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LIST OF PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

1. **Baruah, P.,** & Sarma, T. R. (2024). Optimizing dry port locations using hub and spoke network design-A conceptual framework for inland water ports in Assam. *Educational Administration: Theory and Practice*, 30(1), 3510-3517. https://doi.org/10.53555/kuey.v30i1.7317 .
2. **Baruah, P.** & Sarma, T.R. (2019). Identifying AHP Decision Criteria for inland water port ranking in North East India. *Proceedings of the 7th PAN IIM World Management Conference (IIM Rohtak)*
3. **Baruah, P.** & Sarma, T.R. (2019). Identifying components of shipping freight derivatives through systematic literature review and a brief highlight of key shipping exchanges and Indices. Proceedings of the 4th National Conference on Contemporary Issues in Commerce and Management, 382-395.

Presentations

1. **Baruah, P.** & Sarma, T.R. (2020, February 21-22*). Hub-and-spoke network design considerations for optimising dry port inland water port river infrastructure in North East India*. 4th Doctoral Consortium, Shailesh J. Mehta School of Management, IIT Bombay, India.
2. **Baruah, P.** & Sarma, T.R. (2019, December 19-21). *A conceptual framework for using location allocation model to optimize the inland water port- dry port river logistics infrastructure system.* XXIII Annual International Conference of the Society of Operations Management, Department of Industrial and Management Engineering IIT Kanpur, India.

APPENDIX A1

TEZPUR UNIVERSITY

School of Management Sciences

Department of Business Administration

Analytic Hierarchy Process (AHP) Questionnaire for ranking inland water ports along the major waterways of Assam- Brahmaputra and Barak

Sir/Madam,

This questionnaire forms an integral part of Ph.D. research at Department of Business Administration, Tezpur University, Assam conducted by Prayash Baruah under the supervision of Dr. Tridib R. Sarma, Associate Professor, Department of Business Administration, Tezpur University.

The information shared by you shall be treated as confidential and would not be directly shared with anyone. The results shall be used for research purpose as part of academic requirements.If you need ant clarification and would like to have a copy of the overall results, please feel free to email at prayashb@tezu.ernet.in/+91 7680980815.

Thank you for your time.

Prayash Baruah

SECTION A

Respondent Category:	Government	☐	Shipping Company	☐	Academia ☐
Educational Level:	Bachelor's	☐	Master's	☐	PhD ☐
Work Experience:	5-10 yrs.	☐	11-15 yrs.	☐	Above 15 yrs. ☐
Designation level:	Managerial	☐	Staff	☐	

Respondent's Name *(optional)* _____

Mobile No. _____

APPENDIX A1

SECTION B

SCALE DESCRIPTION

9-point scale for pairwise comparison in AHP

Intensity of Importance	**Definition**	**Explanation**
1	Equal Importance	Two criteria/ sub criteria contribute equally to the objective
3	Moderate Importance	Judgement slightly favors one criterion/sub criterion over another
5	Strong Importance	Judgementstrongly favors one criterion/sub criterion over another
7	Very Strong Importance	One Criterion/ sub criterion is favoredstrongly over the another
9	Absolute/Extreme Importance	There is evidence affirming that one criterion / sub criterion is favored overanother
2,4,6,8	Intermediate values between above scalevalues	Absolute Judgement cannot be givenandacompromise is required
Reciprocals of the above	If element i has one of the none zeronumbers assignment when comparedwith activity j. j has the reciprocalvalue when compared to i	A reasonable assumption

Source: Saaty (1980)

APPENDIX A1

SECTION C

Evaluation of Main Criteria

Port Geographical Location	PG
Port Physical Conditions	PP
Port Infrastructure	PI
Port Costs	PC
Port Efficiency and Performance	EP

1	**PG**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PP**
2	**PG**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PI**
3	**PG**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**
4	**PG**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**EP**
5	**PP**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PI**
6	**PP**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**
7	**PP**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**EP**
8	**PI**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**
9	**PI**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**EP**
10	**PC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**EP**

Evaluation of Sub Criteria

Proximity to import/export	IE
Closeness to highways/railroads	HR
Proximity to dry ports	DP
Proximity to carriers	PC

1	**IE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**HR**
2	**IE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**DP**
3	**IE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**
4	**HR**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**DP**
5	**HR**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**
6	**DP**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PC**

APPENDIX A1

Evaluation of Sub Criteria

Water Depth	WD
Operating Weather Conditions	WC
Port Total Area	TA

1	**WD**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**WC**
2	**WD**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TA**
3	**WC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TA**

Evaluation of Sub Criteria

Terminal Size	TS
Port Equipment	PE
Port Docking Size	PD
Port Management IT Systems	PM
Safety Mechanisms	SM

1	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PE**
2	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PD**
3	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PM**
4	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**SM**
5	**PE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PD**
6	**PE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PM**
7	**PE**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**SM**
8	**PD**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**PM**
9	**PD**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**SM**
10	**PM**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**SM**

APPENDIX A1

Evaluation of Sub Criteria

Docking Cost	DC
Hauling Cost	HC
Loading/Unloading Cost	LU
Applicable Tax Structure	TX

1	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**HC**
2	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**LU**
3	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**
4	**LU**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**LU**
5	**LU**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**
6	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**

Evaluation of Sub Criteria

Loading/Unloading efficiency	LE
Barge waiting time	BW
Barge Turnaround time	TT
Customs Efficiency	CE

1	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**HC**
2	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**LU**
3	**DC**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**
4	**LU**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**LU**
5	**LU**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**
6	**TS**	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**TS**

APPENDIX A2

DATA COLLECTION ACTIVITIES

A summary of data collection activities has been provided below in a chronological manner.

