



Ref: EOI No 01/2018-19/07

Dated: 25.04 2018

CONSULTATIVE PAPER CUM MODEL EXPRESSION OF INTEREST FOR THE SUITABLE SUGGESTION & FINDING OUT INTERESTED PARTIES FOR COLLECTION OF BIO WASTE, CONVERSION OF WASTE TO BIOGAS/COMPRESSED GAS AND GENERATION OF ELECTRICITY USING CHP ENGINES.

AT THE PERMANENT CAMPUS OF NALANDA UNIVERSITY, AT RAJGIR, BIHAR

SUBMISSION FROM THE INTERESTED AGENCIES

- Interested parties shall submit their Expression of Interest to the university. Submission shall clearly show following, (Along with FORM A,B,C, D & E- the format is being provided at the end of this document):
 - Name of Organization
 - Relevant project experience
 - List of similar work executed on site
 - List of similar work in execution stage
 - A report on how they intend to complete the work
 - Space required to set up the plant and feed stock
 - Cost for setting up the Plant
 - Time required to set the plant
 - Plant and Digester/Gasifier Design for Administrative Building Only to meet the requirement
 - Tentative Rs/kWh or Rs/CM cost predicted for proposed strategy
 - Recognition from MNRE/State Nodal Agency of Renewable Energy, proprietary certificate
 - Feedback and suggestion for subsidy incentive on capital as well as O&M part.
 - Whether agency is registered in Central Public Procurement (Yes or NO, if not whether agency intend to register in CPPP?)
 - Financial Information of the agency in the prescribed format A & B.
 - The comments on Model SLA, RFP/GCC
- Submission will be followed by Presentation at Nalanda Universities Delhi Office. Interested parties are requested to present their suggestions covering afore said points. The venue of presentation is mentioned below:

Nalanda University

2nd floor, Ashoka Estate Bldg,
Barakhamba Road,
New Delhi - 110001



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Contact Details for Any Queries

Name: Mr. Manoj Kumar, AE (Electrical)

Mobile: +91-7033698507

E-Mail: mkumar@nalandauniv.edu.in

Alternative Contact

Name: Ms. Swati Krishna, JE (Electrical)

Mobile: +91-9102011241



1. PROJECT BACKGROUND

- Project Name: Nalanda University
- Project Location: Rajgir, District- Nalanda, Bihar
- Project Target: Net Zero Campus
- Site Area: 455 Acres; Built Up Area: 3,70,000 Square Meters

- **Vision:** Nalanda University proposes to establish a Net Zero campus at its site in Rajgir, Bihar thus achieving Net Zero status for Energy, Water & Waste. The university through this approach envisages a paradigm shift in the approach towards designing a new university campus. The location has no potential to generate energy using wind as a source and thus requires an alternative approach. The alternative being adopted is the utilization of Solar P.V. and energy generation through an alternate renewable fuel (Bio Mass). Using the solar energy during day and the energy generated through renewable sources at night time makes a perfect strategy to minimize requirement for energy storage. Net metering further adds a reliable backup for the strategy. Goal of Net Zero requires first reduction of energy demand and then fulfilling the demand using renewable energy. A Series of innovations in architectural design, Air Conditioning and Plumbing systems ensure a reduction in the overall demand. Once the demand is reduced the focus is on generating required energy through renewable sources.

- **Architectural Design:** The design takes inspiration from the existing ruins of Nalanda. The buildings are like a verandah. The design attempts to blur the boundary between the inside and the outside. The periphery is solid, clad in brick while the interiors use all contemporary materials. A solid heavy mass in the periphery houses all services and circulation areas and ensures the first layer of insulation from the outside heat. The interior spaces are then micro cooled further through the DEVAP (a low energy cooling) system housed within the climate towers. Design development looked in all design aspects to keep energy demand to the lowest possible level. All buildings are simulated in energy simulation software to ensure correct orientation, well shaded facades, appropriate building envelop & optimized daylight levels. These considerations reduce heat gain in the building by 30%.

