does not accept the correction of errors, its Bid will be rejected. If there is a discrepancy between words and figures the amount in words will prevail.

21.4 A Bid determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

22. Conversion to Single Currency: To facilitate evaluation and comparison, the Purchaser will convert all Bid Prices expressed in the amounts in various currencies in which the Bid Prices are payable to US dollars at the official UN exchange rate¹¹ on the last day for Submission of Bids.

23. Evaluation of Bids: Determination of compliance with the Solicitation Documents is based on the content of the Bid itself without recourse to extrinsic evidence.

Evaluation Criteria	
1.1	Compliance with pricing conditions set in the ITB.
1.2	Compliance with requirements relating to technical design features or the product's ability to satisfy functional requirements.
1.3	Compliance with Special and General Conditions specified by these Solicitation Documents.
1.4	Compliance with start-up, delivery or installation deadlines set by the procuring entity.
1.5	Demonstrated ability to comply with critical provisions such as execution of the Purchase Order by honoring the tax-free status of the UN.
1.6	Demonstrated ability to honor important responsibilities and liabilities allocated to Supplier in this ITB (e.g. performance guarantees, warranties, or insurance coverage, etc).
1.7	Proof of after-sales service capacity and appropriateness of service network.

F. Award of Contract

24. Award Criteria: The procuring UN entity will Issue the Purchase Order to the lowest priced technically qualified Bidder. The Purchaser reserves the right to accept or reject any Bid, to annul the solicitation process and reject all Bids at any time prior to award of purchase order, without thereby incurring any liability to the affected Bidder(s) or any obligation to provide information on the grounds for the purchaser's action.

¹¹ <http://treasury.un.org/operationalrates/OperationalRates.aspx>

- 25. Purchaser's Right to Vary Requirements at Time of Award:** The Purchaser reserves the right at the time of making the award of contract to increase or decrease by up to 20 % the quantity of goods specified in the Schedule of Requirements without any change in unit price or other terms and conditions.
- 26. Notification of Award:** Prior to the expiration of the period of Bid Validity, the Purchaser will send the successful Bidder the Purchase Order. The Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this purchase order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the parties under which the rights and obligations of the parties shall be governed solely by the terms and conditions of this purchase order.
- 27. Signing of the Purchase Order:** Within 15 days of receipt of the Purchase Order the successful Bidder shall sign, date and return it to the purchaser.
- 28. Performance Security:** The successful Bidder shall provide the Performance Security on the Performance Security Form requested by UNDP DPRK, within 30 days of receipt of the Purchase Order from the purchaser, if the amount of the purchase order is above the equivalent of USD \$500,000.00 (five hundred thousand US dollars).

Failure of the successful Bidder to comply with the requirement of clause 27 or clause 28 of Instructions to Bidders shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security, in which event the Purchaser may make the award to the next lowest evaluated Bidder or call for new Bids.

- 29. Vendor Protest:** Our vendor protest procedure is intended to afford an opportunity to appeal to persons or firms not awarded a purchase order or contract in a competitive procurement process. **It is not available to non-responsive or non-timely proposers/bidders or when all proposals/bids are rejected. In the event that you believe you have not been fairly treated, you can find detailed information about vendor protest procedures in the following link:** <http://www.undp.org/procurement/protest.shtml>

BID DATA SHEET

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instruction to Bidders. Whenever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

Relevant clause(s) of Instruction to Bidders	Specific data complementing, supplementing, or amending instructions to Bidders
Language of the Bid	English
Bid Price	The prices quoted shall be as per following INCOTERMS 2000 and place: DDU Yaksu Cooperative Farm, Kangso County, South Pyongan Province.
Documents Establishing Bidder's Eligibility & Qualifications.	Required. Please see paragraphs 9 and 10 of Annex I .
Bid Validity Period.	60 days
Bid Security	Not required
Preliminary Examination – completeness of bid.	Partial bids not permitted. You may submit an offer comprising all of the items described in Annex V .
Purchaser's Right to Vary Requirements at Time of Award	20 percent increase or decrease. See paragraph 25 of Annex I .
Export license / restrictions to import	<p>VERY IMPORTANT. Please see paragraph 10 of Annex I. It is required:</p> <p>a) A statement whether any import or export licenses are required in respect of the goods to be purchased or service to be rendered including any restrictions on the country of origin, use/dual use nature of goods or services, including and disposition to end users.</p> <p>c) Confirmation that he has obtained licenses of this nature in the past and have an expectation of obtaining all the necessary licenses should their bid be successful.</p> <p>Please note that the United States Department of Commerce regulates exports and re-exports of "dual-use" items, i.e., goods, software and technologies with commercial and proliferation/military applications, through its Export Administration Regulations (EAR). If you are outside the United States and wish to export or re-export an item incorporating, commingled with, or drawn from controlled U.S origin items exceeding 10% of the total value of the item or that has a U.S. connection, your product may require a license from the U.S. Department of Commerce's Bureau of Industry and Security (BIS). For more information, please go to: http://www.bis.doc.gov/licensing/exportingbasics.htm</p> <p>Also, goods made in Japan must obtain export approval from the the Ministry of Economy Trade and Industry (METI) of Japan, as detailed in Article 48, Paragraph 3 of the Foreign Exchange and Foreign Trade Act. For more information, please visit the following website: http://www.meti.go.jp/english/press/2011/0405_03.html</p> <p>In addition, you must confirm that the items offered are not included in the Lists of Items Prohibited for Export to and Import from the Democratic People's Republic of Korea pursuant to Security Council Resolution 1718 (2006). For more information on the list of items please visit: http://www.un.org/sc/committees/1718/xport_list.shtml</p>

**Annex III
General Terms and Conditions.****1. ACCEPTANCE OF THE PURCHASE ORDER**

This Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this Purchase Order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the Parties under which the rights and obligations of the Parties shall be governed solely by the terms and conditions of this Purchase Order, including these General Conditions. No additional or inconsistent provisions proposed by the Supplier shall bind UNDP unless agreed to in writing by a duly authorized official of UNDP.

2. PAYMENT

- 2.1.1 UNDP shall, on fulfilment of the Delivery Terms, unless otherwise provided in this Purchase Order, make payment within 30 days of receipt of the Supplier's invoice for the goods and copies of the shipping documents specified in this Purchase Order.
- 2.1.2 Payment against the invoice referred to above will reflect any discount shown under the payment terms of this Purchase Order, provided payment is made within the period required by such payment terms.
- 2.1.3 Unless authorized by UNDP, the Supplier shall submit one invoice in respect of this Purchase Order, and such invoice must indicate the Purchase Order's identification number.
- 2.1.4 The prices shown in this Purchase Order may not be increased except by express written agreement of UNDP.

3. TAX EXEMPTION

- 3.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. In the event any governmental authority refuses to recognize UNDP's exemption from such taxes, duties or charges, the Supplier shall immediately consult with UNDP to determine a mutually acceptable procedure.
- 3.2 Accordingly, the Supplier authorizes UNDP to deduct from the Supplier's invoice any amount representing such taxes, duties or charges, unless the Supplier has consulted with UNDP before the payment thereof and UNDP has, in each instance, specifically authorized the Supplier to pay such taxes, duties or charges under protest. In that event, the Supplier shall provide UNDP with written evidence that payment of such taxes, duties or charges has been made and appropriately authorized.

4. RISK OF LOSS

Risk of loss, damage to or destruction of the goods shall be governed in accordance with DDU Incoterms 2000, unless otherwise agreed upon by the Parties on the front side of this Purchase Order.

5. EXPORT LICENCES

Notwithstanding any INCOTERM 2000 used in this Purchase Order, the Supplier shall obtain any export licences required for the goods.