Date	Particulars
03/01/2022-07/01/2022	Discussion with Sri. A. Selvakumar (Director-IWAI) on data collection plan and data collection authorization with IWAI Regional office at Pandu Port complex.
11/04/2022-12/04/2022	Discussion with policymakers, port operators, shippers and academicians at Waterways Conclave 2022 held at Dibrugarh (Assam)
06/10/2022-08/10/2022	Discussion with Sri. Bikramaditya Choudhury (Joint Director-IWT) at Inland Water Transport Directorate (Guwahati) on scope of research work and authorization for data collection from IWT managed ports.
02/01/2023-06/01/2023 (Brahmaputra)	Pandu Port Jetty visits and data collection accomplished from IWAI managerial staff, port operations staff and shipper representatives
09/01/2023-10/01/2023 (Brahmaputra)	Port visit for IWAI port equipment discussion and data collection with Mr. Khalid Saifullah (Technical Assistant- IWAI Regional Office) at Pandu Port
11/01/2023-13/01/2023	Data collection and consultation with Sri. Jayanta Gogoi (Executive Engineer-IWT) and IWT staff at Inland Water Transport Directorate (Guwahati). Data collection accomplished from managerial staff of shipping companies on contract with IWT
25/03/2023-26/03/2023 (Brahmaputra)	Port visit and data collection at Nematighat involving discussions with IWT tactical staff and service providers. Sri. Munin Buragohain is the incharge for IWT Jorhat Subdivision.
07/04/2023 (Brahmaputra)	Inland water port visit and data collection at Biswanath Ghat
03/07/2023-07/07/2023 (Brahmaputra)	Port visit and data collection at Dibrugarh Bogibeel from IWAI and IWT. The IWAI office is led by Sri. Sandeep Kumar (Junior Hydrographic Surveyor-IWAI) while Sri. Dijendra Nath

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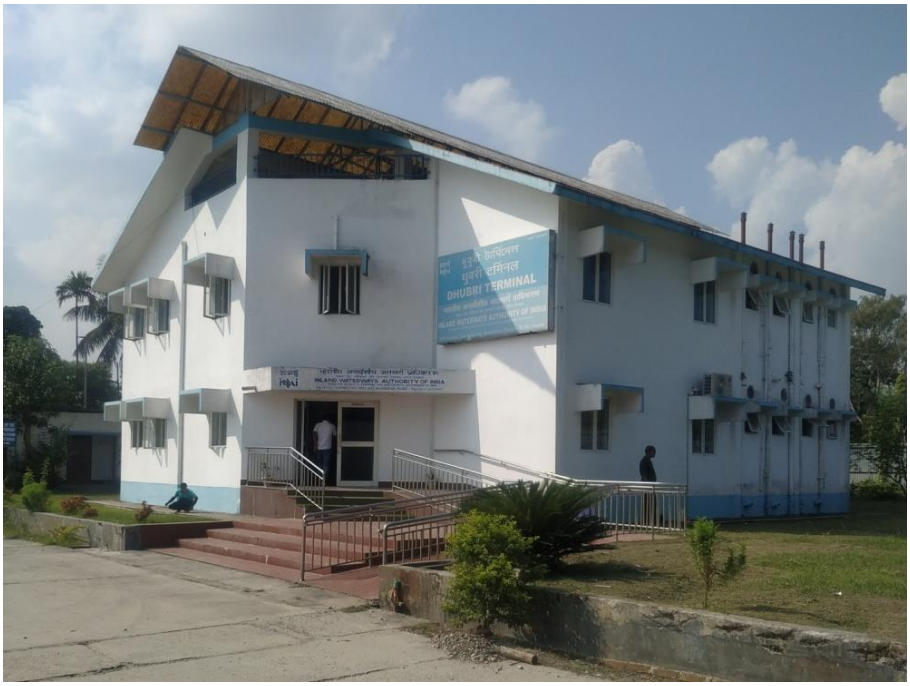
16/07/2023-18/07/2023 (Brahmaputra)	Data collection and discussion from IWAI staff in coordination with Mr. Khalid Saifullah at Pandu IWAI Regional Office.
13/10/2023-14/10/2023 (Barak)	Port visit and Data Collection at Badarpur IWAI inland water port and consultation with Sri. Abhinay Verma (Junior Hydrographic Surveyor-IWAI) and Team
15/10/2023 (Barak)	Data collection at Karimganj port under the supervision of Sri. Amit Kumar Das (Assistant Director- IWAI), port staff and shipping agents
16/10/2023-17/10/2023 (Barak)	Inland water port visit and data collection at the IWT Divisional Office at Silchar in consultation with Sri. Rajashree Borah (Executive Engineer-IWT), office staff Mr. Kishore and operational staff at the jetties
18/10/2023-19/10/2023 (Brahmaputra)	Inland water port visit and data collection at the IWAI Dhubri Port in consultation with Sri. Dharam Narh Prasad (Junior Hydrographic Surveyor-IWAI) and operational staff at the port. Data collection from the shipping companies.
20/10/2023 (Brahmaputra)	Inland water port visit and data collection at the Jogighopa in consultation with Sri. Dharam Narh Prasad
09/11/2023 (Brahmaputra)	Port visit, Data Collection and interaction with the stationed IWAI staff at Silghat inland water jetty
11/01/2024-13/01/2024	Interaction with researchers at IIT Delhi Department of Management Studies and HydroSense Lab

