

North Eastern Development and Finance Corporation
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Assam

Final Report

Benchmark Study for Identifying the Baseline Data for Socio- economic Benefit Indicators for the Assam Gas Cracker Project

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EXECUTIVE SUMMARY

TITLE OF THE STUDY

BENCHMARK STUDY FOR IDENTIFYING THE BASELINE DATA FOR SOCIO ECONOMIC BENEFIT INDICATORS FOR THE ASSAM GAS CRACKER PROJECT

Introduction

The Assam Gas Cracker Project is being implemented by M/s. Brahmaputra Cracker and Polymer Limited (BCPL), which is a joint venture company of GAIL, OIL, NRL and AIDC (Government of Assam). This integrated petrochemical project in Assam is expected to produce 220,000 tons of polyethylene, 60,000 tons of polypropylene, 55,000 tons of raw pyrolysis gasoline and 12,500 tons of fuel oil per year. The site selected for Assam Gas Cracker Project is at Lepetkata, 15 km from Dibrugarh town on NH-37 along river Sessa in Assam.

The total land earmarked for the project is around 1100 Acres and the land acquisition process has already been completed with the help of State government. A total of 66 families have been rehabilitated with compensation provided for crops, houses and infrastructure.

North Eastern Development Finance Corporation Ltd. (NEDFi), has engaged Mott MacDonald for undertaking the *Benchmark Study for Identifying the Baseline Data for Socio-economic Benefit Indicators for the Assam Gas Cracker Project*.

The main **Objectives** of the study are:

- To identify various socio-economic indicators and determine the baseline data for the same on the basis of in-situ investigations.
- To evolve a methodology for continuous evaluation and monitoring of the identified socio-economic indicators.

The overall **Approach** was multi-disciplinary and diagnostic, involving both primary and secondary sources wherever applicable. On the basis of the Terms of Reference and discussions held with the Client and our understanding, a broad category of benefit indicators and their sub-categories were listed and presented to NEDFi in the form of an Inception Report. These indicators have been broadly categorised into:

- Economic/Development Indicators
- Sector-Specific (Plastic) Indicators
- Infrastructure Indicators
- Social Indicators

These indicators have been further subcategorised into critical and desirable indicators for prioritisation of the assessment of impacts. During the course of the study, specifically after the primary and secondary data collection was completed, the team shortlisted, from these indicators, a select set of indicators under each of the above broad heads depending on impact of investments as well as data availability from published sources. Data available from published sources is required as in subsequent years, the data needs to be collected from these sources for continuous monitoring.

The baseline data have been collected mainly from published sources. The data have been collected both for Assam and the other North-Eastern states, and the PIA.

A monitoring framework for assessment and evaluation of the identified socio-economic indicators has been developed. The framework provides the baseline data, data source, year in which the data should be tracked as well as the impact whether positive or negative.

Baseline Indicators for Assam

From various parameters of development, *selective indicators* were shortlisted which will have a direct impact (either positive or negative), due to investment in the Assam Gas Cracker Project and its downstream plastic processing.

Economic/Development Indicators

Following are the Economic/Development Indicators which should be monitored periodically:

Table E.1: Economic/Development Indicators for Assam

Indicator	Unit	Base Year	Baseline Data
CRITICAL INDICATORS			
Gross State Domestic Product (1999-2000 prices)	Rs. Crores	2006-07(Q)	49850
GSDP Growth Rate (1999-2000 prices) (Annual)	%	2006-07	7.6
Contribution of Assam GSDP to GDP of India (1999-2000 prices)	%	2006-07	2
GSDP Growth Rate (1999-2000 prices) (4 years)	%	2003-07	6.2
Per Capita Income (1999-2000 prices)	In Rs	2006-07	15623
Per Capita Income Growth Rate (1999-2000 prices) (Annual)	%	2006-07	5.66
Per Capita Income Growth Rate (1999-2000 prices) (4 years)	%	2003-07	4.5
Contribution of Secondary sector to GSDP	%	2006-07	16.75
Contribution of Manufacturing Sector to GSDP	%	2006-07	9.96
Investments in SSI units	Rs. Lakhs	2006-07	79146
Growth of investments in SSI units (4 years)	%	2003-07	27
Compounded Annual Growth of investments in SSI	%	2003-07	27
DESIRABLE INDICATORS			
No. of small scale industrial units	No.	2006-07	27913
Growth of SSI units (4 years)	%	2003-07	8.9
Total Employment in SSI units	No.	2006-07	131099
Growth of employment in SSI units (4 years)	%	2003-07	9
Compounded Annual Growth of Employment in SSI	%	2003-07	9
No. of persons engaged in manufacturing sector	No.	2005	119548
Total employment in public & private sector	No.	2006	1119394
Growth of Employment in public & private sector	%	2003-07	1.5
% Urban Population	%	2001	13

Source:

1. *State Statistical Handbook Assam 2007*
 2. *Annual Survey of Industries 2004-05*
 3. *Economic Survey Assam 2007-08*
- The rest of the data have been derived

Sector Specific Industrial Indicators

The indicators in this category include:

- Per capita plastic consumption/production
- Number of Plastic Manufacturing Units
- Investment and Employment in Plastic Manufacturing Units
- Exports

The per capita plastic consumption data of Assam is not available from any published sources; and hence, this parameter needs to be collated through primary survey from the whole of north east. The following have been identified as indicators for Sector Specific and Industrial Indicators:

Table E.2: Sector Specific Industrial Indicators for Assam

Indicator	Unit	Base Year	Baseline Data
CRITICAL INDICATORS			
Per Capita Plastic Consumption (survey applies to whole of north east)	Kgs	2009	1.15
Per Capita Plastic Production (survey applies to whole of north east)	Kgs	2009	0.87
Number of Factories in Operation Manufacturing of Plastic Products	No.	2004-05	34
Direct Employment in Manufacturing of Plastic Products	No.	2004-05	776
Fixed Capital Investment in Manufacturing of Plastic Products	Rs. Lakhs	2004-05	5671
DESIRABLE INDICATORS			
Export of Plastic Products	Rs. Lakhs	2008-09	Negligible
No. of Cane Bamboo & Jute Industries	No	2005-06	772
Employment in Cane and Bamboo Industries	No	2005-06	4991
Source :			
1. "Study & prepare the Action Plan for promoting downstream plastic processing & allied industries from the proposed Assam Gas Cracker project, Mott MacDonald 2009"			
2. <i>Annual Survey of Industries</i>			
3. <i>Directorate General of Commercial Intelligence and Statistics</i>			
4. <i>Statistical Handbooks of Assam (2005, 2006 & 2007)</i>			

In this section we have also included the details of local industries like cane and bamboo which would have an impact with the onset of plastic production.

