**GOVERNMENT OF ASSAM**
**ASSAM INLAND WATER TRANSPORT DEVELOPMENT SOCIETY (AIWTDS)**

# REQUEST FOR EXPRESSIONS OF INTEREST

**Country:** INDIA
**Name of Project:** ASSAM INLAND WATER TRANSPORT PROJECT [AIWTP]
**Assignment Title:** EXPRESSION OF INTEREST (EOI) FOR GREENING THE PASSENGER FERRY SECTOR IN ASSAM

The Government of India has obtained financing from the World Bank toward the cost of the AIWTP and intends to apply part of the proceeds for procurement of three (03) green ferries having capacity for 100 passengers, 50 motorcycles.

The new ferries are expected to include a green solution (e.g. technology or fuel) that can lead to fuel and GHG emissions savings, and it is intended that these vessels will be deployed in Guwahati, Assam. AIWTDS is inviting EoIs from the interested national and international firms/companies/organizations/institutions green solutions which could be applied to the passenger ferry sector in Assam, to understand the market responsiveness and to seek knowledge inputs regarding modern and market accepted green technologies / green fuels, and innovative designs.

AIWTDS will not make any shortlist based on the received EoIs but information is expected to inform the further development of a bid / tender document for the supply, commissioning, and installation of green ferries, which will be published at a later stage. Interested parties submitting an EoI will be invited to engage in a dialogue with the AIWTDS to discuss proposed solutions.

A brief requirement of AIWTDS has been placed in Annexure I.

Further information can be obtained at the address below during office hours [1100hrs to 1700hrs].

The proposal must be emailed to **dir.iwtds-as@gov.in** on or before 16.09.2022 till 14:00 HRS(IST)

**(Ankur Jain, IPS)**
**State Project Director,**
**Assam Inland Water Transport Development Society,**
**Ulubari, Guwahati-7**

## Annexure- I

## 1. Introduction to AIWTDS's basic requirements andinstruction for submission of EoIs:

1. The Government of Assam aspires to green passenger vessels plying in the River Brahmaputra and reducing the GHG emissions, as per India's National Action Plan for Green Shipping espoused in the Maritime India Vision 2030.

2. The Government of Assam, through the Assam Inland Water Transport Project, intends to procure new vessels which can provide safe means of passenger transport while at the same time reduce GHG emissions (when compared to the presently operated passenger ferries which are equipped with conventional diesel engines burning HSD extracted from fossil sources).

3. As part of a pilot project, three vessels are to be procured with new technology to demonstrate the green mobility in the Brahmaputra ferry sector to be operated in Guwahati, mainly on the Guwahati-North Guwahati ferry route.

4. To assist interested parties,the following information is provided in the sections below:

   **Section 2: Basic requirement for the green vessels**
   **Section 3: Operating conditions on the River Brahmaputra in the Guwahati region**
   **Section 4: Map of the Guwahati region, ferry routes and existing terminals**
   **Section 5: Current vessels plying the Guwahati to North Guwahati ferry route**

5. **Information to be submitted in response to thisREOI (maximum of 25 pages):**

   a) Brief organizational profile indicating past experience of ship building, turnover in last three financial years.

   b) List of clients and contact details of clients.

   c) List of past supplies of vessels that include a green solution / run on a green fuel.

   d) Basic design parameters proposed for the requirement of AIWTD Society for vessels having capacity for 100 pax, 50 motorcycles.

   e) Description of how the proposed green solution provides a better environmental performance with respect to GHG emissions, when compared to the conventional vessels currently running on HSD and plying the Guwahati to North Guwahati ferry route.

   f) Tentative cost estimate for each vessel and a cost benefit analysis, considering life of the vessel as 10 years.Lifetime cost for conventional vessels viz-a-viz green ferries of equal passenger capacity.

   g) Additional infrastructure required for green solution to operate, if any.

   h) Proposed additional pilot project partners for implementation of the proposed solution.

   i) If applicable, proposed sourcing and bunkering of fuel required for implementation of proposed solution

   j) Any other relevant information related to the operation of the vessel (e.g. maintenance requirements, training requirements etc.)

   k) Applicability of proposed solution to other vessel sizes (e.g. 50 pax ferries).