6. FITNESS OF GOODS/PACKAGING

The Supplier warrants that the goods, including packaging, conform to the specifications for the goods ordered under this Purchase Order and are fit for the purposes for which such goods are ordinarily used and for purposes expressly made known to the Supplier by UNDP, and are free from defects in workmanship and materials. The Supplier also warrants that the goods are contained or packaged adequately to protect the goods.

7. INSPECTION

1. UNDP shall have a reasonable time after delivery of the goods to inspect them and to reject and refuse acceptance of goods not conforming to this Purchase Order; payment for goods pursuant to this Purchase Order shall not be deemed an acceptance of the goods.
2. Inspection prior to shipment does not relieve the Supplier from any of its contractual obligations.

8. INTELLECTUAL PROPERTY INFRINGEMENT

The Supplier warrants that the use or supply by UNDP of the goods sold under this Purchase Order does not infringe any patent, design, trade-name or trade-mark. In addition, the Supplier shall, pursuant to this warranty, indemnify, defend and hold UNDP and the United Nations harmless from any actions or claims brought against UNDP or the United Nations pertaining to the alleged infringement of a patent, design, trade-name or trade-mark arising in connection with the goods sold under this Purchase Order.

9. RIGHTS OF UNDP

In case of failure by the Supplier to fulfil its obligations under the terms and conditions of this Purchase Order, including but not limited to failure to obtain necessary export licences, or to make delivery of all or part of the goods by the agreed delivery date or dates, UNDP may, after giving the Supplier reasonable notice to perform and without prejudice to any other rights or remedies, exercise one or more of the following rights:

- a) Procure all or part of the goods from other sources, in which event UNDP may hold the Supplier responsible for any excess cost occasioned thereby.
- b) Refuse to accept delivery of all or part of the goods.
- c) Cancel this Purchase Order without any liability for termination charges or any other liability of any kind of UNDP.

10. LATE DELIVERY

Without limiting any other rights or obligations of the parties hereunder, if the Supplier will be unable to deliver the goods by the delivery date(s) stipulated in this Purchase Order, the Supplier shall (i) immediately consult with UNDP to determine the most expeditious means for delivering the goods and (ii) use an expedited means of delivery, at the Supplier's cost (unless the delay is due to Force Majeure), if reasonably so requested by UNDP.

11. ASSIGNMENT AND INSOLVENCY

- 11.1. The Supplier shall not, except after obtaining the written consent of UNDP, assign, transfer, pledge or make other disposition of this Purchase Order, or any part thereof, or any of the Supplier's rights or obligations under this Purchase Order.
- 11.2. Should the Supplier become insolvent or should control of the Supplier change by virtue of insolvency, UNDP may, without prejudice to any other rights or remedies, immediately terminate this Purchase Order by giving the Supplier written notice of termination.

12. USE OF UNDP OR UNITED NATIONS NAME OR EMBLEM

The Supplier shall not use the name, emblem or official seal of UNDP or the United Nations for any purpose.

13. PROHIBITION ON ADVERTISING

The Supplier shall not advertise or otherwise make public that it is furnishing goods or services to UNDP without specific permission of UNDP in each instance.

14. CHILD LABOUR

The Supplier represents and warrants that neither it nor any of its affiliates is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

15. MINES

The Supplier represents and warrants that neither it nor any of its affiliates is actively and directly engaged in patent activities, development, assembly, production, trade or manufacture of mines or in such activities in respect of components primarily utilized in the manufacture of Mines. The term "Mines" means those devices defined in Article 2, Paragraphs 1, 4 and 5 of Protocol II annexed to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects of 1980.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

16. SETTLEMENT OF DISPUTES

16.1 Amicable Settlement

The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Purchase Order or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then obtaining, or according to such other procedure as may be agreed between the Parties.

16.2 Arbitration

Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Purchase Order or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Section within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining, including its provisions on applicable law. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

17. PRIVILEGES AND IMMUNITIES

Nothing in or related to these General Terms and Conditions or this Purchase Order shall be deemed a waiver of any of the privileges and immunities of the United Nations, including its subsidiary organs.

Annex IV
 Special Conditions.

The following Special Conditions shall complement, supplement, or amend the General Conditions. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

Warranty/Guarantee	
<input checked="" type="checkbox"/> Applies	<p>If, within 12 months after the goods have been put into service, any defects are discovered or arise in the normal course of usage, the Supplier shall remedy the defect either by replacement or by repair.</p>
Liquidated damages	
<input checked="" type="checkbox"/> Applies	<p>If the Supplier fails to supply the specified goods within the time period(s) stipulated by the purchase order, the Purchaser shall, without prejudice to its other remedies under the contract, deduct from the Purchase Order price, as liquidated damages, a sum equivalent to 0.5 percent of the delivered price of the delayed goods for each week of delay until actual delivery, up to a maximum deduction of 10 percent of the delayed goods Purchase Order price. Once the maximum is reached, the Purchaser may consider termination of the Purchase Order</p>
Performance security	
<input checked="" type="checkbox"/> Applies if purchase order amount is above USD \$500,000. See paragraph 28 of Annex I.	<p>a) Within 30 days of receipt of the Purchase Order from the purchaser, the successful Bidder shall furnish a Performance Security to the Purchaser in the amount of 10% of the Purchase Order Value.</p> <p>b) The Performance Security shall be valid until a date 30 days from the date of Issue of a Satisfactory Certificate of Inspection and Testing by the procuring UN entity.</p> <p>c) The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the contract.</p> <p>d) The Performance Security shall be denominated in the currency of the Purchase Order and shall be in one of the following form of a bank guarantee or irrevocable letter of credit, issued by a reputable bank located in the purchaser's country or abroad in the form provided in these Solicitation Documents.</p> <p>e) The Security will be returned to the Supplier within 30 days of completion of the Purchase order, including any warranty obligation.</p>

Annex V
 Schedule of requirements.

SCHEDULE OF REQUIREMENTS

- All items described in this Annex are not included in the Lists of Items Prohibited for Export to and Import from the Democratic People's Republic of Korea pursuant to Security Council Resolution 1718 (2006)¹². **Nevertheless, the offeror must submit the documents requested in paragraph 10, Annex 1 of this ITB for the items included in the offer.**
- All of the items are required delivered **DDU** (Incoterms 2000) to: **Yaksu Cooperative Farm, Kangso County, South Pyongan Province.**
- Schedule of requirements is as follows:

Delivery Time	The Contractor shall design, manufacture and deliver the equipment to the project site within a period of 20 weeks from the date of Contract signing.
Delivery Terms	INCOTERMS 2000: DDU, Yaksu Cooperative Farm, Kangso County, South Pyongan Province
Location of Assignment	Yaksu Cooperative Farm, Kangso County, South Pyongan Province, the Democratic People's Republic of Korea
Packing, Transportation, Numbering and Storage	<p>Transportation, unloading, storage, erection and test running shall be performed by or under the responsible direction of the Contractor. An appropriate period for transportation shall be considered.</p> <p>All parts of the equipment supplied and installed under this Contract shall be protected and insured from the time of manufacturing until delivery to the Purchaser's storage against damage of any kind at the Contractor's cost. Parts, which are damaged during transport, shall be replaced at the Contractor's cost.</p> <p>All parts of the equipment shall be packed at the place of manufacturer suitably protected against corrosion, water, sand, heat, atmospheric conditions, shocks, impact, vibrations, etc. Dismantling shall be done into convenient section, so that the weights and sizes are suitable for transport to Site and for handling on the Site, under the special conditions. All packing costs shall be included in the Contract Price.</p> <p>When equipment is transported to Site, immediately the Contractor shall check and compare the actual packages received to bill of loading so as to detect losses and damages during transportation.</p> <p>All machine and equipment shall be marked with correct designation shown on the Contractor's detailed drawings and other documents (packing lists, spare part lists, Operating and Maintenance Instructions, etc) to ensure being suitable for preserve and erection at the Site.</p> <p>All equipment shall be effectively protected against damage (including all deterioration) during transport from the place of manufacture to the Site</p>

¹² Considering the technical specifications included for each item in this ITB.