Infrastructure Indicators

Physical infrastructure refers to transportation, communication network, power & water supply systems and the recreational facilities. These facilities are essential for the socio-economic development of a region and also for ensuring good quality of life of the inhabitants. Indicators have been strategically identified to suitably reflect the existing level of infrastructural facilities and to

monitor the developments over a period of time. Under the Infrastructure Indicators, following are the selected indicators which should be monitored periodically:

Table : Infrastructure Indicators for Assam

Indicator	Unit	Base Year	Baseline Data
CRITICAL INDICATORS			
Length of NHs	Km	2008-09	2836
Length of SHs	Km	2006-07	2819
Total Surfaced Road Length	Km	2006-07	12211
Surfaced Road Length as % of Total Road Length	%	2006-07	33
Length of Broad Gauge Railway	Km	2006-07	1127
Broad Gauge Railway Length as % of Total Railway Length	%	2006-07	49
Air Passenger Traffic Load (International & Domestic at Guwahati Airport)	No.	2008	1032413
Air Freight Traffic Load (inward & outward)	MT	2008	1229
Passengers carried by Inland Water transport	Lakhs	2006-07	246
Goods carried by Inland Water transport	MT	2006-07	740649
Installed Capacity of Power Generating Plants	MW	2006-07	416
Gross Power Generation	MU	2006-07	868
Per Capita Power Availability	kWh	2006-07	116
DESIRABLE INDICATORS			
No. of Civil Airports	No.	2006-07	5
Number of Post Offices	No.	2005	4006
Number of Post Offices per 1000 population	No.	2005	0.14
Number of Telephone Exchanges	No.	2005	594
Number of Telephone Exchanges per 1000 population	No.	2005	0.02
Number of BSNL Landline Connections	No.	2007	460344
Number of BSNL Landline Connections per person	No.	2007	0.02
Number of BSNL WLL Connections	No.	2007	84340
Number of BSNL WLL Connections per person	No.	2007	0.003
Number of BSNL Mobile Connections	No.	2007	600377
Number of BSNL Mobile Connections per person	No.	2007	0.02
Number of BSNL Broadband & Internet Connections	No.	2007	33656
Number of BSNL Broadband & Internet Connections per person	No.	2007	0.001
Wireless Subscribers (Private Operators incl. Vodafone Essar, Bharti Airtel, Reliance, Aircel and Tata Teleservices)	No.	March - 09	4837852

Percentage Households (HHs) having Access to Safe Drinking Water Facilities	%	2001	58.8
No. of Establishments in Hotels and Restaurants	No.	2005	39365
Total no of Indian & Foreign Tourists staying in Tourist Lodges of Directorate and other accommodations	No.	2006-07	3493527
<i>Sources:</i>			
1. <i>Economic Census of India 2005</i>			
2. <i>Economic Survey of Assam 07-08</i>			
3. <i>Airports Authority of India website</i>			
4. <i>Statistical Handbook of Assam 07</i>			
5. <i>NHAI</i>			
6. <i>TRAI</i>			
7. <i>Census of India 2001</i>			

Social Indicators

The Social Indicators which are likely to be impacted include healthcare infrastructure, educational facilities, housing & poverty, agriculture, forests & area under cultivation. Indicators have been strategically identified to suitably reflect the existing level of social infrastructural facilities and to monitor the developments over a period of time. Under the Social Indicators, following are the selected indicators which should be monitored periodically:

Table : Social Indicators for Assam

Indicator	Unit	Base Year	Baseline Data
CRITICAL INDICATORS			
Number of Establishments in Health/Social Work	No.	2005	15068
Number of Government Hospitals	No.	2006	22
Number of Medical Colleges	No.	2009	3
Total Beds	No.	2006	7534
Beds per Lakh Population	No.	2006	26
No. of Educational Establishments	No.	2005	51942
No. of Universities	No.	2005-06	5
No. of Engineering Institutions	No.	2005-06	3
No. of ITIs	No.	2008-09	29
Total Housing Stock	Lakhs	2001	61.70
Pucca Houses (Roof Material)	%	2001	51.00
Electrified Households	%	2001	24.90
DESIRABLE INDICATORS			
Households availing Banking Services	%	2001	20.50
Households having Bathroom	%	2001	14.40
Households having Drainage Connectivity	%	2001	20.40

Net Sown Area	'000 Ha	2003-04	2753
Total Area under Reserved Forest	'000 Ha	2006	1387
Total Production of Jute	'000' Bales of 180 kgs	2005-06	579
<i>Sources:</i>			
1. <i>Economic Census of India 2005</i>			
2. <i>Economic Survey of Assam 07-08</i>			
3. <i>Census of India 2001</i>			
4. <i>Statistical Handbook of Assam 2007</i>			
5. <i>Medical Council of India</i>			

Baseline Indicators for the North Eastern States

The Assam Gas Cracker Project would have a direct impact on the socio-economic condition of Assam. However, there will be certain direct and indirect impact on the North Eastern region as a whole. Therefore, the identified set of indicators for measuring the socio-economic impact on Assam has also been included while arriving at the indicators for the North Eastern region. These indicators have been broadly categorised into four, as mentioned earlier and similarly a select list of indicators have been identified, which will have a direct impact (either positive or negative) in the entire North Eastern region, due to investment in the Assam Gas Cracker Project and its downstream plastic processing.