APPENDIX B

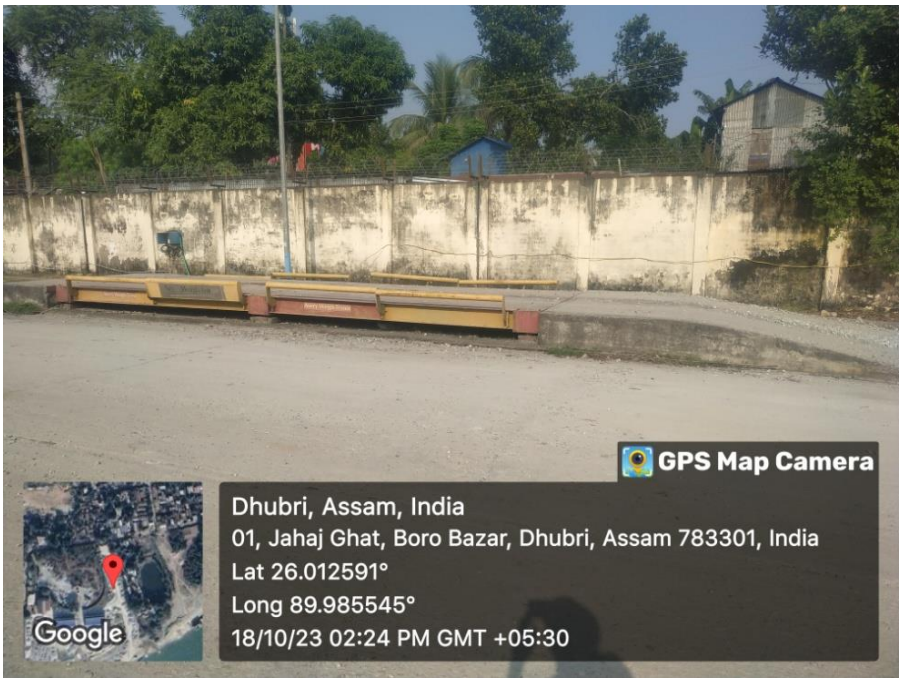
FIELD VISIT PHOTOGRAPHS

Plate 1: Port Terminal office at Dhubri Port



Source: Researcher's own click

Plate 2: Weighbridge at Dhubri Port



Source: Researcher's own click

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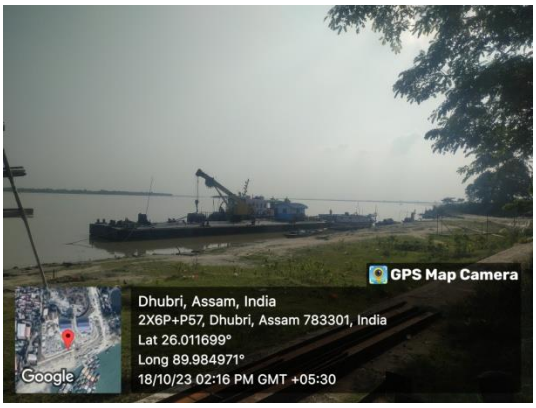
Plate 3: Shed for Cargo at Dhubri Port