- **Air Conditioning:** Hot and Humid climate of the area offered a challenge in obtaining low energy cooling system. But the design team converted the challenge into an opportunity. A cooling system consists of three stage cooling strategy - chemical dehumidification, evaporative cooling and air conditioning. The dehumidification is driven by waste heat available from electricity generation process. This three-stage process over a conventional air cooling reduces cooling load by 40%. This strategy has been used in parts at various locations but all three parts will be working together in this project for the first time.

- **Electricity:** Bihar being mainly an agricultural state has a huge biomass available. Nalanda University proposes use of Solar P.V. and Electricity generation from Bio Mass. This dual approach takes benefit of solar energy in morning and biomass based electricity at night. With this dual energy source University plans to produce 100% electricity on site using renewable energy sources. Also having a secondary renewable energy source minimizes use of battery for storage. Excess Energy can also be exported to the grid if required.



- **Water:** The project location has good rainfall with large catchment area. Feasibility clearly showed surplus water availability. The project utilizes this potential and collects surface water in large manmade lakes. Collected water is then treated further before use. Project also uses Decentralized Waste Water Treatment for sewage treatment. Treated water is used for landscaping.
- **Test Case:** All of the above strategies are planned for the entire project; however, all strategies & technology will be tested in an “Administrative Center”. The performance of Administrative center will be monitored and strategies will be fine-tuned before implementing it on other buildings and campus area. Project seeks funding for testing out the model on “Administrative Center”. Repetition of model for Phase 1 & Phase 2 buildings will be done by the university.

- **Administrative Center: (Pilot Project)**

Being located in a Net Zero campus, the Administrative Centre is a Net Zero Building. The energy required will be met from a combination of Solar P.V. and Bio Mass. A CHP engine is proposed which generates electricity from bio mass. Heat produced in the process is utilized to drive the dehumidification cycle in air conditioning. Reuse of this residual heat reduces load on cooling by 30%. Air cooling has a system to deliver air at two temperatures. Air coming out after dehumidification and then evaporative cooling and air which is further cooled using active air conditioning. With this combination overall cooling consumption is lowered by 35% – 45%. An integrated building management system to monitor energy consumption including indoor temperatures monitoring modules with power generation and distribution load management modules will be used to monitor data on a daily basis. However, this will be scaled-up in the entire campus through SCADA/DMS modules.

- Peak Day and Night Time Electricity Demand (For Administrative Building Wherein Pilot is proposed and for entire Phase-I)

For Administrative Building (Henceforth Administrative Building)	
Day	Night
380 kW (2No X 250kW CHP)	80 kW
3540 kWh	500 kWh

- Tentative raw material required to generate Biogas/Biomass (Final quantities shall be selected by third party based on their proposed strategy).
- Raw material assumed to generate 1 KWH of electricity:
- 1 KWH needs 0.65 CM of Biogas
- 1 CM of Biogas requires:
 - 2 kG Rise Husk
 - 1.5 KG Wooden Pallets
 - 5 kG Organic waste
 - 4 kG Chicken Manure
 - 5.25 kG dairy waste
 - 20 kG Cow dung



Raw material Requirement for Administration Building:
(For reference, actual quantities to be provided by Third Party)