	<p>and during storage en-route to the Site. Large parts shall be supported to distribute their masses uniformly and thus avoid any permanent deformation.</p> <p>All electrical parts shall be carefully protected from damage by packing them in high-pressure polyethylene toil with silica-gel bags. If large parts are stored in the open air, they shall be provided with weather-resistant and fire-resistant covers.</p>
Supplier's Qualification	<ul style="list-style-type: none"> • Profile of the Company: give a brief description of the company; • Technical capability: give a reference list of similar projects implemented in last five (5) years; • Financial capability: give financial audit reports for the last three (3) years; • Experience: the Contractor must have a minimum of five (5) years experience in the relevant line of business.
Reporting	<ul style="list-style-type: none"> • The Contractor will report to the UNDP Head of Procurement Unit. At the end of every month (from the date of Contract signing), a brief report on progress of contract implementation shall be submitted by the Contractor to UNDP.

4. The scope of works for this Contract includes:

- Designing, manufacturing and supplying of a complete equipment and materials for a 100 kW rice husk gasification power plant in accordance the reference manufacturing standards and equipment technical specifications specified in Annex VII.
- Providing supervision service during installation of the equipment (the installation of equipment will be performed by the local contractors).
- Training of operators of the rice husk gasification power Plant in operation and maintenance of all equipment supplied by the Contractor.
- Testing, commissioning, and handing over the power plant to the Purchaser.
- Providing equipment guarantee.

5. List of equipment and services to be supplied:

Item	Description	Unit	Quantity
1.	Rice husk gasifier system	System	01
2.	Bottom ash removal system	System	01
3.	Dry ash remover	Set	01
4.	Gas cleaning and cooling system	System	01
5.	Gas blower/fan	System	01
6.	Gas engine-generator system	System	01
7.	Electrical system	System	01
8.	Instrumentation, control and safety system	System	01
9.	Cooling water system	System	01
10.	Cooling water make-up system	System	01
11.	Power cable connecting to the grid	Meters	30

The Contractor shall design his drawings for manufacture of the equipment in accordance with the reference Technical Specifications specified in this ITB.

The Contractor, basing on the equipment parameters of his Supply, shall calculate and verify the conformity of the data and area for equipment arrangement specified in the Bidding Drawings. Requirements on supplementation and modification of data and/or area for equipment arrangement in the Technical Specification shall be, under the agreed program, submitted to the Purchaser's Representative for review and adjustment prior to the commencement of manufacturing or erection of equipment.

The Bidder is advised to visit and examine the site of works and its surroundings and obtain for itself as its own responsibility all information that may be necessary for preparing bid document. The cost of site visit shall be at the Contractor's own expense.

6. DOCUMENTS TO BE SUBMITTED

6.1. General requirements

The documents as defined under this Sub-Section comprising drawings, diagrams, schedules, calculations, operation and maintenance manuals and other information shall be submitted, as far as applicable, by the Contractor to the Purchaser's Representative in a number, quality, type and within a period as stated in the Conditions of the Contract.

The Purchaser's Representative reserves the right to request from the Contractor additional documents as may be required for proper understanding and definition of construction and operation, and for other purposes such as coordination between contractors.

Prior to manufacturing and erecting, Contractor shall have to submit overall drawings, documents of equipment to be submitted as well as erection procedures for electrical equipment to Purchaser's Representative for approval. Purchaser's Representative shall prepare conclusion and recommendation for any necessary amendments (if any) suitably with Technical Specifications.

Even when Purchaser's Representative approved drawings, it does not mean that the check has been completed. It only means that the overall structure and equipment details satisfy the Technical Specifications.

Purchaser's Representative approval shall not release Contractor from any obligations as specified in the Bidding Document to meet its requirements to amend drawings or equipment, consequence due to failure, omissions, troubles, defects or damage during warranty period can occur during disassembling, assembling or operation in the future.

As soon as possible but not later than 30 days from receive date, Purchaser's Representative shall study and state his comments on the drawings to the Contractor and keep one (1) copy for himself. The returned drawings shall be noted with one of the following:

- Not require for discussion
- Returned for Corrections
- Discussion when notices included
- Discussion

Revised drawings and documents shall be submitted to Purchaser for approval.

Contractor shall immediately submit supplement document required in the Contract including calculations, drawings and others information, which had been agreed during Contract negotiation.

Contract shall bear all necessary expenditures to provide document, drawings and other information except for special requirements.

Contract Price shall remain unchanged even when a number of amendments had been made to the approved design.

When a number of amendments had been made compared to the Technical Specifications, agreements and determinations in the meeting, Contractor shall outline those amendments onto drawings by "excerpt" and submit these revised drawings and specifications.

6.2. Drawing Title and Sizes

All document and drawings submitted by Contractor shall have a title:

100 kW Rice Husk Gasification Power Project in Yaksu Cooperative Farm

All drawings shall be drawn on the International Standards Organization (ISO) 'A' series of drawing sheets standardizing where possible on the A3 size. All drawings shall be conformed to IEC 617 and ISO 3272.

6.3. Language

All related document and drawings must be written in English languages. In case document and catalogue be written in other languages (except for English), it is necessary to translate into English with professional review.

Procedures for disassembling, assembling, guidelines for operation and maintenance shall be written in English.

Any document, drawings submitted which were not written in English or no English version attached hereto shall be considered unsuitably and returned to Contractor.

6.4. Drawings and Documents Submitted by the Contractor

This shall cover general requirements to drawings and documents submitted by Contractor

Loading Drawings: For all large pieces of equipment, the Contractor shall submit binding loading drawings indicating dimensions, weights, axle loads, and the intended means of transport and hoisting. The loading drawings shall be submitted prior to manufacturing.

Arrangement Drawings: The arrangement drawings shall show the physical arrangement of equipment, equipment groups or complete units in relation to each other, to piping and cable channels, to the civil construction and reserved areas, etc., All arrangement drawings shall be drawn according to standard scale

Assembly Drawings: Assembly drawings shall be submitted for all individual equipment units. The drawings shall indicate the main dimensions, elevations, tolerances, adjustments, clearances, capacities, and the reference numbers of the respective shop drawings and part lists. The assembly

drawings for electrical equipment shall also show the designation, i.e. the plant identification number of the equipment shown.

Execution Drawings: The Execution drawings shall include the shop drawings, erection drawings, piping drawings, process diagrams, parts lists, etc. showing the dimensions, design and data of all apparatus and equipment to be supplied and installed under this Contract.

Other information and calculations:

- Applicable Standards;
- Diagram, calculations, samples, descriptions, features;
- Guidelines for disassembling, transportation and storage of equipment;
- Package requirements;
- Schedule for design, manufacturing, equipment delivery, commissioning and hand-over as mentioned in the Bidding Document;
- Mass and calculation charts;
- List of special tools and equipment, spare parts and auxiliaries;
- Operating and maintenance manuals.

6.5. Quantity of Drawings and Documents Submitted

The Contractor shall provide to the Purchaser's Representative the drawings and information in the form of one (01) set of origin and seven (07) sets of copy.