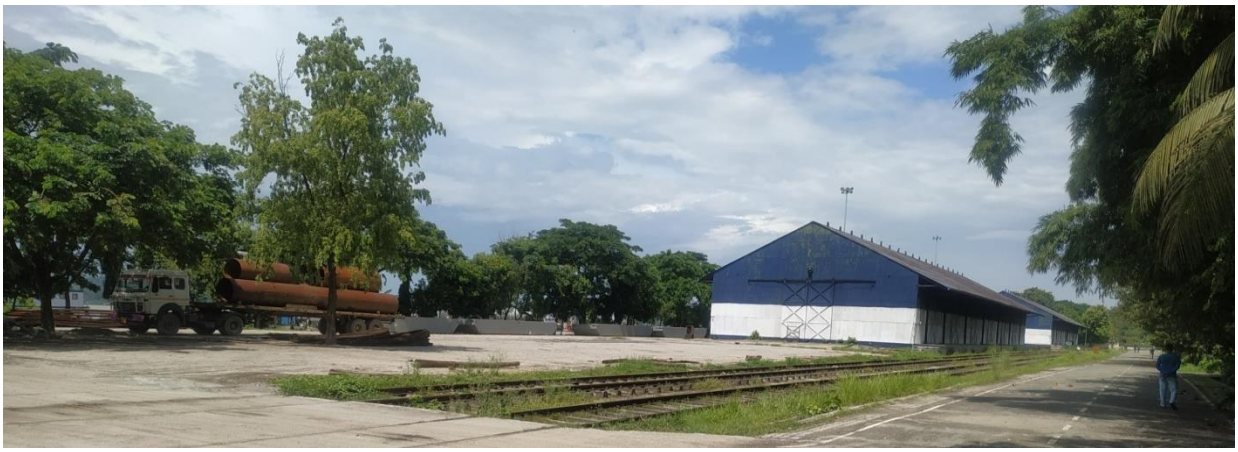
Source: Researcher's own click

Plate 4: Floating Terminal at Dhubri Port



Source: Researcher's own click

Plate 5: Sheds and railway track at Pandu Port

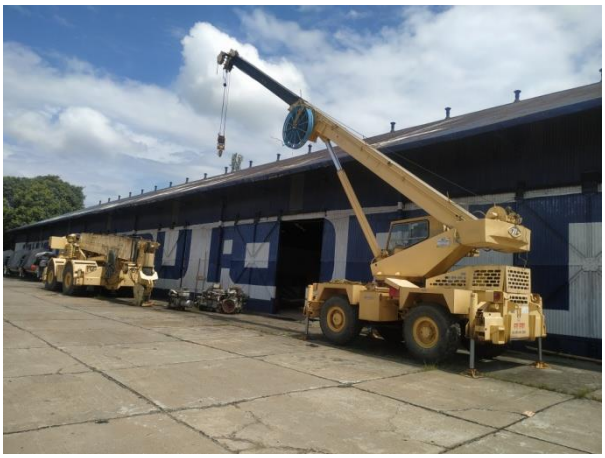


Source: Researcher's own click

Plate 6: High level jetty at Pandu Port

Source: Researcher's own click

Plate 7: Heavy duty crane at Pandu port



Source: Researcher's own click

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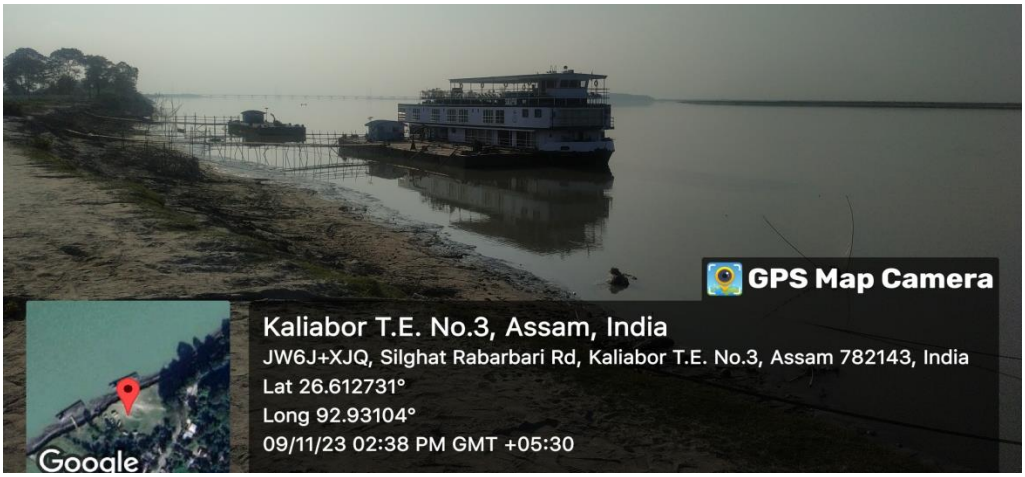
Plate 8: Over dimensional cargo (ODC) at Pandu port