MONTHLY RAW MATERIAL OPTIONS FOR CHP								
Month	From CHP kWH	Bio Gas Cubic Meters 1 kWh=0.65CM	Rice Husk KG 2	Wooden Pallets KG 1.5	Organic Waste KG 5	Chiken Manuare KG 4	Dairy Waste KG 5.25	Cow Dung KG 20
Jan	49,314	75,868	1,51,737	1,13,802	3,79,341	3,03,473	3,98,308	15,17,366
Feb	25,959	39,936	79,873	59,904	1,99,681	1,59,745	2,09,665	7,98,726
Mar	40,830	62,815	1,25,630	94,223	3,14,076	2,51,261	3,29,780	12,56,303
Apr	48,483	74,589	1,49,178	1,11,883	3,72,944	2,98,355	3,91,592	14,91,777
May	52,114	80,175	1,60,350	1,20,263	4,00,876	3,20,701	4,20,920	16,03,503
Jun	52,383	80,589	1,61,178	1,20,883	4,02,944	3,22,355	4,23,092	16,11,777
Jul	54,129	83,275	1,66,550	1,24,913	4,16,376	3,33,101	4,37,195	16,65,503
Aug	52,191	80,294	1,60,589	1,20,442	4,01,472	3,21,178	4,21,546	16,05,890
Sep	47,313	72,789	1,45,578	1,09,183	3,63,944	2,91,155	3,82,142	14,55,777
Oct	46,069	70,875	1,41,750	1,06,313	3,54,376	2,83,501	3,72,095	14,17,503
Nov	31,713	48,789	97,578	73,183	2,43,944	1,95,155	2,56,142	9,75,777
Dec	46,069	70,875	1,41,750	1,06,313	3,54,376	2,83,501	3,72,095	14,17,503
Total	5,46,566	8,40,870	16,81,743	12,61,307	42,04,357	33,63,485	44,14,575	1,68,17,427

DAILLY RAW MATERIAL OPTIONS FOR CHP								
Month	From CHP kWH	Bio Gas Cubic Meters 1 kWh=0.65CM	Rice Husk KG 2	Wooden Pallets KG 1.5	Organic Waste KG 5	Chiken Manuare KG 4	Dairy Waste KG 5.25	Cow Dung KG 20
Jan	1,644	2,529	5,058	3,793	12,645	10,116	13,277	50,579
Feb	865	1,331	2,662	1,997	6,656	5,325	6,989	26,624
Mar	1,361	2,094	4,188	3,141	10,469	8,375	10,993	41,877
Apr	1,616	2,486	4,973	3,729	12,431	9,945	13,053	49,726
May	1,737	2,673	5,345	4,009	13,363	10,690	14,031	53,450
Jun	1,746	2,686	5,373	4,029	13,431	10,745	14,103	53,726
Jul	1,804	2,776	5,552	4,164	13,879	11,103	14,573	55,517
Aug	1,740	2,676	5,353	4,015	13,382	10,706	14,052	53,530
Sep	1,577	2,426	4,853	3,639	12,131	9,705	12,738	48,526
Oct	1,536	2,363	4,725	3,544	11,813	9,450	12,403	47,250
Nov	1,057	1,626	3,253	2,439	8,131	6,505	8,538	32,526
Dec	1,536	2,363	4,725	3,544	11,813	9,450	12,403	47,250
Total	18,219	28,029	56,060	42,045	1,40,150	1,12,120	1,47,158	5,60,600

Raw material Requirement for Phase 1 Buildings:
(For reference, actual quantities to be provided by Third Party)

2. PROPOSED SCHEME

- Project will generate part of electricity requirement using CHP (Combined Heat and Power) engines. CHP Engines need to run on a renewable energy source. Biogas or Compressed gas in isolation or combination can be used as a fuel source for CHP Engine.
- To generate **Biogas**, waste material like – Organic Waste, Poultry Waste, Cow dung, Agricultural Waste, Sabji Mandi Waste, Briquettes etc needs to be collected. To generate **Compressed Gas** – agricultural waste, Briquettes etc needs to be collected.



3. OBJECTIVE & SCOPE

- Objective of this EOI is to find a Third Party to play following roles:
 - **Collection of Raw Material:**
 - Collect raw material required to generate Biogas or Compressed Gas.
 - Waste may include following either in isolation or combination - Organic Waste, Agricultural Waste, Sewage Waste, Sabji Mandi Waste, Organic Waste from Hotels, Cow dung, Poultry Waste or any other waste which can generate Biogas or Compressed gas.
 - Collection quantity will vary based on combination of waste used.
 - University will provide expected output calendar for the year. Collection needs to be backlinked with the expected demand.
 - **Generate Biogas or Compressed Gas:**
 - Process collected waste to generate Biogas or Compressed gas of required quantity and quality.
 - Required configuration of gas to run CHP shall be
 - Methane Content – 55%
 - RH Value – 80
 - Pressure – 6 Bar
 - Calorific Value – 22-24 MJ/m³
 - **Operate CHP Engine:**
 - Use generated gas to run CHP Engines and Generate electricity.
 - Recover heat generated in the process to generate hot water and supply it to the university.
 - **Operation, Repair and Maintenance:**
 - Digester and its components
 - Gasifier and its components
 - CHP Engine and its components
 - Heat Exchanger and its components
 - Any other equipment or component required in the process
- Interested parties may submit their Expression of Interest as per timelines given in Section "7. TIMLINES".
- Interested parties will be asked to Present their submission.
- Based on Participation and Presentation by Interested parties, a Tender will be floated for award of work.