## 2. Basic requirement for the green vessels:

1. All interested parties submitting their EoI are advised to benchmark their submissions against the following basic vessel requirements:

| SI No. | SalientFeatures | Basic requirement |
|---|---|---|
| 1 | Lengthoverall | As per design criteria of shipbuilder |
| 2 | Lengthofhull | As per design criteria of shipbuilder |
| 3 | Type of vessels | Mono Hull, Catamaran or any other |
| 4 | Draughtinwater | Notexceeding0.70m |
| 5 | Airdraft | Notexceeding4.50m |
| 6 | Carryingcapacity | 1. Maximumpassengers(seated) 100<br>2. Maximumpassengers(standing) 0<br>3. Maximummotorcycles 50<br>4. Thedesignwillensurethatmotorcyclescanonlybe stowed below the gunwales of the ferry<br>5. Provision will be made for each passenger to carry 0.5 $m^3$ of luggage stowed safely awayfrom the seated passenger |
| 7 | Speed (fullyloadedcondition) | 1. Cruising-Upstream and downstream average speed 10-12 knots.<br>2. Vessels should be able to be operated with a forward speed of at least13.0 knots in the absence of any river flow and 7 knots at 85% Maximum Continuous Rating against anassumed adversecurrent definedas the average maximum current speed in the Brahmaputra River overthe proceeding 10 years<br>3. Speeds are to be proven through full-scale trials of the ferries during river trials |
| 8 | Propulsion engine | As per the design |
| 9 | Fuelandendurance | 1. If an alternative fuel is proposed, interested parties should indicate how the availability of fuel will be ensured, and sourced<br>2. The ferries shall have adequate energy/fuel storage for endurance over two (2) days with daily 10 hours of service |
| 10 | Propulsion | As per the design |
| 11 | Generator | As per the design |
| 12 | Wheelhouse | Fitted with control and monitoring, communication, and navigation equipment |
| 13 | Other equipment | GPS, Echo Sounder, Heading and Speed Indicators, Wind Measurement, Life - saving and fire-fighting equipment, etc. as per applicable class rules |
| 14 | Gross Tonnage | As per class approved design |

2. The three vessels are expected to include green solutions that can deliver substantial emission reductions, when compared to existing ships plying the Guwahati waters (see section 5 for more information on existing vessels).

3. The AIWTDS is following a technology-neutral approach. As such, the desired emission reduction maybe achieved by the following or a hybrid/combination of some of these options:

    - **Renewable energy/electricity:** solar, wind, grid electricity
    - **Alternative fuels:**biodiesel, CNG, methanol
    - **Alternative energy carriers:**battery
    - **Other technical and operational solutions**

4. Interested parties may offer any other feasible option that can result in substantial emissions savings.

5. Availability of suitable fuel and supporting infrastructure in the Assam region for suggested innovation willbe a critical factor in choosing the final solution at the tendering stage.Therefore, should the proposed green solution require any additional infrastructure (e.g. infrastructure at berth), those infrastructure requirements are to be set out in the EoI.

6. In case CNG and methanol engines are proposed, they shall have the flexibility of fuel switch over to the bio-CNG and bio-methanol in the future and as and when low carbon alternative fuels are available.

7. The cost of the various fuel strategies isto be modeled for lifetime of the vessel, i.e., assumed to be 10 years. The integration of the fuel system in vessel design shall take into consideration the safety and environmental protection challenges.

8. Design of the vessel shall have minimum air resistance, minimum hull resistance, minimum wave losses, minimum viscous resistance, minimum propeller losses (axial, rotational & frictional), minimum rudder losses, minimum deadweight, minimum energy consumption at the rated speed and optimized to achieve most efficient performance for operation in river Brahmaputra throughout the year (in particular, during the monsoon season when river water velocities are high). Hull optimization with respect to the Brahmaputra River characteristics to be carried out for energy efficiency purposes. Hull to be of lightweight material to reduce the deadweight.