Source: Researcher's own click

Plate 9: Floating Terminal at Silghat port



Source: Researcher's own click

Plate 10: Ferry Services docking at Silghat port

Source: Researcher's own click

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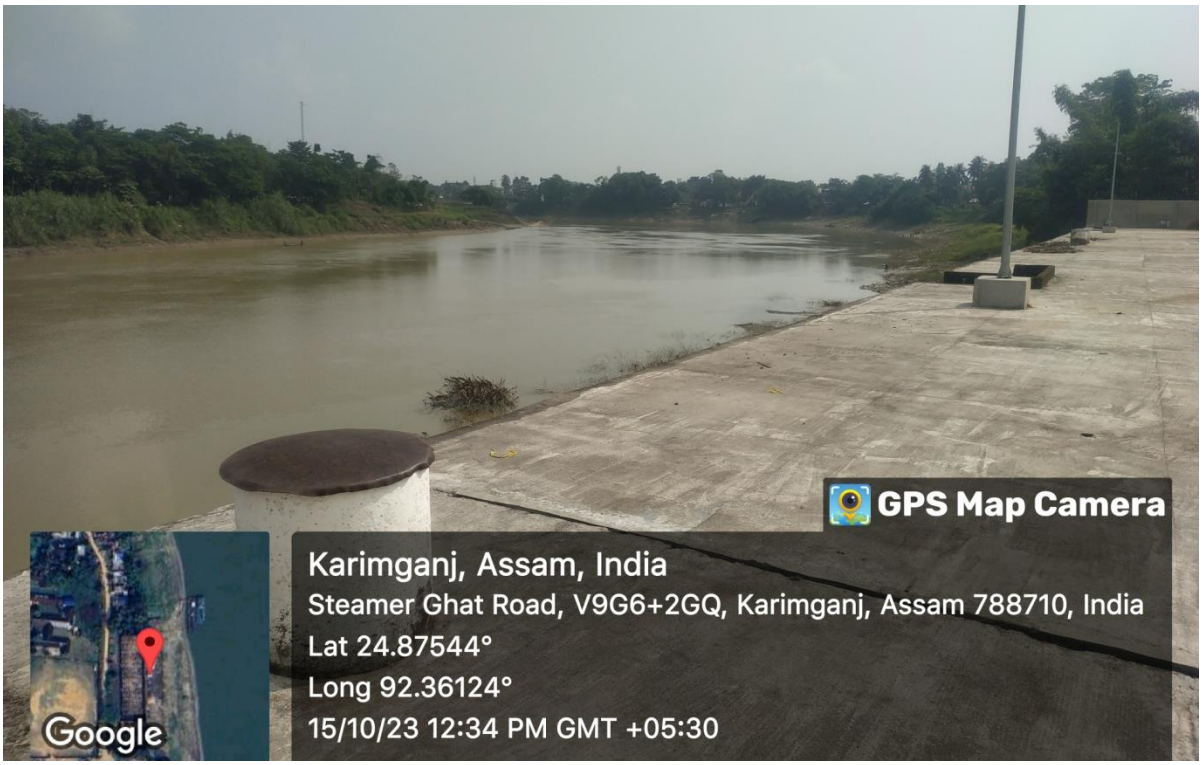
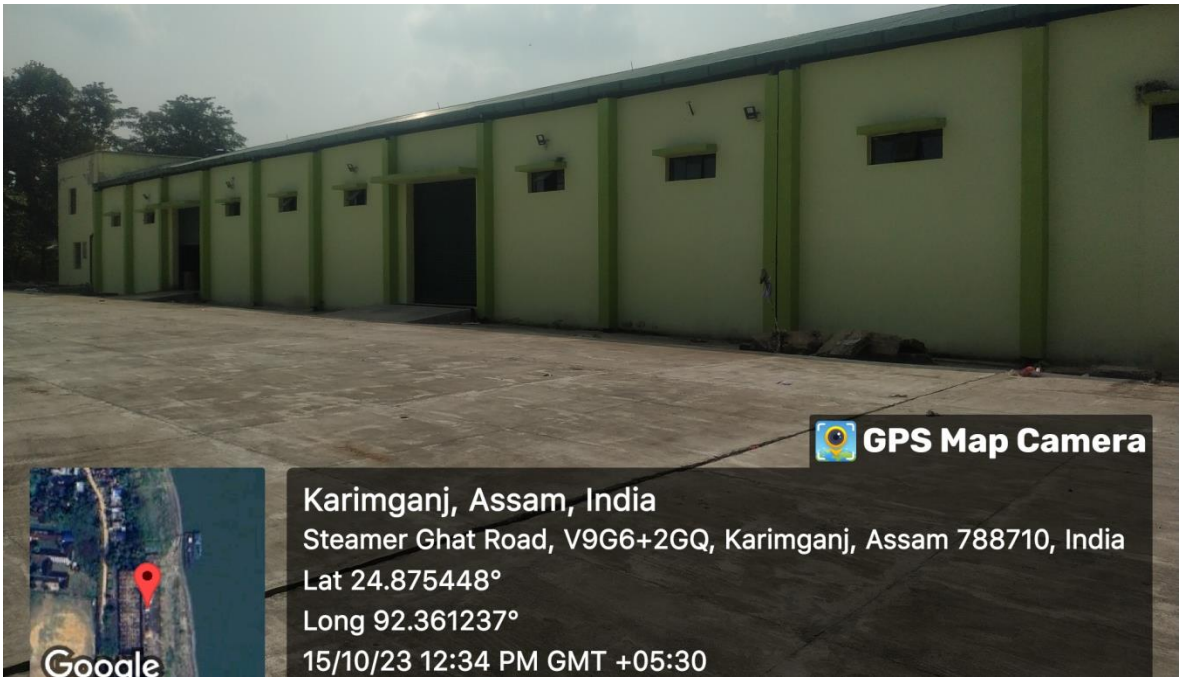
Plate 11: RCC Jetty at Karimganj port