4. FINANCE MODELS & UNDERSTANDING FOR THE SCOPE OF WORK

- Installation, Maintenance and Operation of Bio digester and/or Gasifier will be by the Third Party. (Capital cost for the Digester or Gasifier will be provided by the University)
- Any cost to generate tie ups to collect waste material from around the area will be by the Third Party.
- Any transportation vehicles to collect waste material will be by the Third Party.
- Any cost to store collected waste on site will be by the Third Party
- Any permissions to be obtained will be by the Third Party.
- University will agree on per unit rate (Rs/kWh or Rs/CM of gas) for pre-determined period (expected to be for initial 3 years and then renewed for next 22 years).



Basic Definitions for understanding:

1st Party – Nalanda University

2nd Party – Contractor who will develop the plant infrastructure

3rd Party – The agency who will design the plant, will supply bio feed to the University and will maintain the plant under O&M mode.

NALANDA UNIVERSITY RESPONSIBILITY:

Plant setup (SITC of Plant - Bio digester and/or Gasifier as per the mutually agreed design, the agency/3rd party has to submit the basic design during in this EOI and need to explain during the scheduled presentation)

Third Party/Agency Responsibility:

- Provide a detailed design sufficient to tender out the size of Gasifier and/or digester which will be supplied and installed by Second Party. Overall load shall be sufficient to provide Gas to CHP Engine to operate two 250 kW CHP engines to generate required electricity and heat.
- Maintenance and Operation of Bio digester and/or Gasifier will be by the Third Party. (Capital cost for the Digester or Gasifier will be provided by the University)
- Any cost to generate tie ups to collect waste material from around the area will be by the Third Party.
- Any transportation vehicles to collect waste material will be by the Third Party.
- Any cost to store collected waste on site will be by the Third Party
- Any permissions to be obtained will be by the Third Party.
- University will agree on per unit rate (Rs/kWh or Rs/CM of gas) for pre-determined period (expected to be for initial 3 years and then renewed for next 22 years).
- **On finalization of Third Party, Third Party has to sign agreement with University within 60 days of finalization. During 60 Days, Third party shall provide Bank Guarantee/FDR equivalent of 10% of annual estimated cost for the work.**

5. STAGES for Phase-I

The overall capacity of plant will be built in stages. Following are expected stages:

1. **Pilot Stage:** Administrative Building: 2 Nos CHP Engines of 250 kW Each, at this stage the University is looking for PILOT TEST CASE.
2. **Phase 1:** CHP of 350kW X 3 NO

It is planned that Pilot plant for the administrative building will be the first to be constructed and operated. Based on experience of setting up collection, operation and maintenance a strategy can be modified in Phase 1 to improve the performance. Therefore, the University may extend the scope of the requirement for entire Phase-I, if required, or may not extend if any changes required to considered.



6. SUBMISSION FROM THE INTERESTED AGENCIES

- Interested parties shall submit their Expression of Interest to the university. Submission shall clearly show following, (Along with FORM A,B,C, D & E- the format is being provided at the end of this document):
 - Name of Organization
 - Relevant project experience
 - List of similar work executed on site
 - List of similar work in execution stage
 - A report on how they intend to complete the work
 - Space required to set up the plant and feed stock
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 - Whether agency is registered in Central Public Procurement (Yes or NO, if not whether agency intend to register in CPPP?)
 - Financial Information of the agency in the prescribed format A & B.
 - The comments on Model SLA, RFP/GCC
- Submission will be followed by Presentation at Nalanda Universities Delhi Office. Interested parties are requested to present their suggestions covering afore said points.