Economic/Development Indicators

Under this category, the following selected indicators should be monitored periodically against the baseline values indicated against each indicator:

Table : Economic/Development Indicators for North Eastern States

Indicator	Unit	Assam	Arunachal Pradesh	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	NE Region
		2006-07	2005-06	2006-07	2006-07	2006-07	2004-05	2005-06	2006-07
CRITICAL INDICATORS									
Gross State Domestic Product (1999-2000 prices)	Rs. '000 Crores	49.9	2.7	5.5	5.4	2.4	5.2	8.3	79.38
GSDP Growth Rate(1999-2000 prices) (Annual)	%	7.60	4.83	11.10	5.68	7.57	6.65	8.31	6
GSDP Growth Rate(1999-2000 prices) (4 Years)	% 2003-07	6.2	8.2	15.3	5.8	6.3	6.2	7.9	7.0
Contribution of GSDP to India GDP	%	1.74	0.09	0.19	0.19	0.08	0.18	0.29	2.77
Per Capita Income (1999-2000 prices)	Rs. '000	15.6	18.4	19.6	18.9	20.6	18.1	22.9	18.3

Growth in Per Capita Income(1999-2000 prices) (Annual)	%	5.66	3.88	9.33	3.67	4.71	1.05	7.09	3.2
Per Capita Income (1999-2000 prices) (4 Years)	% 2003-07	4.5	1.7	13.6	3.5	3.6	0.4	4.6	4.3
Secondary sector contribution to GSDP	%	16.75	28.27	41.80	-	18	14.01	21.05	18
Contribution of Manufacturing Sector to GSDP	%	10	2.53	5.96	-	1.8	1.49	2.11	7
Investments in SSI units	'000 Lakhs	79.2	4.8	4.3	7.9	9.4	26.3	NA	132

DESIRABLE INDICATORS									
Foreign Direct Investment (April 2000 to March 2009)	Rs. Crores	-	-	-	-	-	-	-	229
No. of small scale industrial units	No. in'000	27.9	0.5	10.3 (05-06)	5.6 (05-06)	6.3	0.717 (06-07)	0.2 (06-07)	52
Compounded Annual Growth of small scale industrial units (4 Years)	% 2003-07	8.9	-	0.9	6.2	6.1	7.8	-	6.4
Total Employment in SSI units	No. in'000	131.1	4.6	53.7 (05-06)	31.5 (05-06)	18.4	13.5 (06-07)	-	253
Plant & Machinery investments of SSI units	Rs. '000 Lakhs	79.2	4.8	4.3 (05-06)	7.9 (05-06)	9.4	26.3	-	132
Total employment in manufacturing sector (2005)	No. in'000	119.5	-	1.8	3	-	2.8	15.4	143
Total public sector employment	No. in'000	1119.4 (2006)	-	60.6 (05-06)	72.8 (01-02)	47.7 (2005)	74.3 (2004)	98.3 (01-02)	1473
Urbanisation	%	12.90	20.75	25.11	19.58	49.61	17.74	17.06	15.7
<i>Sources: Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08</i>									

Sector-specific Industrial Indicators

Under the Sector-specific Industrial Indicators, we have considered the following, as mentioned earlier:

- Per capita plastic consumption/production
- Number of Units in the manufacture of plastic products
- Investment and Employment in the manufacture of plastic products
- Local Industries

However, the per capita plastic consumption data for the entire North East Region is not available from published sources; and hence this parameter would have to be continuously collected through primary and secondary surveys. The following have been identified as indicators for Sector Specific and Industrial Indicators for the North Eastern region:

Table : Sector Specific Industrial Indicators for North Eastern States

Indicator	Unit	Assam	Arunachal Pradesh	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total NER
CRITICAL INDICATORS									
Per Capita Plastic Consumption	Kgs	-	-	-	-	-	-	-	1.15
Per Capita Plastic Production	Kgs	-	-	-	-	-	-	-	0.87
Number of Factories in Operation Manufacturing of Plastic Products	No.	34	-	-	-	-	-	6	40
Direct Employment in Manufacturing of Plastic Products	No.	776	-	-	-	-	-	90	866
Fixed Capital Investment in Manufacturing of Plastic Products	Rs. Lakhs	5671	-	-	-	-	-	162	5833
DESIRABLE INDICATORS									
Export of Plastic Products	Rs. Lakhs	Negl	-	-	-	-	-	-	Negl
No. of Cane Bamboo & Jute Industries	No	772	-	-	-	-	-	-	-
Employment in Cane and Bamboo Industries	No	4991	-	-	-	-	-	-	-
<p><i>Source:</i></p> <p>1. Mott MacDonald Report on “Study & prepare the Action Plan for promoting downstream plastic processing & allied industries from the proposed Assam Gas Cracker project” prepared for NEDFi, 2009</p> <p>2. Annual Survey of Industries 2004-053.DGCIS</p> <p>4. State Statistical Handbook Assam 2007</p>									

Infrastructure Indicators

It is expected that with investment in the Cracker project and downstream plastic processing units, there would be positive impact on transportation, power & water supply systems, the communication network as well as recreational/tourism facilities of Assam in particular and the other North Eastern states in general. Under the Infrastructure Indicators, following are the selected indicators which should be monitored periodically:

Table : Infrastructure Indicators for North Eastern States

Indicator	Base Year	Unit	Assam	Arunachal Pradesh	Manipur	Mizoram	Meghalaya	Nagaland	Tripura	NER (Approx Total)
CRITICAL INDICATORS										
Length of National Highways	2008-09	Km	2836	392	959	927	810	494	400	6818
Length of State Highways	2006-07	Km	2819	0	668 (04-05)	259	1134 (05-06)	1033 (03-04)	689	6602
Length of BG Railway	2006-07	Km	1127	0	0	0	0	9.3	0	1136
Broad Gauge Railway Length as % of Total Railway Length	2006-07	%	49	0	0	0	0	100	0	50
Installed Capacity of Power Generation	2006-07	M W	415.50	57.66 (05-06)	47.25	46.59	185.20 (05-06)	29.80	110	892
Gross Power Generation	2006-07	M U	867.54	54.57 (05-06)	3.11	253.81	514.44 (05-06)	14.50	566.03	2274