Source: Researcher's own click

Plate 12: Covered Shed at Karimganj port



Source: Researcher's own click

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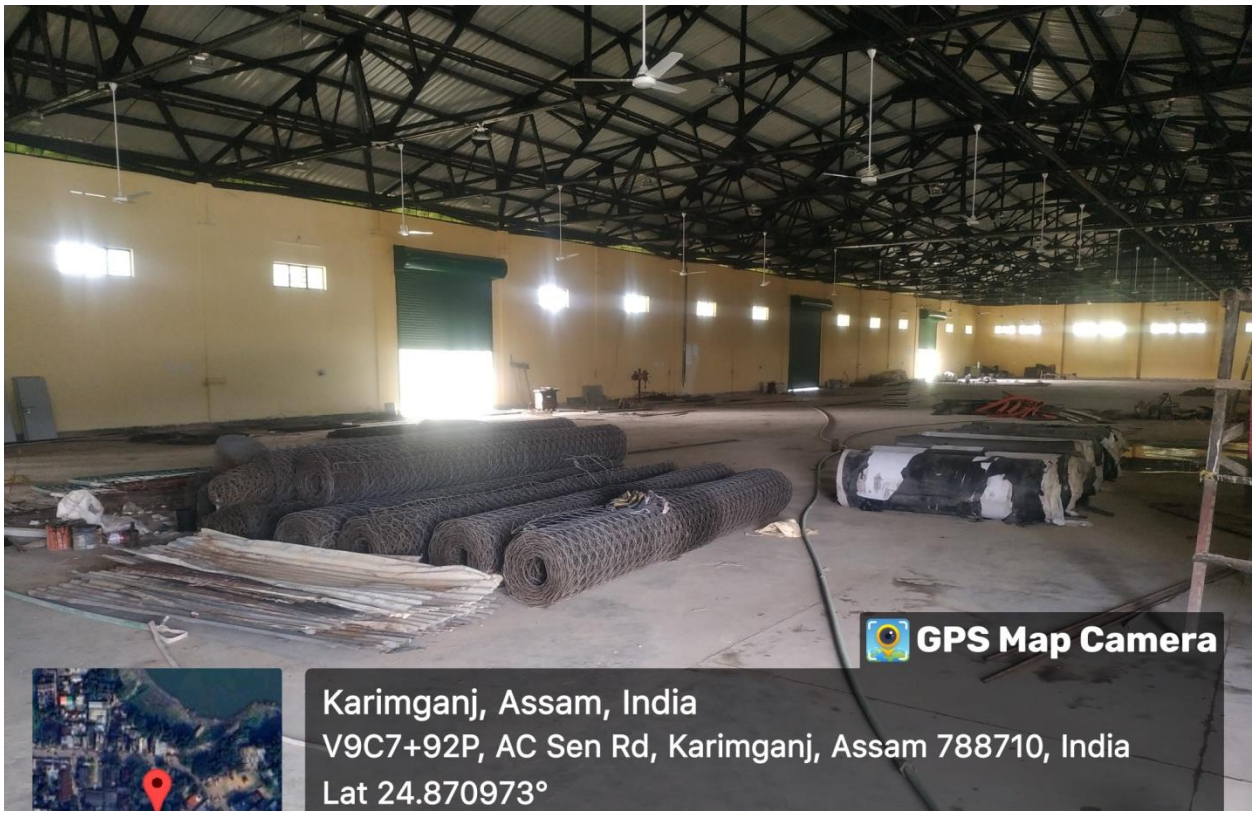
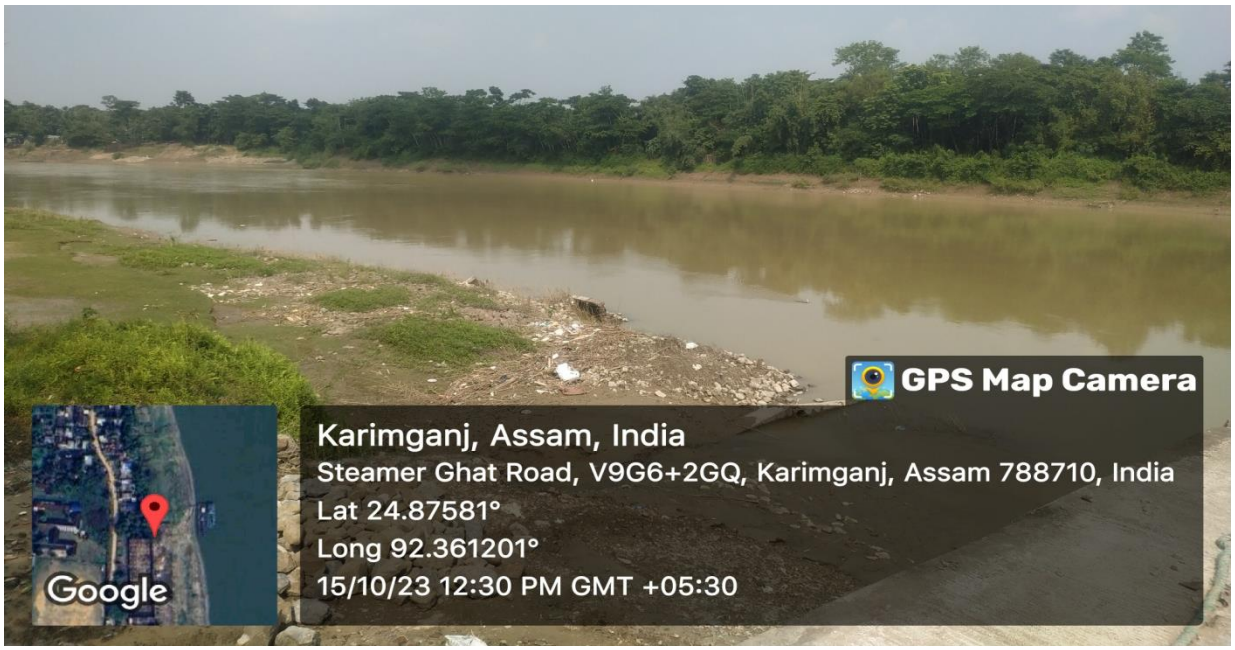
Plate 13: Cargo storage at Karimganj port