7. TIMELINES

- Date of floating Consultative paper cum EOI: 24th April 2018
- Presentation by Parties: 2nd May 2018 (MAY TAKE PRESENTATION ON 2ND MAY 2018)

8. TENTATIVE INFORMATION REGARDING REQUIREMENT OF THE UNIVERSITY CAMPUS:

- Peak Day and Night Time Electricity Demand (For Administrative Building Wherein Pilot is proposed and for entire Phase-I)

For PILOT TEST CASE Proposed in the Administrative Building		Phase-I (for understanding the future requirement)	
Day	Night	Day	Night
380 kW (2No X 250kW CHP)	80 kW	3600 kW	2300 kW
3540 kWh	500 kWh	973496 kWh	625443 kWh

- Tentative raw material required to generate Biogas/Biomass (Final quantities shall be selected by third party based on their proposed strategy.
- Raw material assumed to generate 1 KWH of electricity:
 - 1 KWH needs 0.65 CM of Biogas
 - 1 CM of Biogas requires:
 - 2 kG Rise Husk



- 1.5 KG Wooden Pallets
- 5 kG Organic waste
- 4 kG Chicken Manure
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Raw material Requirement for Administration Building:
(For reference, actual quantities to be provided by Third Party)

MONTHLY RAW MATERIAL OPTIONS FOR CHP									
Month	From CHP kWH	Bio Gas	Rice Husk	Wooden Pallets	Organic Waste	Chiken Manuare	Dairy Waste	Cow Dung	
		Cubic Meters 1 kWh=0.65CM	KG 2	KG 1.5	KG 5	KG 4	KG 5.25	KG 20	
Jan	49,314	75,868	1,51,737	1,13,802	3,79,341	3,03,473	3,98,308	15,17,366	
Feb	25,959	39,936	79,873	59,904	1,99,681	1,59,745	2,09,665	7,98,726	
Mar	40,830	62,815	1,25,630	94,223	3,14,076	2,51,261	3,29,780	12,56,303	
Apr	48,483	74,589	1,49,178	1,11,883	3,72,944	2,98,355	3,91,592	14,91,777	
May	52,114	80,175	1,60,350	1,20,263	4,00,876	3,20,701	4,20,920	16,03,503	
Jun	52,383	80,589	1,61,178	1,20,883	4,02,944	3,22,355	4,23,092	16,11,777	
Jul	54,129	83,275	1,66,550	1,24,913	4,16,376	3,33,101	4,37,195	16,65,503	
Aug	52,191	80,294	1,60,589	1,20,442	4,01,472	3,21,178	4,21,546	16,05,890	
Sep	47,313	72,789	1,45,578	1,09,183	3,63,944	2,91,155	3,82,142	14,55,777	
Oct	46,069	70,875	1,41,750	1,06,313	3,54,376	2,83,501	3,72,095	14,17,503	
Nov	31,713	48,789	97,578	73,183	2,43,944	1,95,155	2,56,142	9,75,777	
Dec	46,069	70,875	1,41,750	1,06,313	3,54,376	2,83,501	3,72,095	14,17,503	
Total	5,46,566	8,40,870	16,81,743	12,61,307	42,04,357	33,63,485	44,14,575	1,68,17,427	