DESIRABLE INDICATORS										
No. of Civil Airports	2006-07	No.	5	0	1	1	1	1	1	10
No. of Wireless private subscribers	March 09	No.	4837852							2580512 (Excluding Assam)
Telephone Density (per 100 population)	2004	No.	2.44	6.22	2.41	7.13	3.73	2.98	2.95	2.9
Number of Telephone Exchanges	2000-01	No.	167	26	5	21	29	14	13	275
Number of Telephone Exchanges per Lakh population	2004	No.	2	0.6	0.2	5	1	0.7	0.4	0.7
Total Tourist Inflow	2006-07	No.	3493527	3317 (05-06)	120835	50786	381010 (2005)	16032	232798	4298305
Per Capita Power Availability	2006-07	kWh	116	-	106	170	318 (05-06)	125	-	-

Percentage Households (HHs) having access to safe drinking water facilities	2001	%	58.8	77.5	37.0	36.0	39.0	46.5	52.5	-
Establishments in Hotels & Restaurants	2005	No.	39365	1770	6181	1722	8121	1925	8857	67941

Source:

1. NHAI website: www.nhai.org

2. Economic Survey Assam 2007-08, Statistical Handbook Nagaland 2007, Statistical Abstract Mizoram 2007, Statistical Abstract Tripura 2007, Statistical Abstract Arunachal Pradesh 2006, Statistical Handbook Meghalaya 2007, Economic Survey Manipur, 2007-08

3. <http://www.nfrailway.org>

4. TRAI

5. Census of India 2001

6. Economic Census of India

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Social Indicators

The Social Indicators have been sub-divided into the broad categories of health, education & skill development, housing & poverty and agriculture, forests & cropping pattern. The indicators under each category have been appropriately selected. Following are the selected indicators which should be monitored periodically:

Table : Social Indicators for North Eastern States

Indicator	Base Year	Unit	Assam	Arunachal Pradesh	Manipur	Mizoram	Meghalaya	Nagaland	Tripura	NER (Approx. Total)
CRITICAL INDICATORS										
Number of Establishments in Health/Social Work	2005	No.	15068	672	667	1480	1645	961	2339	22832
Number of Government Hospitals	2006	No.	22	16	13 (05-06)	10	8 (05-06)	11 (2005)	22	102
No. of Medical Colleges	2008-09	No.	3	0	1	0	0	0	2	6
No. of Seats in Medical Colleges	2008-09	No.	426	0	100	0	0	0	100	626

Total Beds	2006	No.	7534	2218	2290 (05-06)	2611	3166 (04-05)	2516 (2005)	2627	22962
Beds per lakh Population	2006	Nzzo.	28	202	100 (05-06)	294	137 (04-05)	126 (2005)	82	60
Number of Establishments in Education	2005	No.	51942	2261	4411	2821	8184	2318	12991	84928
Number of Universities	2006-07	No.	5 (05-06)	1	2 (04-05)	1	1 (05-06)	1	3	14
No. of Engineering Institutions	2008-09	No.	4	1	1	1	1	0	1	9
No. of Management Institutions	2008-09	No.	6	0	1	0	1	0	0	8
No. of ITIs	2008-09	No.	29	3	7	2	7	1	7	56

Total Housing Stock	2001	Lakhs	61.70	2.80	4.92	1.90	5.20	3.80	8.60	88.92
Pucca Houses (Roof)	2001	%	51.00	45.50	-	76.70	60.40	67.40	56.40	50.33
DESIRABLE INDICATORS										
HHs Electrified	2001	%	24.90	54.70	60.00	69.60	34.00	63.60	41.80	32.56
HHs availing Banking Services	2001	%	20.50	37.30	8.73	31.80	20.80	15.90	26.50	21.02
HHs having Bathroom	2001	%	14.40	22.50	10.44	51.20	33.70	37.40	11.20	17.02
HHs having Drainage Connectivity	2001	%	20.40	34.50	38.99	44.20	37.20	45.30	29.10	25.27
Net Sown Area	2006-07	'000 Ha	2753 (03-04)	209.00	155.29 (2000-01)	94.19	219.22 (03-04)	30.88 (05-06)	255.08	3176.66

Total Area under Reserved Forest	2005-06	'000 Ha	1387.00	5154.00 (06-07)	1467.00	1593.70	71.27 (03-04)	86.29	606.17	10365.43
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Sources:

1. *Economic Census of India 2005*
2. *Economic Survey Assam 2006-07, Statistical Handbook Assam 2007, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08*
3. *Official website of Medical Council of India*
(www.mciindia.org)
4. *Census of India 2001*
5. www.aicte.ernet.in (Includes institutions offering degree courses in Engineering and Technology only)
6. www.aicte.ernet.in & www.iimshillong.in
7. *Official website of National Vocational Training Information Service (NVTIS)*

Socio-Economic Baseline Indicators for the Project Impact Area (PIA) Districts

The Assam Gas Cracker Project is being set up in and around the Dibrugarh district at Lepetkata, Duliajan and Lakwa. After discussions with NEDFi, the PIA (Project Impact Area) districts identified include Dibrugarh and the neighbouring districts of Tinsukia, Sibsagar & Jorhat in Assam, Changlang in Arunachal Pradesh and Mokokchung in Nagaland.

Dibrugarh District is located in the plains of the Upper Assam region and lies towards the North East region of the Brahmaputra Basin. The total area of the district is 3381 sq. km. With Headquarters in Dibrugarh, the District has 1345 villages, 7 blocks, 1 sub-division and 9 towns; including Dibrugarh, Chabua, Naharkatia, Duliajan, Digboi and Namrup. The project location (at Lepetkata) is about 15 km from Dibrugarh town.