7. For all items, you should provide a warranty of at least 1 year against manufacturing defects, as described in **Annex IV**.
8. UNDP has identified the following companies with experience in handling cargo to and within DPRK. However, you are free to choose any forwarder of your choice:
 - a) M&M International Forwarding Co./ Korea Foreign Transportation Corporation (KFTC).
Mr. Ji Chol. KFTC's representative in Beijing, China.
Email: p.kftc@yahoo.com
Mobile No: 188 0117 5173 Fax: +8610-65720998
 - b) The Korea Kumkop Trading Company (local transportation)
Phone: (850-2) 18111-381-8705. Fax: (850-2) 381-4012
Email: kumcup@silibank.net.kp
 - c) Andy Chao Trans Service. Co. Ltd
Phone: 86-10-6592-9973. Mobile: 86-186-8888-5933
Email: andytrans@andycho.net.cn andy@andycho.com.cn andycho99@hotmail.com
Website: www.andychao.com.cn
 - d) DHL Express DPRK.
Phone +8502 381 43 24 Fax +8502 381 40 44
Email: csfnj@dhl.com Email: Burmaa.byambaa@dhl.com
DHL Express based in Beijing.
Office phone no. +8610-64665566 extension 2068
Internet: www.dhl.com

Annex VI
Technical specifications.

1. General Conditions

The Contractor shall strictly observe the General Technical Specifications in conjunction with the Special Technical Specifications. The Special Technical Specifications shall take precedence over the General Technical Specifications in case of any contradiction.

The supply shall comply with the relevant export standards of the country of manufacture and shall be acclimatized so as to enable its operation with durability and reliability under the climate conditions specified in Clause 1.2. The Bidder shall provide the date displaying the sales of all products similar to the offered equipment.

1.1. Project Site Location

The site of the rice husk gasification power plant is situated in Yaksu Cooperative Farm, Kangso County, South Pyongan Province of DPRK. The site is approximately 7 km from the center of Kangso County to the north-west, and about 17 km from Pyongyang capital to the north-east. Nearest international seaport is Nampho seaport that is about 30 km from the South. Therefore, the equipment and construction materials can be transported to the site by railway, and then by road. The equipment can also be transported by road from Nampho to the site. The road connecting from the center of Kangso County to the cooperative farm is in good condition; however, some places of the unpaved road within the cooperative farm are narrow and/or uneven. Yaksu cooperative farm will repair these parts of road in order to be favorable for transportation of the equipment and construction materials.

The land area available at the site is more sufficient for arrangement of the proposed power plant that requires about 112 m² (8 m x 14 m).

1.2. Site Conditions

The project site is situated in a humid continental climate. Typically, the winter that lasts from November to early March is very cold and dry. The temperature is usually below freezing (sometime, as low as -20oC), though the average daytime temperature is a few degrees above freezing in every month except January. The transition from the cold, dry winter to the warm, wet summer occurs rather quickly between April and early May, and there is a similar rather abrupt return to the winter in late October and November. Summers are generally hot and humid. There are also the hottest months, with average temperatures of 21-25oC, and daytime highs are often above 30oC. The air temperatures in Yaksu cooperative farm range from below -15oC to above 30oC with an annual mean of 10.3oC. The monthly average temperatures vary from -5.7oC in January to 23.6oC in July.

The annual average relative atmospheric humidity is measured at 72%. Lowest average monthly humidity is 63% in April, and highest value is 80% in July and August. Annual average wind speed is 3.0 m/s with strongest wind occurring in March and April. Annual average precipitation is 880 mm, of which the heaviest rainy months (July, August and September) share around 72%.

1.3. Rice Husk Fuel Characteristics

The proximate and ultimate analysis of the rice husk fuel generated in DPRK is presented in Table below.

Description	Unit	Value
Proximate analysis:		
Moisture content	%	11-12
Volatile content	%	56.0
Fixed carbon	%	15.0
Ash	%	17.0
Low Heating Value (LHV)	MJ/kg	13.07
Ultimate analysis:		
Moisture content	%	11-12
Ash	%	17.49
Carbon (C)	%	35.49
Hydrogen (H)	%	4.56
Oxygen (O)	%	30.44
Nitrogen (N)	%	0.51
Sulfur (S)	%	Very little

1.4. Quality of Raw Water

The source of raw water is from the water supply network at the site. The quality analysis of the raw water is provided in Table below, and will be used for designing the water treatment system of the power plant.

Description	Unit	Value
Calcium (Ca)	mg/L	25.0
Magnesium (Mg)	mg/L	5.5
Sodium (Na)	mg/L	9.2
Chlorine (Cl)	mg/L	12.0
Sulfate (SO ₄)	mg/L	12.0
pH	-	7.2

1.5. Communication

Communication system (telephones) required for the Contractor's temporary working area and accommodation during the staying of Contractor Engineers at the site will be supplied by the Purchaser. However, All the costs for using communication system be borne by the Purchaser.

1.6. Equipment Storage, Temporary Working Area and Accommodation

Equipment storage, temporary working area, accommodation for the Contractor's engineers will be provided at the project site by the Purchaser.

1.7. Electricity Power Supply

Electricity required for the Contractor's temporary working area and accommodation during the staying of Contractor Engineers at the site will be supplied by the Purchaser. All the costs for electricity, which is used for those purposes, shall be borne by the Purchaser.

1.8. Portable Water Supply

Portable water required for the Contractor's temporary working area and accommodation during the staying of Contractor Engineers at the site will be supplied by the Purchaser. All the costs for electricity, which is used for those purposes, shall be borne by the Purchaser.

1.9. Labour Safety and Environmental Hygiene

All personnel of Contractor shall aware of and follow all regulations related to labour safety and environmental hygiene, which is issued by DPRK Government. The Contractor is responsible for purchasing the labour insurance for all his workers at his own expenses.

1.10. Acclimation

When selecting materials and spare parts for equipment supplied, the climate conditions at the Site shall be taken into account. Contractor shall submit in details all methods applied in his work to ensure that all equipment are satisfactory to the climate conditions of the site as specified in Item 1.2 above. Materials and spare parts are subjected to the Purchaser's Representative's approval.

1.11. Spare Parts

The Contractor following Purchase orders of the Purchaser shall supply spare parts. The Contractor shall submit the list of necessary spare parts that are sufficient for routine maintenance and operation of the plant in five (05) years. The estimated costs of these spare parts shall be included in the Bid.

Spare parts shall be carefully packed for long-term storage under the Site conditions. Each detail of spare parts shall be clearly marked or labeled on the outside of its packing with its description and tag number.

Spare parts shall be warranted according to the warranty provisions of main equipment. Warranty period shall be counted at the time of handing-over spare parts to the Purchaser.

In case of any failure in any original part/component of the equipment and where such failures are due to faulty design, material and workmanship, such components/parts shall also be replaced, if any, without any extra cost to the Purchaser. Such replaced spare parts shall have the same guarantee period as applicable to the replacement made for the defective original part/component.

All spare parts supplied shall be absolutely interchangeable with each other and with the parts for which they are intended to be replaced.

2. General Technical Requirements.

2.1 Design Criteria

The rice husk gasification power plant shall be designed to meet the following criteria:

- The gross power output at the generator's terminal shall be 100 kW;
- Parasitic load of the power plant shall be not more than 8% of gross power output;
- Plant startup, shutdown and operation will be semi-automatic control;

- Except the cooling tower, ash settling pond, and waste water tank, all equipment shall be enclosed in a weather enclosure (building). The cooling tower, ash settling pond, and waste water tank shall be roofed;
- The gross electrical efficiency of the power plant: $\geq 16.8\%$ at full load and LHV of rice husk of 13 MJ/kg. It means that the specific rice husk consumption shall be less than 1.65 kg/kWh;
- The lifetime of the equipment shall be more than 60,000 hours;
- The annual availability of the power plant shall be more than 7,500 hours.

2.2 Applicable Standards

General

All equipment are designed and manufactured, installed, checked, and commissioned in accordance with the latest edition of the approved standards as specified below.