DAILLY RAW MATERIAL OPTIONS FOR CHP									
Month	From CHP kWH	Bio Gas	Rice Husk	Wooden Pallets	Organic Waste	Chiken Manuare	Dairy Waste	Cow Dung	
		Cubic Meters 1 kWh=0.65CM	KG 2	KG 1.5	KG 5	KG 4	KG 5.25	KG 20	
Jan	1,644	2,529	5,058	3,793	12,645	10,116	13,277	50,579	
Feb	865	1,331	2,662	1,997	6,656	5,325	6,989	26,624	
Mar	1,361	2,094	4,188	3,141	10,469	8,375	10,993	41,877	
Apr	1,616	2,486	4,973	3,729	12,431	9,945	13,053	49,726	
May	1,737	2,673	5,345	4,009	13,363	10,690	14,031	53,450	
Jun	1,746	2,686	5,373	4,029	13,431	10,745	14,103	53,726	
Jul	1,804	2,776	5,552	4,164	13,879	11,103	14,573	55,517	
Aug	1,740	2,676	5,353	4,015	13,382	10,706	14,052	53,530	
Sep	1,577	2,426	4,853	3,639	12,131	9,705	12,738	48,526	
Oct	1,536	2,363	4,725	3,544	11,813	9,450	12,403	47,250	
Nov	1,057	1,626	3,253	2,439	8,131	6,505	8,538	32,526	
Dec	1,536	2,363	4,725	3,544	11,813	9,450	12,403	47,250	
Total	18,219	28,029	56,060	42,045	1,40,150	1,12,120	1,47,158	5,60,600	

Raw material Requirement for Phase 1 Buildings:
(For reference, actual quantities to be provided by Third Party)



MONTHLY RAW MATERIAL OPTIONS FOR CHP								
Month	From CHP kWH	Bio Gas Cubic Meters 1 kWh=0.65CM	Rice Husk KG 2	Wooden Palllets KG 1.5	Organic Waste KG 5	Chiken Manuare KG 4	Dairy Waste KG 5.25	Cow Dung KG 20
Jan	9,32,314	14,34,329	28,68,657	21,51,493	71,71,644	57,37,315	75,30,226	2,86,86,574
Feb	5,60,000	8,61,538	17,23,077	12,92,308	43,07,692	34,46,154	45,23,077	1,72,30,769
Mar	7,02,626	10,80,963	21,61,926	16,21,444	54,04,815	43,23,852	56,75,056	2,16,19,260
Apr	9,75,831	15,01,279	30,02,558	22,51,918	75,06,395	60,05,116	78,81,715	3,00,25,580
May	12,04,520	18,53,107	37,06,214	27,79,660	92,65,535	74,12,428	97,28,812	3,70,62,139
Jun	12,78,350	19,66,692	39,33,385	29,50,039	98,33,462	78,66,770	1,03,25,135	3,93,33,848
Jul	14,05,052	21,61,619	43,23,238	32,42,428	1,08,08,095	86,46,476	1,13,48,500	4,32,32,379
Aug	13,29,244	20,44,991	40,89,983	30,67,487	1,02,24,956	81,79,965	1,07,36,204	4,08,99,825
Sep	9,17,364	14,11,329	28,22,659	21,16,994	70,56,646	56,45,317	74,09,479	2,82,26,586
Oct	7,80,826	12,01,270	24,02,540	18,01,905	60,06,350	48,05,080	63,06,668	2,40,25,402
Nov	6,00,000	9,23,077	18,46,154	13,84,615	46,15,385	36,92,308	48,46,154	1,84,61,538
Dec	8,44,803	12,99,697	25,99,393	19,49,545	64,98,483	51,98,787	68,23,407	2,59,93,933
Total	1,15,30,930	1,77,39,892	3,54,79,785	2,66,09,839	8,86,99,463	7,09,59,571	9,31,34,436	35,47,97,853