Tinsukia District is located in Upper Assam, bounded by Arunachal Pradesh in the East & South, by Dibrugarh District in the South-West and the Dhemaji District, separated from Tinsukia District by the mighty river Brahmaputra, in the North. Tinsukia is also a major railhead of Assam and acts as a link to all other cities in the North East of India. The total geographical area of the Tinsukia District is 3790 sq. km. The District has 4 Revenue circles and 7 Development blocks. In addition, there are 88 Gram Panchayats and 1162 villages, of which 1138 are inhabited and rest 24 are uninhabited. There is one Zila Parishad and 3 sub-divisions. The project location (at Lepetkata) is about 55 km from Tinsukia town.

Sibsagar District is located in the Upper Assam Region, 370 km northeast of Guwahati, and is predominantly a plain land in the Brahmaputra Valley. The District shares common boundaries with Dibrugarh District in the east, Jorhat District in the west, river Brahmaputra in the North and the states of Nagaland and Arunachal Pradesh in the south. The total Area of the district is 2668 sq. km. The District consists of 873 villages, 9 blocks, 3 subdivisions and 5 towns including Sibsagar (District Headquarter), Sonari, Demow, Moran, Nazira, Gaurisagar. The project location (at Lepetkata) is around 60 km from Sibsagar town.

Jorhat District is one of the 27 Districts of the state of Assam. Jorhat town is District headquarters. Earlier, Jorhat was a sub-division in the undivided Sibsagar District. In 1983, Jorhat was carved out of Sibsagar District. At present Jorhat District consists of 3 sub-divisions namely Jorhat, Majuli and Titabor. The District is divided into 6 revenue circles, 8 development blocks and 111 gram panchayats. The area of the District is 2852 sq. km. with a population of 999221 (as per 2001 Census), which is around 3.75 percent of the state population, with a Population density of 350 per sq. km. The project

location (at Lepetkata) is about 120 km from Jorhat town.

Changlang District is located in the hilly areas of Arunachal Pradesh with altitudes ranging from 200 m to 4500 m above mean sea level. The District is bound in the east & south by Myanmar (international borders), in the north by Tinsukia District of Assam & Lohit District of Arunachal Pradesh and in the west by Tirap District of Arunachal Pradesh. The District is home to a number of tribes such as the Tangsa, Singpho and Tutsa. The total area of the district is 4662 sq. km. The Changlang District is administered through four subdivisions namely Changlang, Miao, Jairampur and Bordumsa which can be further subdivided into 13 administrative circles; with headquarters located at Changlang town. The project location (at Lepetkata) is around 150 km from Changlang town.

Mokokchung District is located in the hilly ranges of Nagaland altitudes, bound in the east by Mon District of Nagaland, in the north & north west by the State of Assam, in the south by Tuensang and Zunheboto Districts and in the south west by the Wokha District. The District is home to the Ao Naga Tribe and is known to be the cultural centre of Nagaland. The Mokokchung District is about 120 km from Jorhat in Assam and requires an Inner Line Permit for entry. The total area of the district is 1615 sq. km. The Mokokchung District is administered through 6 blocks, 8 circles and 105 village panachayats. The District has only one urban town - Mokokchung. The project location (at Lepetkata) is around 225 km from Mokokchung town.

Baseline data corresponding to the socio-economic indicators for the PIA is summarized in the following Table.

Table : Socio-economic Indicators for PIA Districts

Indicator	Unit	Base Year	Baseline Data for PIA
ECONOMIC / DEVELOPMENT INDICATORS			
CRITICAL INDICATORS			
GDDP at current prices (only for districts in Assam)	Rs. Crores	2003-04	12781
Per Capita Income at current prices (only for districts in Assam)	Rs.	2003-04	28000
Urban Population	%	2001	16.13
Literacy Rate	%	2001	70.06
Agriculture Labourers	% of Total Workers	2001	7.02
SECTOR SPECIFIC INDICATORS			
CRITICAL INDICATORS			
No. of SSI Unit	No.	2006-07	6388
No. of Plastic Processing Units	No.	2006-07	16
INFRASTRUCTURE INDICATORS			
CRITICAL INDICATORS			
Length of NHs	Km	2006-07	471
Length of SHs	Km	2006-07	716
Total Road Length	Km	2006-07	9365
Road Length per sq. km.	Km	2006-07	0.49
Total Surfaced Road Length	Km	2006-07	3586
Surfaced Road Length as % of Total Road Length	%	2006-07	38.29
Length of BG Railway	Km	2006-07	334
Percentage Villages Electrified	%	2005-06	85
DESIRABLE INDICATORS			
Percentage Villages with Safe Drinking Water	%	2001	99
Number of Telephone Exchanges	No.	2007-08	172
Number of BSNL Landline Connections	No.	2007-08	120723
Number of BSNL WLL Connections	No.	2007-08	31085
Number of BSNL Mobile Connections	No.	2007-08	236470

Number of BSNL Broadband & Internet Connections	No.	2007-08	5848
SOCIAL INDICATORS			
CRITICAL INDICATORS			
Number of Government Hospitals	No.	2006	6
Number of Medical Colleges	No.	2008-09	1
Total Beds	No.	2006	1526
Beds to Population Ratio	Per lakh Population	2006	30
Number of High Schools	No.	2005-06	786
Number of Higher Secondary Schools	No.	2005-06	119
Number of Intermediate/ Junior Colleges	No.	2005-06	25
Number of Engineering Colleges	No.	2008-09	2
DESIRABLE INDICATORS			
Percentage Households occupying Permanent Houses	%	2001	30.4
Net Sown Area	'000 Ha	2003-04	514.05
Total Area under Reserved Forest	'000 Ha	2003-04	136.94

Source :

1. *Statistical Handbooks of Assam-2007*
2. *Census of India 2001*
3. *Economic Survey Assam 2007-08, Statistical Abstract of Arunachal Pradesh 2006, Statistical Handbook Nagaland 2007*
4. *District Industries Center*
5. *PWD Guwahati, Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007*
6. *Bharat Sanchar Nigam Limited, Guwahat; Statistical Handbook of Changlang District, 2006-07*
7. *Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007*
8. *Census of India 2001*
9. *Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007*

Alongwith the above it is required that the environmental indicators are also monitored for the region which include surface water, ground water, air quality and noise.