The codes and standards given above should be followed by the equipment supply Contractors. In case the equipment supply Contractors propose any equivalent codes or standards, they shall be approved by UNDP. Such approval will be given if the offered equipment can be satisfactorily demonstrated to comply with and is of equivalent quality to the codes and standards specified above. The equivalent standards proposed by the Contractors shall be written or translated into English. In this case, the Contractor shall submit his proposed standards as soon as they are required by the Purchaser's Representative

The Special Technical Specification shall prevail where its requirements conflict with or exceed those of any standard. For applications where no relevant standard exists, up-to-date recognized good practice shall apply, to the approval of the Purchaser's Representative.

If more than a single degree of quality of accuracy is permitted within the scope of a particular Code or Standard, the highest quality shall be applicable and the degree of accuracy commensurate with the intended function shall be selected but with the understanding in either case that the decision as to the degree, of accuracy will be made eventually by the Purchaser's Representative.

Contractor's attention is drawn to the prevailing climatic Site conditions and, where applicable in the Codes and/or Standards, shall propose a suitable derivation factor for each certain instance, and such standards shall be subject to approval of the Purchaser's Representative.

Approved design standards for the equipment

All imported equipment, materials and systems shall be designed, manufactured, tested and commissioned in accordance with the latest issue of the following International Codes and Standards:

- ASME (American Society of Mechanical Engineers) for mechanical equipment
- ASTM (American Society for Testing and Materials) for mechanical equipment
- ISO 8528:2005 - Reciprocating internal combustion engine driven alternating current generating sets
- IEC 60034 - Rotating electrical machines
- IEC 60072 - Dimensions and output series for rotating electrical machines
- IEC 60076 - Power transformers
- IEC 60439 - Low-voltage switchgear and controlgear assemblies
- IEC 227 - Cables and electric wires

- IEC 60502 - Power cables with extruded insulation and their accessories for rated voltages from 1 kV up to 30 kV
- ISO 5198 - Centrifugal, mixed flow and axial pumps - Codes for hydraulic performance tests
- ISO 5199:2002 - Technical specifications for centrifugal pumps
- ASME/ANSI B16 - Standards for pipes and fittings
- PFI (Pipe Fabrication Institute) for gas piping
- ISO 4422 - Pipes and fittings made of unplasticized PVC-U for water supply
- IEC 60870 - Telecontrol equipment and systems
- IEC 62305 - Protection against lightning
- IEEC (Institute of Electrical and Electronics Engineers) for electrical equipment

All local-made equipment, materials and systems shall be designed, manufactured, tested and commissioned in accordance with the National Codes and Standards of DPRK.

The codes and standards given above should be followed by the equipment suppliers. In case the equipment suppliers propose any equivalent code or standard, it shall be approved by UNDP. Such approval will be given if the offered equipment can be satisfactorily demonstrated to comply with and is of equivalent quality to the codes and standards specified above.

The installation of equipment shall be in accordance with the appropriate standards and the manufacturers' recommendations and guidelines.

Materials standards

ASTM (American Society for Testing and Materials) Standard, DIN and British Standard (BS) and/or their equivalent standards shall be applied to all materials used for equipment manufacture. Materials shall be new, having first-grade quality, and conformable to the purposes of use without any defects or damages.

Surface Treatment and Painting

All equipment shall be supplied with complete and reliable surface treatment and painting. Such work shall include the surface treatment and coating at the manufacturer's workshops and finishing painting at the project site. Unless otherwise specified, the coating and painting shall be carried out in accordance with DIN 55928, "Corrosion protection of steel structures by the application of organic or metallic coatings". The quality of coating shall ensure long-life protection of the equipment with the specified site conditions.

All the methods, processes, and materials used for surface treatment and painting shall comply with relevant safety rules and health standards, and do not contaminate the environment.

The equipment manufacturer shall submit the details of coating/painting materials including their volatile matter content, nature of solvent, number of components, type of coat, specific coverage, time interval between coats and number of coats, compatibility of each coat with the previous coat, toxic properties, physical properties, shelf life, pot life, resistance against chemical attack, resistance against ozone and UV-radiation, compatibility with drinking water standards, etc.

Coating materials shall be standard products of a reputable manufacturer with strong experience in the field of corrosion protection of the type of equipment to be supplied.

2.3 Equipment Testing

The tests on the equipment shall be conducted at the Manufacturers' factory and after completion of equipment installation at the site. The tests shall be carried out by Contractor without extra charge in order to determine whether the materials and equipment comply with the Specifications.

All tests on the equipment shall be made in accordance with the relevant ASTM, IEC, DIN and BS Standards if not otherwise agreed by the Purchaser's Representative. If the approved Standards are not available for the particular test, the scope, standard and methods applied shall be specified by the Contractor and will be subject of approval by the Purchaser's Representative. Bidder shall submit with their offer standards used for equipment testing, the type of test certificates issued for each type of the equipment offered.

Following the tests at Site, the Contractor shall be at his own expense and within the terms of the Contract, rectify any defect and replace any defective part, as directed by or to the satisfaction of the Purchaser's Representative

Acceptance of test: Approval of assemblies, tests and test procedures, etc., and acceptance of pertinent test certificates, or waiving of inspections and tests, shall in no way relieve the Contractor of his contractual obligations for furnishing the works in accordance with the provisions of the Contract.

2.4 Locking facilities

Locking facilities shall be provided for security locking system and isolation locking system for cubicles, equipment, room doors and access gates.

2.5 Unit of Measurement

The units of measurement shall be System International (SI) units unless otherwise approved by the Purchaser's Representative. These units shall also be used in all documentation, calculations, drawings, measurements and other documents (such as O&M manual, catalogues, etc.). If the other units have been used on the drawings or printed documents, the SI equivalents shall be added in parallel. Temperature shall be changed into Centigrade Degree (°C).

2.6 Noise

Unless conditions specified in Technical Specifications, the noise level caused by the installed operating equipment shall not be allowed to exceed the following values:

Machine hall, engine-generator floor or any place 1 meter distant from:

- Operating equipment: maximum 80dB(A)
- Offices, control rooms, first aid rooms, and canteen: maximum 45dB (A)
- Residential areas: maximum 50dB (A) during daytime, and maximum 35dB (A) for nighttime

The definition and measurement of noise levels shall be in accordance with ISO and IEC standards and shall conform to the values above.

2.7 Erection, Inspection at the Site, Instruction and Training for Operator

Erection, Inspection at the Site

The Contractor shall dispatch experienced erection and supervision staff to the Site to supervise the erection and instruct the commissioning and test of his Supply.

Purchaser shall not be responsible for any costs and other needs of the instructors, i.e., accommodation, food and drinks, transportation and travel, fuels, insurance, daily expenses, etc. The Contractor shall include them all even their salary in the Contract Price

Instruction for Operation

The Contractor shall field experienced and qualified personnel who are fluent in English speaking and writing to train operating personnel of the Purchaser at Yaksu Rice Husk Gasification Power Plant.

Before sending the supervisors to Site, the Contractor shall submit to Purchaser for approval the supervisors' Bio data and evidence of his former experience and knowledge of English.

The Contractor's operating instructors shall be responsible for guiding, assisting and advising the operating and maintenance process of the equipment and shall establish close connections with hydropower plant's operators.

3. Technical specifications of the Equipment

3.1. RICE HUSK GASIFIER SYSTEM

Rice Husk Gasifier:

Rice husk gasifier is used to convert rice husk into a combustible gas mixture, typically consisting of carbon monoxide (CO), hydrogen (H₂), methane (CH₄), carbon dioxide (CO₂), nitrogen (N₂) and water vapor. The gasifier will be of downdraft type suitable for power generation applications. The gasifier shall be designed to meet the minimum technical specifications required in Section 4 "Data Sheet". The gasifier shall be supplied with complete internal parts and auxiliaries such as gasifier steelwork & supports, platforms, stairs and walkways, access doors & observation ports, thermal insulation and cladding refractories.