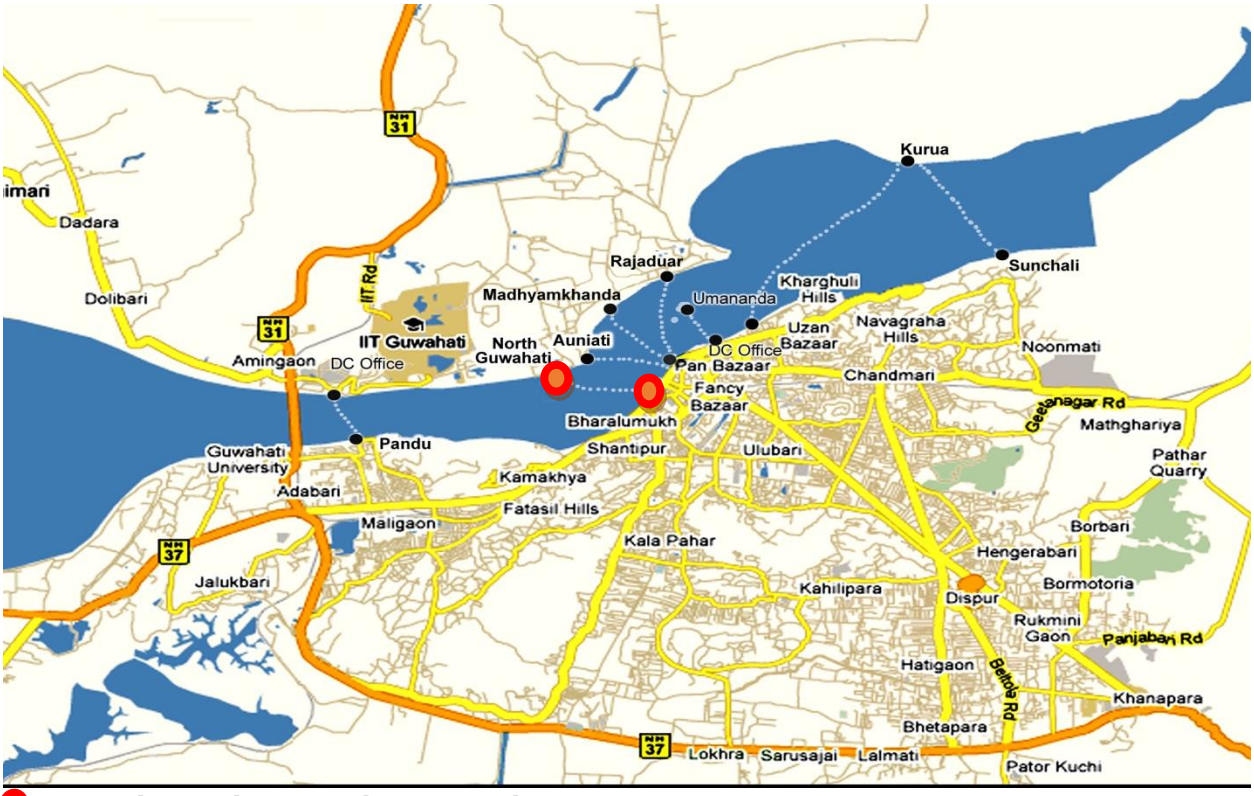
9. Design of the vessel shall consider usage of best available technology to ensure highest efficiency for performance of all the equipment, minimum usage of auxiliary power (e.g. LED lighting with longer life span), ease of operation taking into consideration the competency of the operating crew, minimum maintenance, and operational expenses.

10. **Interested parties are advised to undertake a thorough due diligence while offering any technological solution for greener vessels from the point of operational sustainability, fuel availability, river condition etc. at the operational areas of Assam.**

## 3. Operating conditions on the River Brahmaputra in the Guwahati region

| | | |
|---|---|---|
| Total length of the river Brahmaputra | | 2800 km |
| Declaration of NW-2(Sadia- Dhubri) | | 891 km |
| No of tributaries | | 41 |
| Velocity variation | 0.35m/sec | 5.80 m/sec |
| Water level variation | | 9.04 m (approximately) |
| Length of the river Barak | | 152 km |
| **VELOCITY VARIATION IN THE RIVER BRAHMAPUTRA** | | |
| **Period of Month** | **Max Velocity (m/s)** | **Min Velocity (m/s)** |
| January to April | 0.70 | 0.35 |
| May to July | 3.50 | 0.61 |
| August to September | 5.80 | 1.30 |
| October to December | 1.40 | 0.40 |
| **LEAST AVAILABLE DEPTH AT BANK FOR RIVER BRAHMAPUTRA** ( minimum navigational depth in longitudinal route) | | |
| **From** | **to** | **Depth (m)** |
| Bangladesh Border | Tezpur | 2.00 |
| Tezpur | Neamati | 1.30 |
| Neamati | Dibrugrah | 1.10 |
| Dibrugrah | Sadia | 0.80 |