Rehabilitation of displaced families

The consultant team had interactions with the Additional District Commissioner at Dibrugarh which provided considerable insight into the Government's perspective of the rehabilitation process and its current status in and around the project site at Lepetkata. According to the District Government records, there were a total of 66 homeless and landless families; of which there were 44 Tea estate workers, 20 Tribal families and 2 families belonging to the General category.

Under the rehabilitation package, 1 Bigha of land has been given to each family, as well as a compensatory amount of Rs. 1.5 Lakh per household has been provided for construction of new houses. Tubewells for drinking water and latrines to each household have been provided by the Public Health Engineering Department. Government has also taken care of the connecting roads and the power supply to the newly constructed homes; as well as Schools, Temples and Market places. In some cases, the compensation due for land are being settled by the Government.

Monitoring and Evaluation Framework

The selective indicators that will have an impact due to investment in the Assam Gas Cracker and downstream units within the four broad categories have been identified. It was ensured that the indicators identified not only have an impact due to the investment but also the data are available from publicly available published sources or can be collected easily from district or state departments.

These helped in identification of the monitoring indicators as well as established baseline value for the same. Based on this the monitoring framework has been prepared, which lists the following:

- Various indicators under the four broad categories
- Base year for the baseline values
- Baseline Value with relevant Unit of measurement
- Data Source
- Period of monitoring
- Impact – positive or negative

The structure of the monitoring framework for the identified indicators under the four broad categories is given in Tables 5.1, 5.2 and 5.3.

Monitoring and Evaluation Cell

It is recommended that a dedicated ‘**Monitoring and Evaluation Cell**’ should be established for studying the impact of Assam Gas Cracker on North Eastern States.

- The Cell should be constituted as a part of the Chief Minister of Assam’s Secretariat, and the Chief Minister should be the Chairman of the Cell.
- The Deputy Chairman should be the Industries Minister
- The Principal Secretary / Commissioner, Industries & Commerce, Government of Assam should be the Executive Head of this Cell, and the Cell should comprise of:
 - A representative Ministry of DoNER/NEC
 - One senior executive from BCPL, OIL and NRL
 - One senior representative from the Directorate of Economics & Statistics, Government of Assam
- The Monitoring and Evaluation Cell should appoint a Consultant to collect and collate the data in the attached format and present the same to the Cell on an annual basis.
- We recommend that the monitoring should be carried out for a period of 10 years. The frequency of data update would vary for different indicators, and should be as per the frequency indicated in the attached format.
- The Consultant should commence work after the close of financial year and when the new set of data is available, preferably during September-October of each year.
- Ideally, but subject to satisfactory performance, the same consultant should perform the assignment on an ongoing basis for a minimum period of 3 years.

The scope of work of the “Cell” should include (but not limited to):

- Collection of data corresponding to identified socio-economic and industry-specific indicators from various sources and departments.
- Preparation and maintenance of a comprehensive database.
- Periodic monitoring and evaluation and reporting (maintain MIS).
- Publication of reports demonstrating success stories.

Table 5.1 M&E Framework for Assam

						YEAR S			Source	Reference
						1	-----	10		
Selected Indicators	Expected Impact	Unit	Period of Monitoring	Base Year	Baseline Data					
Economic/Development										
Gross State Domestic Product (1999-00 prices)	↑	Rs. Crores	1	2006-07(0)	49850				Economic Survey Assam 2007-08	A-1
GSDP Growth Rate	↑	%	1	2006-07(0)	7.6				Economic Survey Assam 2007-08	A-2
GSDP Growth Rate (4 years)	↑	%	4	2003-07	6.2				Derived	
Assam GSDP as % of GDP of India	↑	%	1	2006-07	2				Derived	
Per Capita Income (1999-00 prices)	↑	Rs.	1	2006-07(0)	15623				Economic Survey Assam 2007-08	A-2
Growth in Per Capita Income	↑	%	1	2006-07	5.66				Economic Survey Assam 2007-08	A-2
Growth in Per Capita Income (4 years)	↑	%	4	2003-07	4.5				Derived	
Secondary sector contribution to GSDP	↑	%	1	2006-07	16.75				Statistical Handbook Assam 2007	A3
Contribution of Manufacturing Sector to GSDP	↑	%	1	2006-07	9.96				Statistical Handbook Assam 2007	A3
No. of Small Scale Industrial (SSI) units	↑	No.	1	2006-07	27913				Economic Survey Assam 2007-08	A-4
Total Employment in SSI units	↑	No.	1	2006-07	131099				Economic Survey Assam 2007-08	A-4
P/M investments of SSI units	↑	Rs. lakhs	1	2006-07	79146				Economic Survey Assam 2007-08	A-4
Growth of SSI Units (4 years)	↑	%	4	2003-07	8.9				Derived	
Growth of Employment in SSI Units (4 years)	↑	%	4	2003-07	9				Derived	
Growth of P/M Investments of SSI Units (4 years)	↑	%	4	2003-07	27				Derived	
No. of persons engaged in manufacturing sector	↑	No.	1	2005-06	119548				Annual Survey of Industries 2004-05	A-5
Total employment in public & private sector	↑	No.	1	2006-06	1119394				State Statistical Handbook Assam	A-6
Growth of employment in public & private sector (4 years)	↑	%	4	2003-07	1.5				Derived	
% Urban Population (Urbanisation)	↑	%	10	2001-01	13				Statistical Handbook Assam 2007	A7
Industry Specific										
Per Capita Plastic Processing	↑	kgs	1	2009-09	0.87				Market survey	
Per Capita Plastic Consumption (Applicable for North East Region Also)	↑	kgs	1	2009-09	1.15				Market survey	
Number of Factories in Operation Manufacturing of Plastic Products	↑	No.	1	2004-05	34				Annual Survey of Industries	A-8
Direct Employment in Manufacturing of Plastic Products	↑	No.	1	2004-05	776				Annual Survey of Industries	A-8
Fixed Capital Investment in Manufacturing of Plastic Products	↑	Rs. Lakhs	1	2004-05	5671				Annual Survey of Industries	A-8
Export of Plastic Products	↑	Rs. Lakhs	1	2008-09	0				DG of Commercial Intelligence & Statistics	
Number of Cane & Bamboo Industries	↓	No.	5	2005-06	772				Statistical Handbook Assam 2007	A-10
Employment in Cane & Bamboo Industries	↓	No.	5	2005-06	4991				Statistical Handbook Assam 2007	A-10
Infrastructure										
Length of NHs	↑	Km	5	2008-09	2836				Economic Surveys of Assam	AR5
Length of SHs	↑	Km	5	2006-07	2819				Economic Survey Assam 2007-08	A-11
Total Surfaced Road Length	↑	Km	5	2006-07	12211				Statistical Handbooks Assam	A-12