Source: Researcher's own click

Plate 14: View of Bangladesh (opposite bank) from Karimganj port



Source: Researcher's own click

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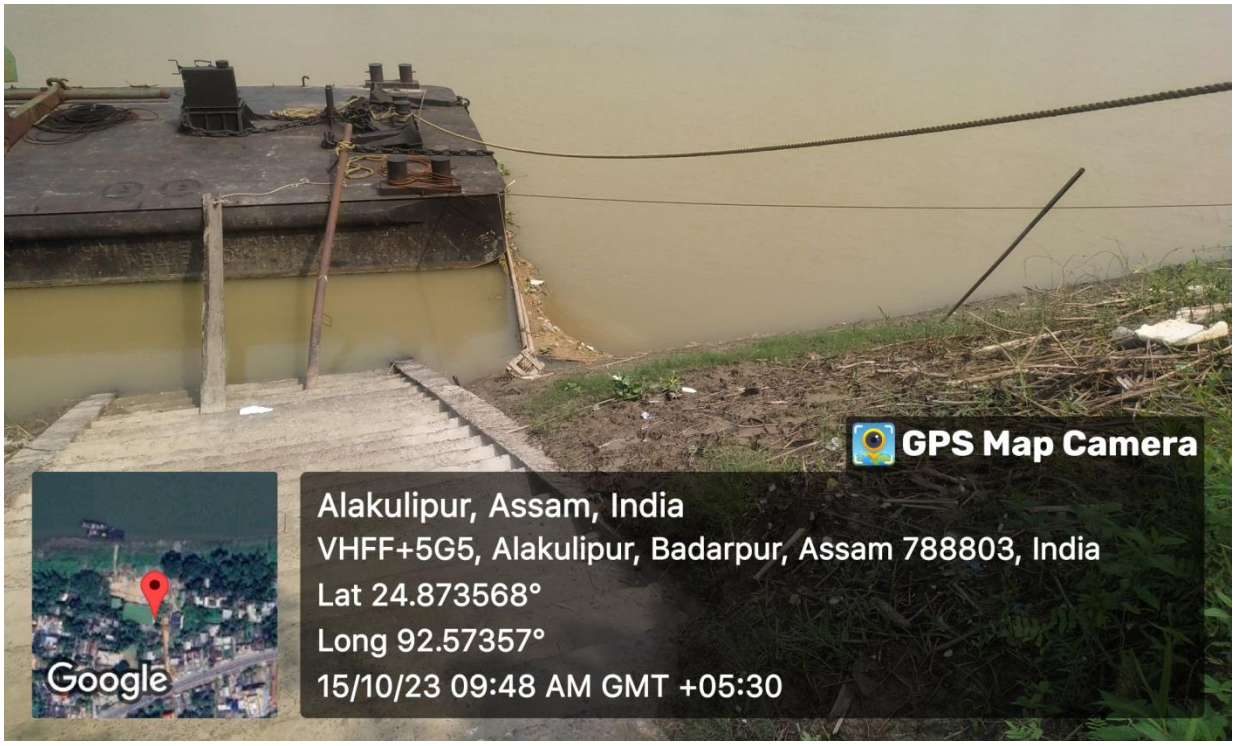
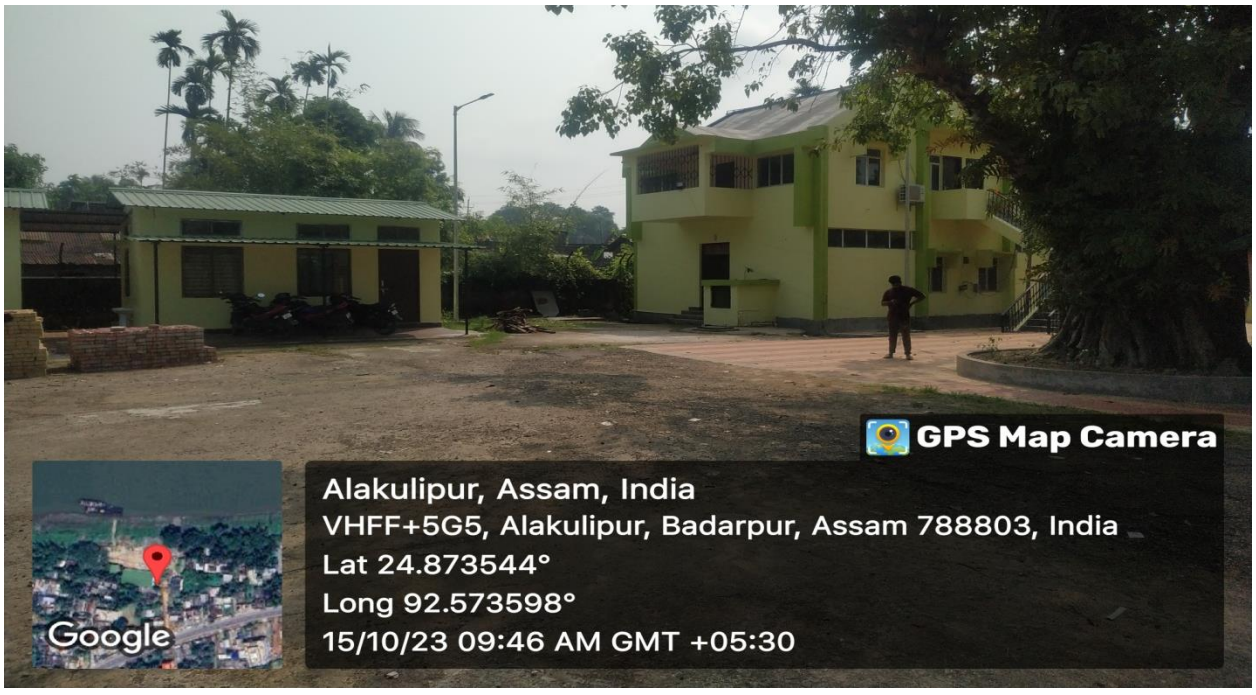
Plate 15: RCC Jetty at Badarpur port