DAILLY RAW MATERIAL OPTIONS FOR CHP								
Month	From CHP kWH	Bio Gas Cubic Meters 1 kWh=0.65CM	Rice Husk KG 2	Wooden Palllets KG 1.5	Organic Waste KG 5	Chiken Manuare KG 4	Dairy Waste KG 5.25	Cow Dung KG 20
Jan	31,077	47,811	95,622	71,716	2,39,055	1,91,244	2,51,008	9,56,219
Feb	18,667	28,718	57,436	43,077	1,43,590	1,14,872	1,50,769	5,74,359
Mar	23,421	36,032	72,064	54,048	1,80,160	1,44,128	1,89,169	7,20,642
Apr	32,528	50,043	1,00,085	75,064	2,50,213	2,00,171	2,62,724	10,00,853
May	40,151	61,770	1,23,540	92,655	3,08,851	2,47,081	3,24,294	12,35,405
Jun	42,612	65,556	1,31,113	98,335	3,27,782	2,62,226	3,44,171	13,11,128
Jul	46,835	72,054	1,44,108	1,08,081	3,60,270	2,88,216	3,78,283	14,41,079
Aug	44,308	68,166	1,36,333	1,02,250	3,40,832	2,72,666	3,57,873	13,63,328
Sep	30,579	47,044	94,089	70,566	2,35,222	1,88,177	2,46,983	9,40,886
Oct	26,028	40,042	80,085	60,064	2,00,212	1,60,169	2,10,222	8,00,847
Nov	20,000	30,769	61,538	46,154	1,53,846	1,23,077	1,61,538	6,15,385
Dec	28,160	43,323	86,646	64,985	2,16,616	1,73,293	2,27,447	8,66,464
Total	3,84,364	5,91,330	11,82,661	8,86,996	29,56,654	23,65,323	31,04,486	1,18,26,614



9. Model SLA MATRIX (Interested agencies are requested to submit the suggestion in on this model SLA)

1. SERVICE LEVEL AGREEMENT

SLA given below is indicative; however detailed SLA will be signed after award of contract and signing of agreement.

SLA Objectives

- Contractor shall take predicted energy consumption pattern (in kWh electricity & kW heat) from NU on a quarterly basis.
- Contractor shall back calculate Biogas required (Cubic Meters) based on predicted load consumption pattern provided by NU.
- Contractor shall back calculate raw material / waste to be collected to generate required Biogas (Cubic Meters) based on plant efficiency factors.
- Contractor shall always have Biogas equivalent to 7 days of demand in storage. The stock will be reviewed by NU on a weekly basis.
- Contractor shall always have Raw feed required to generate biogas for 15 days. The stock will be reviewed by NU on a weekly basis.
- Any shortfall on supply of required electricity or heat will attract penalty of Rs.18/kWh.
- Contractor shall provide warranty /on-site maintenance and operation support services during the period of contract as per SLA for a period of four (3) years (Three Year Warranty and further three Years AMC). NU would review performance of contractor at the end of each year and may or may not renew the contract based on the same.
- Based on performance of contractor, the contract can be extended after every 3 years subjected to mutually agreed fees for SLA and any particular / need full addendum with the existing terms and conditions applicable in the Agreement for SLA.
- Contractor shall provide services as per SLA matrix, which defines maximum response as well as rectification times for all kinds of infrastructure/equipment covered under this RFP.

SLA Duration

Timings : 24x7
 Period : Six years (from the date of successful commissioning and Acceptance of equipment's)

SLA Matrix

The Contractor shall provide facility management services as per SLA matrix given below:

Sl. No	Severity Level	Equipments/Items	Permitted Down Times	Response Time
1	Level 0	Electricity & Hot Water Supply	0 Hrs (i.e. No Down Time Allowed)	0 Hr
2	Level 1	7 Day stock of Biogas	Minimum 3 Days stock shall always be available.	Within 1 Day
3	Level 2	15 Day stock of raw material required to generate Biogas	Minimum 7Days stock shall always be available.	Within 2 Days



SLA Manpower Requirements

Contractor shall deploy suitably qualified and experienced sufficient manpower in shifts to meet out the SLA. Minimum personnel’s required to be deployed are as under.

- In Charge of running of CHP Engines – Minimum Three - One in each shift
- In Charge of running Digester/Gasifier - Minimum Three - One in each shift
- In Charge of collecting raw material to generate Biogas - Minimum Three - One in each shift

Contractor shall appoint as many team members, over and above the manpower specified, as deemed fit by them, to meet out the time Schedule and SLA requirements. NU would not be liable to pay any additional cost for this.

Contractor shall always maintain above minimum manpower on-site throughout the period of the contract.

Warranty/AMC involves comprehensive maintenance and repairs of all hardware and/or software for the said systems, including free of cost replacement of parts, consumables if any, modules, sub-modules, assemblies, sub-assemblies, spares, weekly cleaning of filters etc to make the system operational.