Rice Husk Feeding System:

A rice husk feeding system is used for feeding rice husk from receiving hopper located in rice husk storage building into the gasifier. The feeding system will be of screw conveyor or bucket elevator type. The rice husk feeding system shall be designed to meet the minimum technical specifications required in Section 4 "Data Sheet". The rice husk feeding system shall be supplied with complete accessories.

The following characteristics will be incorporated into the design and manufacture of the rice husk feeding system:

- The leakage of rice husk fuel dust shall be minimized and necessary facilities will be provided to prevent the dust emission to the environment;
- The type and design of rice husk feeding system selected will have a proven operating history with high reliability under normal maintenance and of effectively feeding rice husk without jamming;

- The operation of the rice husk feeding system will be automatically controlled depending on the level of rice husk in the gasifier or rice husk feed shell.

3.2. BOTTOM ASH REMOVAL SYSTEM

Ash/char remover:

Ash/char remover is used to control the reactor's process zone level by removing ash/char from reduction zone. The ash/char remover will be of single or double expeller arm type. The ash/char remover shall be designed to meet the minimum technical specification required in Section 4 "Data Sheet".

Ash Discharging System:

This system is used to collect and convey the ash from the bottom of the gasifier to the ash settling pond. The ash conveyor will be of water-cooled screw or chain type. Water is circulated in the jacket of the conveyor. This brings down the ash/char temperature to almost ambient temperature. The dry ash/char is collected in the ash settling pond, and then shifted to an appropriate place for bag filling and storing. The ash discharging system shall be designed to meet the minimum technical specifications required in Section 4 "Data Sheet". The ash discharging system shall be supplied with complete accessories.

3.3. DRY ASH REMOVER

Dry ash remover is used to arrest and remove the large (coarse) particles entrained in the hot gas generated from the gasifier. This equipment is of single or multiple cyclone type. The dry ash remover will be equipped with the valves and ash collection box at the bottom of the cyclone. The dry ash remover shall be designed to meet the minimum technical specifications required in Section 4 "Data Sheet".

3.4. GAS CLEANING AND COOLING SYSTEM

Gas Cleaner and Cooler:

This system is used to remove tar and particles, and cool down the gas. It will be designed to reduce the tar content as well as the particulate matters to less than 30 mg/Nm³ of gas. The moisture content of the gas will be less than 1%, and the gas temperature is less than 40°C. The gas cleaner and cooler shall be designed to meet the minimum technical specifications required in Section 4 "Data Sheet".

Gas Filters:

Gas filters are used to remove both tar and particles those are "escaped" from the gas cleaning and cooling system. The gas filters ensure that no engine parts have any harmful effect due to gas contamination. Two (2) gas filters as per technical specifications specified in Section 4 "Data Sheet" shall be supplied. The filter media will be dried rice husk or "activated" saw dust.

The gas cleaning and cooling system shall be supplied with complete internal parts and auxiliaries such as piping, steelwork & supports, platforms, stairs and walkways, access doors & observation ports, thermal insulation, etc.

3.5. GAS BLOWER/FAN

This gas blower/fan is used to draw the gas from gasifier to feed the engine and the same time, to create suction which allows combusted air entry into the gasifier. This gas blower/fan could be installed before or after the gas filters and used during system start-up only. Once the system is stable, the by-pass valve will be opened to allow the engine suction to drawing the gas directly, and the blower/fan will be shut down.

The gas blower/fan shall be designed to meet the minimum technical specifications specified in Section 4 "Data Sheet".

3.6. GAS ENGINE-GENERATOR SYSTEM

Gas Engine:

One (1) gas engine as per technical specifications in Section 4 "Data Sheet" will be installed. The gas engine will be brand new and is designed to operate stably with 100% gas. It will be of stationary, water cooled, spark ignited internal combustion type.

The gas engine will be supplied with complete standard accessories such as engine support (legs); ignition system; speed governor; lubricating oil system; oil-water cooling system (cooler, filters, valves, etc.); instrumentation, control and monitoring devices (various temperature sensors, pressure sensors, warning switches, etc.).

Electric Generator:

One (1) electric generator as per technical specifications in Section 4 "Data Sheet" will be installed. The electric generator will be supplied with complete standard accessories. The generator will be totally enclosed in housing. Its frame will be fabricated from plate steel, and the enclosure will be explosion proof and painted.

All generator windings will be made of high strength copper alloy. The generator stator will be designed for IP 23 cooling method. Its core will be high grade, low loss silicon sheet steel insulated laminations. The rotor will be one piece steel forging with integral shaft ends and radial slots machined for field windings.

The generator shall operate successfully at rated kVA, power factor, frequency and any voltage between $\pm 5\%$ of rated voltage.

3.7. ELECTRICAL SYSTEM

The single line diagram of electrical system is given in Drawing 4. The electrical system will include the following main items:

- One 0.4/3.3 kV step-up transformer; and
- One 0.4 kV switchgear.

The step-up transformer, as per technical specifications in Section 4 "Data Sheet", will be outdoor installation and designed in accordance with IEC standard or approved equivalent standards. The transformer shall be equipped with complete standard accessories.

The switchgear will be indoor type, and equipped with vacuum circuit breaker (VCB) or air circuit breaker (ACB) (see Section 4 "Data Sheet"). It will be metal clad and incorporate a fixed position, housing within a lower compartment a withdrawable circuit breaker, fixed earth bar and ancillary equipment. The upper compartment will have separate sections for bus bars, transformer, instruments, etc. The panel thickness and paint coloring will be as per the international approved standards.

A complete lot of electric wires and cables shall be supplied to interconnect all the electrical equipment installed.

3.8. INSTRUMENTATION, CONTROL AND SAFETY SYSTEM

The instrumentation and control system (see Section 4 "Data Sheet") will be designed to aid the plant operators in achieving effective, safe, and reliable operation of the rice husk gasification power plant.

The type of control system will be closed-loop Proportional-Integral-Derivative (PID) Controller or Programmable Logic Controller (PLC). The start-up, shut-down and operation of the plant is semi-automatic, and will be conducted by the plant operators from the Control Panel(s) or a Human-Machine Interface (HMI).

A complete system of field instrumentation will be installed where necessary for measurement of flows, levels, pressures, temperatures, voltage, current, frequency, active power, power generation (kWh), etc. The measured signals will be transmitted to the measurement indicators mounted at the Control Panel(s) or HMI. This instrumentation and control system will also include all necessary monitoring and control devices (i.e. sensors, control valves, etc.) which will receive the control commands via control cabling to the I/O (Input/Output) modules. In case HMI is used for control system, the software shall be Windows or equivalent supported.

All equipment, after being installed, shall be connected to earthing system, which shall be designed and installed in the neatest and most workmanlike manner. Conductors shall be located unobtrusively. All equipment and exposed metalwork shall be earthed at one point, with exception of large equipment and metalwork which shall be earthed at two points, preferably on opposite comers, with connections made to two different conductors of the earth grid. Any part of any equipment, which can be electrically separated, shall be separately grounded.

The lightning protection conductors shall be installed where necessary in order to protect the equipment against lightning.

3.9. COOLING WATER SYSTEM

One (1) cooling tower and its complete accessories as per technical specifications in Section 4 "Data Sheet" will be installed to provide cooling water to gas cooler, gasifier cooling and engine oil-water cooler. The cooling tower will be made of Fibreglass Reinforced Plastics (FRP), and the cooling water basin will be constructed from steel reinforced concrete foundation and brick walls.

Two (2) cooling water circulating pumps will be installed (1 working + 1 standby). These pumps will be of centrifugal, horizontal, end-suction type. The cooling water system shall be supplied with complete piping and accessories.