Surfaced Road Length as % of Total Road Length	↑	%	5	2006-07	33			Derived	
Length of BG Railway	↑	Km	5	2006-07	1127			Statistical Handbooks Assam	A-13
Broad Gauge Railway Length as % of Total Railway Length ²	↑	%	5	2006-07	49			Statistical Handbooks	A-13
No. of Civil Airports	↑	No.	5	2006-07	5			Airports Authority of India	AA1
Air Passenger Traffic Load (International & Domestic at Guwahati Airport)	↑	No.	5	2008	1032413			Airports Authority of India	AA1
Air Freight Traffic Load (inward & outward)	↑	MT	5	2008	1229			Airports Authority of India	AA1
Passengers carried by Inland Water transport	↑	Lakhs	5	2006-07	246			Statistical Handbooks of Assam	A14
Passengers carried by Inland Water transport	↑	MT	5	2006-07	740649			Statistical Handbooks of Assam	A14
Number of Post Offices	↑	No.	5	2005	4006			Economic Survey Assam 2007-08	A15
No. of Post Offices per 1000 population	↑	No.	5	2005	0.14			Economic Survey Assam 2007-08	A15
Number of Telephone Exchanges	↑	No.	5	2005	594			Economic Survey Assam 2007-08	A-16
Number of Telephone Exchanges per 1000 population	↑	No.	5	2005	0.02			Derived	
Number of BSNL Landline Connections	↑	No.	5	2007	460344			Economic Survey Assam 2007-08	A-16
Number of BSNL WLL Connections	↑	No.	5	2007	84340			Economic Survey Assam 2007-08	A-16
Number of BSNL Mobile Connections	↑	No.	5	2007	600377			Economic Survey Assam 2007-08	A-16
Number of BSNL Broadband & Internet Connections	↑	No.	5	2007	33656			Economic Survey Assam 2007-08	A-16
Wireless Subscribers (Private Operators incl. Vodafone Essar, Bharti Airtel, Reliance, Aircel and Tata Teleservices)	↑	No.	5	Mar-09	4837852			TRAI	Tel-1
Installed Capacity of Power Generating Plants	↑	MW	5	2006-07	416			Economic Surveys of Assam	A-17
Gross Power Generation	↑	MU	5	2006-07	868			Economic Surveys of Assam	A-17
Per Capita Power Availability	↑	kWh	5	2006-07	116			Economic Surveys of Assam	A-18
Percentage Households (HHs) having Access to Safe Drinking Water Facilities	↑	%	5	2001	58.8			Census of India 2001	A-19
No. of Establishments in Hotels and Restaurants	↑	No.	5	2005	39365			Economic Census of India 2005	A-20
Total no of Indian & Foreign Tourists staying in Tourist Lodges of Directorate and other accommodations	↑	No.	5	2006-07	3493527			Economic Surveys of Assam	A-21
Social									
Number of Establishments in Health/Social Work	↑	No.	1	06	15068			Economic Census of India 2005	A-22
Number of Government Hospitals	↑	No.	1	06	22			Economic Survey Assam 2007-08	A-23
Number of Medical Colleges	↑	No.	1	2008-09	3			Official website of Medical Council of India (www.mciindia.org)	
Total Beds	↑	No.	1	06	7534			Economic Surveys of Assam	A-23

Beds per Lakh Population		No.	1	2006	26			Economic Surveys of Assam	A-23
No. of Educational Establishments		No.	1	2005	51942			Economic Census of India 2005	A-24
No. of Universities		No.	1	2006	5			Statistical Handbooks of Assam	A-25
No. of Engineering Institutions		No.	1	2008	3			Statistical Handbooks of Assam	A-25
No. of Management Institutions		No.	1	2008	6			www.aicte.ernet.in & www.iimshillong.in	
Number of ITI s		No.	1	2008	41			Statistical Handbooks of Assam	A-26
Total Housing Stock		Lakhs	10	2001	61.7			Census of India 2001	
Pucca Houses (Roof Material)		%	10	2001	51			Census of India 2001	
Electrified Households		%	10	2001	24.9			Census of India 2001	
Households availing Banking Services		%	10	2001	20.5			Census of India 2001	
Households having Bathroom		%	10	2001	14.4			Census of India 2001	
Households having Drainage Connectivity		%	10	2001	20.4			Census of India 2001	
Net Area Sown	≈	000 Ha	5	2003	2753			Statistical Handbooks of Assam	A-27
Total Area under Reserved Forest	≈	000 Ha	5	2006	1387			Economic Surveys of Assam	A-28
Total Production of Jute	≈	000' Bales of 180 kgs	5	2005-06	579			Statistical Handbook of Assam 2007	A-29
	Impacts								
	↑	Positive	↓	Negative	≈			May or may Not	