Source: Researcher's own click

Plate 16: IWAI Terminal Office at Badarpur port



Source: Researcher's own click

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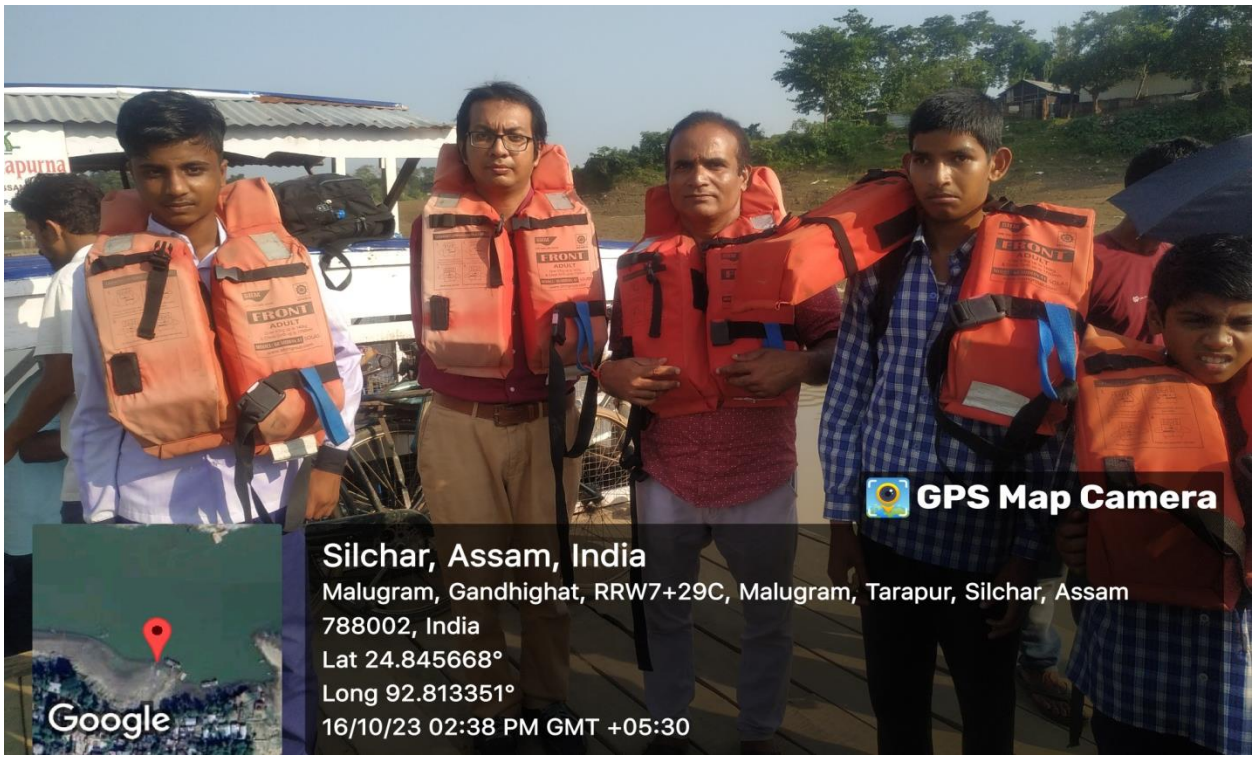
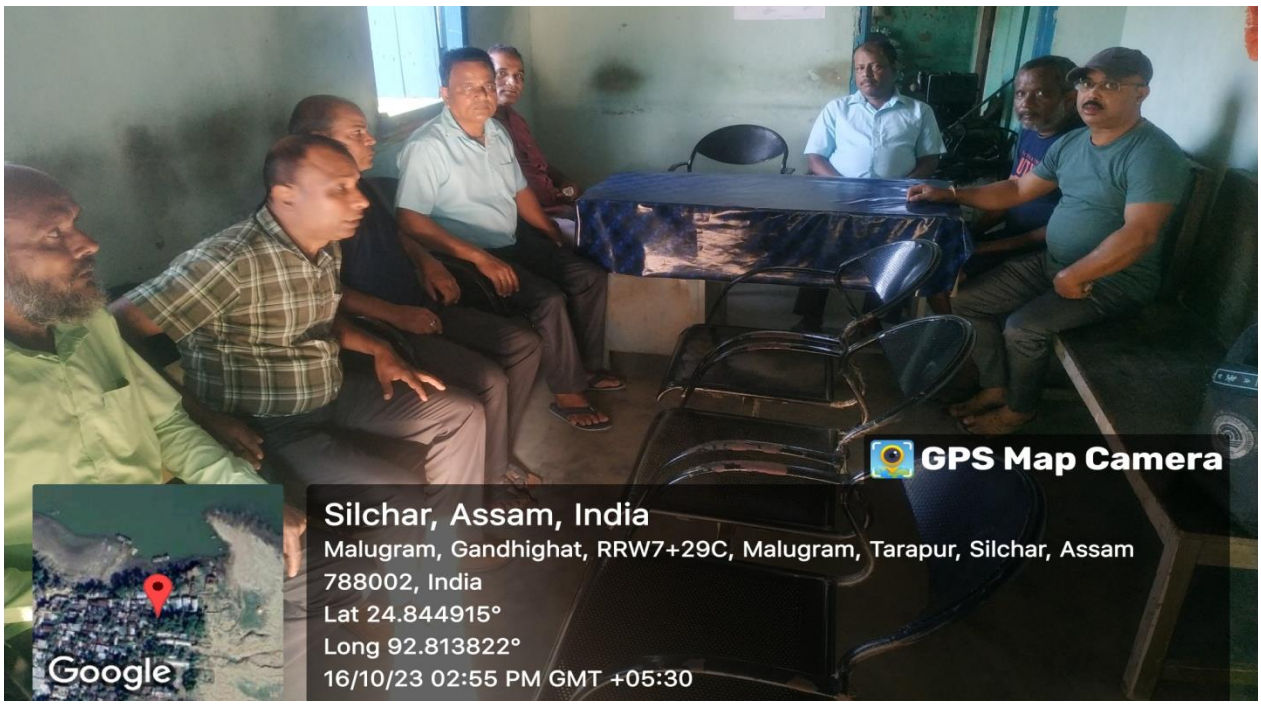
Plate 17: Ferry services at Silchar IWT port



Source: Researcher's own click

Plate 18: Interaction with IWT officials at Silchar port



Source: Researcher's own click