3.10. COOLING WATER MAKE-UP SYSTEM

A cooling water make-up system and its complete accessories as per technical specifications in Section 4 "Data Sheet" will be installed.

The raw water (from underground water well or water tank) will be fed by the raw water pumps to the water treatment plant, where the raw water will be treated. Then, the treated water will be pumped to the cooling water basin by the cooling water make-up pumps. The cooling water make-up system shall be supplied with complete piping and accessories.

3.11. POWER CABLE CONNECTING TO THE GRID

Thirty (30) meters of 3.3 kV power cable shall be supplied to connect the gasification power system to the grid. Power cable shall be of three-core, copper conductor, XLPE insulated type.

4. Data sheet

The data in the "Required" Column of the following tables are to be read in conjunction with the description in the Technical Specification, and are the requirements, which the Bidder has to fulfill.

The Bidder shall copy the following data sheet, completely fill the "offered" column, and include them in his Bid. The bidder shall initial each data sheet.

Where the space in the "Offered" Column is not sufficient to enter Bidder's information, a reference shall be made to separate sheets, which are to be attached at the end of the section. Such additional" sheets shall contain the specific information and data. References to general leaflets, catalogues etc. are not acceptable and may be evaluated as missing information.

Item.	Description	Technical Specifications required	Offered by the Bidder
1.	RICE HUSK GASIFIER SYSTEM		
1.1.	Rice Husk Gasifier		
	Manufacture standards	ASME, ASTM or approved equivalent standards	
	Type	Downdraft	
	Quantity	1 (one)	
	Fuel	Rice husk (LHV = 13 MJ/kg, Moisture content ≤ 14%, Ash content 18-22%)	
	Rated gas flow at gasifier outlet (Nm ³ /h)	300-350	
	Gas calorific value (MJ/Nm ³)	> 5.0	
	Gasification temperature (°C)	1100-1400	
	Gas temperature at gasifier outlet (°C)	< 500	
	Gasifier efficiency (%)	> 75% (hot gas)	
	Gas composition (CO, H ₂ , CO ₂ , CH ₄ , N ₂)	As per design of the Equipment Supplier	
	Gas impurities at gasifier outlet		
	+ Tar content (mg/Nm ³ of	< 1000	

Item.	Description	Technical Specifications required	Offered by the Bidder
	gas)		
	+ Particulate matters (mg/Nm ³ of gas)	< 1000	
	Gasifier start-up time (min)	< 45	
	Turn down ratio	50%	
	Load fluctuation (% of full load)	≥ 20%	
	Rice husk consumption (kg/h)	≤ 165	
	Air consumption (Nm ³ /h)	300-350	
	Char/Ash discharge (kg/h)	≤ 45 max	
	Materials of construction		
	+ Gasifier body	Carbon steel	
	+ Critical components of the gasifier (combustion cone, nozzle, etc.)	Carbon steel/Cast Iron	
1.2.	Rice Husk Feeding System		
	Type	Automatic, depending on the signal given by infrared or electrical level sensor	
	Rice husk receiving hopper		
	+ Type	Metallic	
	+ Quantity	1 (one)	
	+ Capacity	500 kg of rice husk	
	Rice husk conveyor		
	+ Type	Screw Conveyor or Bucket Elevator	
	+ Quantity	1 (one)	
	+ Conveying capacity	150% of rice husk consumption at full load of the gasifier	
	+ Type of drive	Electric motor (3 phases, 380 V, 60 Hz)	
2.	BOTTOM ASH REMOVAL SYSTEM		
2.1.	Ash/Char Remover		
	Type	Single or double arm type	
	Quantity	1 (one)	
	Working temperature (°C)	150 – 400C	
	Rotational speed (rpm)	< 2	
	Materials of construction	- Bearing: cast iron bushing - Blade: high chromium cast iron - Shaft: carbon steel	-
	Type of drive	Electric motor (3 phases, 380 V, 60 Hz)	
	Motor rated power (kW)	0.5	
2.2.	Ash Discharging System		
	Type	Water-cooled screw or chain conveyor	
	Quantity	1 (one)	
	Capacity (kg/h)	100	

Item.	Description	Technical Specifications required	Offered by the Bidder
	Type of drive	Electric motor (3 phases, 380 V, 60 Hz)	
	Motor rated power (kW)	0.25	
3.	DRY ASH REMOVER		
	Type	Cyclone	
	Quantity	Multiple-parallel	
	Ash removal efficiency (%)	> 98%	
	Fly ash removed (kg/h)	< 0.3	
	Materials of construction	cast iron	
4.	GAS CLEANING AND COOLING SYSTEM		
4.1	Gas Cleaner and Cooler		
	Type	Scrubber + Tar Condenser	
	Outlet gas impurities		
	+ Tar content (mg/Nm ³ of gas)	< 30	
	+ Particulate matters (mg/Nm ³ of gas)	< 30	
	+ Moisture content (%)	< 1	
	Outlet gas temperature (°C)	< 40	
	Gas calorific value (MJ/Nm ³)	> 5.5	
	Water demand for Scrubber (m ³ /h)	< 6 m ³ /h, Recyclable	
	Cooling water flow rate (for Cooler) (m ³ /h)	< 20 m ³ /hr (from Cooling Tower)	
	Materials of Construction	- Scrubber: Carbon steel - Gas Cooler: Carbon steel/Stainless steel tube	-
4.2	Gas Filters		
	Type	On-line, cylinder tanks	
	Quantity	2 (1 working + 1 standby)	
	Filter media	Dried rice husk or "Activated" Saw dust	
	Gas impurities at filter outlet		
	+ Tar content (mg/Nm ³ of gas)	< 10	
	+ Particulate matters (mg/Nm ³ of gas)	< 10	
	+ Moisture content (%)	< 0.5	
	Filter media life (hours)	330 – 3300	
	Outlet gas temperature (°C)	< 35	
	Materials of construction		
	+ Body	Carbon steel	
	+ Critical components	Carbon steel	
5.	GAS BLOWER/FAN		
	Type	Centrifugal, induced draft	
	Quantity	1 (one)	
	Rated gas flow (Nm ³ /h)	> 150	
	Static pressure (mm WG)	150	

Item.	Description	Technical Specifications required	Offered by the Bidder
	Type of drive	Electric motor (3 phases, 380 V, 60 Hz)	
	Motor rated power (kW)	3	
	Materials of construction	Carbon steel	
6.	GAS ENGINE-GENERATOR SYSTEM		
6.1.	Gas engine		
	Type	Sparks internal combustion engine	
	Quantity	1 (one)	
	Gas consumption in full load (Nm ³ /h)	300-350	
	Engine efficiency	≥ 30%	
	Starting system	Battery power starter	
	Lubrication method	Lube oil	
	Cooling method	Closed circuit oil-water cooling	
	Materials of construction	ASME, ASTM or approved equivalent standards	
6.2.	Electric generator		
	Type	Brushless, self-regulated, digital voltage regulation (AVR), horizontal mounted, single shaft with single or double bearing	
	Quantity	1 (one)	
	Gross power output (kW)	100	
	Efficiency (%)	≥ 90%	
	Rated voltage (Volt)	400	
	Frequency (Hz)	60	
	Cos φ	0.8 lag.	
	Phase & Connection	3 phases / 4 wires	
	Mode of excitation	Brushless	
	Insulation class	F (both rotor, stator and exiter)	
	Mounting	Horizontal	
	Temperature rise	Class B (both rotor and stator)	
	Terminal box	To suit HT cable connection	
	Cooling method	IP 23	
	Materials of construction	Carbon steel	
7.	ELECTRICAL SYSTEM		
7.1.	Step up transformer		
	Type	Out-door installed	
	Manufacture standards	IEC or approved equivalent standards	
	Quantity	1 (one)	
	Rated capacity (kVA)	150	
	Cooling method	ONAN	
	Rated voltage		
	+ HV side (kV)	3.3	
	+ LV side (kV)	0.4	