Bidder should ensure 99.0 % availability of the listed systems. This will include all kind of breakdown, corrective & preventive maintenance

Availability shall be calculated on quarterly basis. Availability will be based on the report of representative of NU, based on system logs, equipment logs, downtime and rectification reporting etc. In case the availability for each of the system under Warranty/AMC is less than 99 % the non-performance deduction from payments for the system under Warranty/AMC shall be as per the following table:

Sr. No.	Availability (On monthly basis)	Non-performance deduction in each case
1.	99 % or above	No deduction
2.	Less than 99 % & up to 95%	5% of the annual maintenance contract value for the month excluding taxes.
3.	Less than 95 %	10% of the annual maintenance contract value for the month excluding taxes.

Tie up with OEM/ Manufacture

The Contractor should have back-to-back arrangements with OEM/Manufacturer for warranty support for a period of three years and AMC period of three Years It is the responsibility of the Contractor to provide certification of OEM/Manufacture for complete support for the period of six years in case of product upgrades or discontinue of product and has sufficient provision for spares.

Model – General Condition of Contract: As per the CPWD guidelines.



10. FORMS AND FORMATS FOR PROVING INFORMATIONS

FORM A (self-certified)

FINANCIAL INFORMATION

Financial Analysis-Details to be furnished duly supported by figures in balance sheet/profit & loss account for the last **five (5)** years, self-certified, as submitted by the agency to the Income Tax Department (copies of all the documents to be attached).

S. No.	Description	Years				
		2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
i)	Gross Annual turnover					
ii)	Turnover on similar works					
iii)	Profit/Loss					

i. Financial arrangements for carrying out the proposed work.

FORM B (For this EOI, agency may submit SELF-CERTIFIED solvency certificate to understand the financial strength of the agency.)

SOLVENCY CERTIFICATE

This is to certify that to the best of our knowledge and information that our firm..... can be treated as good for any engagement up to a limit of Rs.....(Rupees.....).

This certificate has been issued at the specific request for limited purpose of submitting the Tender to the Nalanda University, Rajgir, Bihar and shall not be used for any other purpose whatsoever.



FORM C

DETAILS OF SIMILAR WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING PREVIOUS DAY OF LAST DATE OF SUBMISSION OF TENDER

A	B	C	D	E	F	G	H	I	J
Sr.No	Name of work/project and location	Owner or sponsoring organization	Cost of work in Crores of Rupees	Date of commencement as per contract	Stipulated date of completion	Actual date of completion	Litigation / arbitration cases pending / in progress with details*	Name and address / telephone number of officer to whom reference may be made	Whether the work was done on back to back basis Yes/No
1									
2									
3									

*Indicate gross amount claimed and amount awarded by the Arbitrator.

SIGNATURE OF BIDDER (S)



FORM E
STRUCTURE & ORGANIZATION

1	Name & Address of the bidder	
2	Telephone No./Telex No./Fax No./e-mail address	
3	Legal status of the bidder (attach copies of original document defining the legal status).	
	a) An Individual	
	b) A Proprietary Firm	
	b) A firm in partnership	
	c) A limited company or Corporation	
4	Particulars of registration with various Government bodies (attach attested photo-copy). (Company Registration, PAN no., CST and VAT Registration, Service Tax Registration, PF Registration, ESI Registration, Registration as a Contractor with CPWD/MES/State PWD etc. ant information about others)	
	ORGANIZATION/PLACE OF REGISTRATION	REGISTRATIONNo.
	1	
	2	
5	Names and Titles of Directors& Officers with designation to be deputed for the Works	
6	Designation of individuals authorized to act for the organization.	
7	Has the bidder or any constituent partner in case of partnership firm/Limited Company/Joint Venture, ever been convicted by a court of law? If so, give details.	
8	In which field of Mechanical Engineering the bidder has specialization and interest?	
9	Any other information considered necessary but not included above.	



Nālandā
UNIVERSITY

Certified that the information mentioned above is complete and no information has been left undisclosed and that the information furnished above is true, correct and not misleading to my/our knowledge and belief.
SIGNATURE OF BIDDER (S)