## 4. Map of the Guwahati region andexisting terminals




- North Guwahati-Guwahati Ferry Ghat

## ADDITIONAL INFORMATION

### Existing terminals

Existing terminals of temporary nature is present in both North Guwahati and South Guwahati locations. Ferries are currently plying from these locations. Under the Project, Permanent terminal and riverine structure is being constructed at Guwahati Gateway Ghat. Construction will be completed within 24 months. Another modular terminal at North Guwahati will be constructed under the Project which is currently at DPR stage. Power supply available in both the locations.

## 5. Current vessels plying the Guwahati to North Guwahati ferry route

### Current steel catamaran vessels

- Design of the vesselswas approved by Indian Register of Shipping (IRS)
- Vessels were constructed under supervision of IRS
- Capacity: 100 Passengers and 50 Motorcycles

- Size - Length: 31.20 m, Breadth: 10.20 m
- Draft: Low draft vessel, Draft is 0.75 m | Gross Tonnage: 139 T
- Power: 180 HP x 2 – 6 cylinder engine | Speed: 10 knots forward speed
- Wheelhouse: Fitted with control and monitoring, communication and navigation equipment.
- Equipped with: GPS, Echo Sounder, Heading and Speed Indicators, Wind Measurement, Life-saving and fire-fighting equipment.

**Fuel consumption on Guwahati – North Guwahati ferry route**

| Name of vessel | Main Engine Consumption (l/hr) | Generator Set Consumption (l/hr) | Approx. monthly requirement of diesel (in litres) | Total no. of round trips per day |
|---|---|---|---|---|
| MV Puthimari (150 pax; 55 bikes) | 32 | 3 | 8000 | 14 |
| MV Jacob (Ro-pax) (140 pax; 100 bikes) | 44 | 6 | 9000 | 14 |
| MV Kameng (100 pax; 50 bikes) | 32 | 6 | 4560 | 16 |

**Current Ferry schedule of Guwahati – North Guwahati ferry route**

The ferry route is 5 km long and on average one crossing takes 15 minutes. Voyage duration is much longer during monsoon season when current velocities are high.Currently, different vessels are deployed at different times of the day, depending on traffic volumes.

| Name of vessel | Departure time: Guwahati-North Guwahati | Departure time: North Guwahati-Guwahati |
|---|---|---|
| MV Puthimari | 06:45 | 07:05 |
| MV Puthimari | 07:30 | 08:00 |
| MV Kameng | 08:30 | 09:00 |
| MV Jacob (Ro-pax) | 09:15 | 09:45 |
| MV Puthimari | 09:00 | 09:30 |
| MV Kameng | 09:35 | 10:15 |
| MV Jacob (Ro-pax) | 10:15 | 10:45 |
| MV Kameng | 10:55 | 11:25 |
| MV Kameng | 12:00 | 12:30 |

| | | |
|---|---|---|
| MV Puthimari | 1:00 | 1:30 |
| MV Puthimari | 13:00 | 13:30 |
| MV Puthimari | 14:30 | 15:00 |
| MV Puthimari | 15:30 | 16:00 |
| MV Jacob (Ro-pax) | 16:30 | 16:45 |
| MV Kameng | 17:00 | 17:25 |
| MV Puthimari | 17:30 | 18:00 |
| MV Jacob (Ro-pax) | 17:45 | 18:00 |
| MV Kameng | 18:00 | 18:30 |
| MV Jacob (Ro-pax) | 18:40 | 19:00 |
| MV Kameng | 19:00 | 19:20 |
| MV Kameng | 19:45 | 20:05 |
| MV Jacob (Ro-pax) | 20:30 | 20:45 |
| MV Jacob (Ro-pax) | 21:30 | 21:45 |
| MV Kameng | 23:00 | 23:15 |

**Passenger traffic data for Guwahati– North Guwahati ferry route (16th Aug-23rd Aug 2022)**

| Ferry Route | Passengers |
|---|---|
| Guwahati – North Guwahati (South to North) | 11627 |
| North Guwahati – Guwahati (North to South) | 12111 |