Item.	Description	Technical Specifications required	Offered by the Bidder
	Tap voltage on HV side	+ 2 x 2.5%	
	No. of taps	5	
	Tap changing method	OCTC (off circuit tap charger)	
	Connection	Delta-Wye	
	Connection method		
	+ HV side	Bushing	
	+ LV side	Bushing	
	+ LV neutral	Bushing	
7.2.	0.4 kV Switchgear		
	Type	Vacuum or Air, Indoor	
	Manufacture standards	IEC or approved equivalent standards	
	Rated voltage (kV)	0.4	
8.	INSTRUMENTATION, CONTROL AND SAFETY SYSTEM		
8.1.	Control system		
	Type of control	Closed-loop PID Controller / PLC	
	Power supply for control system	220 V / 60 Hz	
	Operators Interface	Local Control Panel(s) / Human Machine Interface (HMI)	
8.2.	Field instrumentation		
	Analog signal (mA)	4-20	
	Digital signal	24 VDC (dry contacts)	
	Local indicators	Analog and/or digital type	
	Transmitters (If applicable)	Intelligent type of instruments enabling the easy integration with the PLC system	
	Temperature measurements	Thermo-couples and/or resistance temperature detectors (RTDs)	
	Flow measurements (If applicable)	Pitot-type devices	
	Level measurements	Infrared level sensor and/or level gauges	
	Pressure measurements	Pitot-type pressure gauges	
	Control valves	<ul style="list-style-type: none"> - Valves shall be sized to carry maximum nominal flow at the specified pressure drop with 80% of valve maximum lift; - Control valves and control dampers shall be equipped with pneumatic actuators and electro-pneumatic positioners; - Provide with accessories such as handwheels, filter 	

Item.	Description	Technical Specifications required	Offered by the Bidder
		regulators, solenoid pilot valves, and limit switches as applicable.	
8.3.	Safety system		
	Earthing system	To be proposed by the Bidder	
	Lightning protection system	To be proposed by the Bidder	
9.	COOLING WATER SYSTEM		
9.1.	Cooling tower		
	Type	Induced draft	
	Quantity	1 cooling tower with its accessories	
	No. of cells	As per design of the Equipment Supplier	
	Fans per cell	1	
	Maximum circulating water flow (m ³ /h)	As per design of the Equipment Supplier	
	Hot water temperature (°C in)	44 max	
	Cold water temperature (°C out)	32 max	
	Tower pump head (m)	20	
	Design drift loss (%)	0.1	
	Design evaporation loss (%)	1.9	
	Water basin		
	+ Volume (m ³)	32	
	+ Dimensions (L x W x H m)	4.0 x 4.0 x 2.0	
	Materials of construction		
	+ Cooling tower	Fiberglass Reinforced Plastics (FRP)	
	+ Water basin	Steel Reinforced concrete foundation and brick walls	
9.2	Cooling water circulating pumps		
	Type	Centrifugal, horizontal, end-suction	
	Quantity	2 (1 working + 1 standby)	
	Capacity per pump (m ³ /h)	20	
	Water head (m)	20	
	Type of motor	380 V / 3 phases / 60 Hz	
	Motor speed (rpm)	1800	
	Protection	IP 55	
	Insulation class	F	
	Materials of construction		
	+ Casing	Cast Iron	
	+ Impeller	Cast Iron	
	+ Shaft	Stainless Steel	
10.	COOLING WATER MAKE-UP SYSTEM		
10.1.	Water treatment plant		
	Type	Skid-mounted	

Item.	Description	Technical Specifications required	Offered by the Bidder
	Treatment technology	As per design of the Equipment Supplier	
	Quantity (trains)	2 (1 working + 1 standby)	
	Rated capacity (m3/h) per train	1.0	
	Quality of treated water	To meet the requirements of the cooling water	
10.2.	Raw water pumps		
	Type	Single stage, horizontal	
	Quantity	2 (1 working + 1 standby)	
	Rated capacity per pump (m3/h)	1.0	
	Head (m)	As per design of the Equipment Supplier	
	Type of motor	220 V / 60 Hz	
	Motor speed (rpm)	1800	
	Protection	IP 55	
	Insulation class	F	
	Materials of construction		
	+ Casing	Cast Iron	
	+ Impeller	Cast Iron	
	+ Shaft	Stainless Steel	
10.3.	Cooling water make-up pumps		
	Type	Single stage, horizontal	
	Quantity	2 (1 working + 1 standby)	
	Rated capacity per pump (m3/h)	1.0	
	Head (m)	As per design of the Equipment Supplier	
	Type of motor	220 V / 60 Hz	
	Motor speed (rpm)	1800	
	Protection	IP 55	
	Insulation class	F	
	Materials of construction		
	+ Casing	Cast Iron	
	+ Impeller	Cast Iron	
	+ Shaft	Stainless Steel	

5. Reference Drawings

Item	Name of Drawing	Bidder's Reference No.
1.	Process Flow Diagram	
2	Heat and Mass Balance	
3	Project Site Location and Layout	
4	Single Line Diagram of Grid Connection	



Annex VII
Bid Submission form.

To: United Nations Development Programme, DPRK

Dear Sir / Madam,

Having examined the Bidding Documents, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver **[please detail description of goods]** in conformity with the said bidding documents for the sum of **[please, detail total bid amount in words and figures]** as may be ascertained in accordance with the Price Schedule attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

We agree to abide by this Bid for a period of 60 days from the date fixed for opening of Bids in the Invitation to Bid, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

I, **(please include name and title of company representative)**, acting in my capacity as the authorized representative of **(please include full name of the company)**, hereby declare that all the information and statements made in this bid are true. I further declare that **(please include full name of the company)** has checked the "Lists of Items Prohibited for Export and Import from the Democratic People's Republic of Korea pursuant to Security Council Resolution 1718 (2006)" (http://www.un.org/sc/committees/1718/xportimport_list/shtml) and confirm that the items offered in the bid are not included in the said list.

We understand that you are not bound to accept any Bid you may receive.

Dated thisday of[year].

.....
Signature

.....
[in the capacity of]

Duly authorised to sign the Bid for and on behalf of

**Annex VIII.
Price Schedule**

The Price Schedule must provide a detailed cost breakdown for each item. The format shown below should be used in preparing the Price Schedule. The format uses a specific structure which may or may not be applicable but are indicated to serve as examples.

Name of Bidder:.....					
Item	Description	Unit	Unit Price *	Quantity Required	Total Price per item
1.	Equipment	1 complete system			
2.	Supervision during equipment installation	1			
3.	Training of operators	1			
4.	Testing and commissioning and handing over the power plant to the Purchaser	1			
	GRAND TOTAL				

Notes:

1. Technical descriptions for each proposed item must provide sufficient detail to allow the Purchaser to determine compliance of Bid with specifications as per Schedule of Requirements and Technical Specifications of this ITB. You may attach all technical specifications for evaluation purposes. Estimated weight/volume of the consignment must be part of the documentation submitted.
2. All prices/rates quoted shall comply with paragraph 12 of Annex 1 and must be exclusive of all taxes, since the United Nations, including its subsidiary organs, is exempt from taxes. Unit price should be based on DDU (Incoterms 2000) DDU Yaksu Cooperative Farm. In case of discrepancy between unit price and total, the unit price shall prevail.
3. Please include delivery time expressed in calendar days. Please include estimate days for reasonable delays and export licences if required (**paragraph 10, Annex 1**).

Signature of Bidder