Table 5.2 M&E Framework for North East										
Selected Indicators	Impact	Unit	Period of Monitoring	Base Year	Baseline Data	Years			Source	References
						1	-----	10		
Economic/Development										
Gross State Domestic Product(1999-2000 prices)	↑	Rs. '000 Crores	1	2006-07	79.38				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A 1, AR 1, MA1,MZ1,ME1,N1,TR1
GSDP Growth Rate	↑	%	1	2006-07	7.4				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A2,AR1,MA2,MZ1,ME1,N1,TR1
GSDP Growth Rate	↑	%	4	2003-07	7				Derived	
Contribution to GDP	↑	%	1	2006-07	3				Derived	
Per Capita Income	↑	Rs	1	2006-07	17107				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A2,AR2,MA2,MZ2,ME1,N1,TR1

Growth in Per Capita Income	↑	%	1	2006-07	5.3			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A2,AR2,MA2,MZ2ME1,N1,TR1
Per Capita Income Growth Rate	↑	%	4	2003-07	5.5			Derived	
Secondary sector contribution to GSDP	↑	%	1	2006-07	18			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A3,AR1,MA3,MZ3,N1,TR1
Contribution of Manufacturing Sector to GSDP	↑	%	1	2006-07	7			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A3,AR1,MA4,MZ3,N1,TR1
No. of small scale industrial units	↑	No. in '000	1	2006-07	52			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A4,AR3,MA5,MZ4,ME2,N2,TR2
Growth in Small Scale Industries	↑	%	4	2003-07	6.4			Derived	

Total Employment in SSI units	↑	No. in '000	1	2006-07	253			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A4,AR3,MA5,MZ4,ME3,N2
Investment in SSI units	↑	in Rs. '000 lakhs	1	2006-07	132			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A4,AR3,MA5,MZ4,ME3,TR3
Total employment in manufacturing sector	↑	No. in '000	1	2006	143			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A5,MA6,ME4,N3,TR3,
Total employment in state government	↑	No. in '000	1	2006	1473			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A6,MA7,MZ5,ME5,N4,TR4,
Urbanisation	↑	%	10	2001	15.7			Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007	A7,AR4,MA8,MZ6,ME6,N5,

									Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	
Industry Specific										
Per Capita Plastic Processing	↑	kgs	1	2009	0.87				Market Survey	
Per Capita Plastic Consumption	↑	kgs	1	2009	1.15				Market Survey	
Number of Factories in operation manufacturing of Plastic Products	↑	No.	1	2004-05	41				Annual Survey of Industries 2004-05	ASI-1, ASI-2
Direct Employment in manufacturing of Plastic Products	↑	No.	1	2004-05	866				Annual Survey of Industries 2004-05	ASI-3, ASI-4
Fixed Capital Investment in Manufacturing of Plastic Products	↑	Rs. Lakhs	1	2004-05	5833				Annual Survey of Industries 2004-05	ASI-1, ASI-2
Infrastructure										
Length of NHs	↑	Km	5	2008-09	6818				NHAI Website : www.nhai.org	AR5
Length of SHs	↑	Km	5	2004-05	6602				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006	A11, MA9, MZ7, ME7, N6, TR8

									Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	
No. of Civil Airports	↑	No.	5	2006-07	10				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	AA1
Installed Capacity of Power Generating Plants	↑	MW	5	2006-07	892				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A17,AR6,MA10,MZ8, ME8,N7,TR9
Gross Power Generation	↑	MU	5	2006-07	2274				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A17,AR6,MA10,MZ8, ME8,N7,TR9
Telephone Density (per 100 population) ¹	↑	No.	5	2004	2.9				NER Vison 2020	NER1

Number of Telephone Exchanges ¹	↑	No.	5	2000-01	275				NER Vison 2020	NER2
Number of Telephone Exchanges per Lakh population	↑	No.	5	2004	0.7				Derived	
No. of Wireless BSNL Subscribers	↑	No.	5	Mar-09	769289				BSNL	BSNL Office
No. of Wireless private subscribers	↑	No.	5	Mar-09	2580512				TRAI	Tel1
No. of Establishments in Hotels and Restaurants	↑	No.	5	2005	67941				Derived	
Total Tourist inflow (Foreign & Domestic) Social	↑	No.	5	2006-07	4298305				Derived	
Number of Establishments in Health/Social Work	↑	No.	1	2005	22832				Economic Census of India 2005	A22
Number of Government Hospitals	↑	No.	1	2005-06	111				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic	A23,AR8,MA12,MZ11, ME10,N9

									Survey Manipur 2007-08	
Beds Per Lakh Population	↑	No.	1	2006	60				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A23,
Number of Medical Colleges	↑	No.	1	2008-09	6				Official website of Medical Council of India (www.mciindia.org)	
No. of Establishments in Education	↑	No.	1	2005	84928				Economic Census of India 2005	A24,A24
No. of Universities	↑	No.	1	2004-05	14				Economic Survey	A25,AR9,MA13,ME11, N10,TR12
No. of Engineering Institutions	↑	No.	1	2008-09	9				www.aicte.ernet.in (Includes institutions offering degree courses in Engineering & Technology)	
No. of Management Institutions	↑	No.	1	2008-09	8				www.aicte.ernet.in	
Number of ITI s	↑	No.	1	2008-09	56				Official website of National Vocational Training Information Service (NVTIS)	
Total Housing Stock	↑	Lakhs	10	2001	88.92				Census of India 2001	

Pucca Houses (Roof Material)	↑	%	10	2001	50.33				Census of India 2001	
Electrified Households	↑	%	10	2001	32.56				Census of India 2001	
Households availing Banking Services	↑	%	10	2001	21.02				Census of India 2001	
Households having Bathroom	↑	%	10	2001	17.02				Census of India 2001	
Households having Drainage Connectivity	↑	%	10	2001	25.27				Census of India 2001	
Net Area Sown	≈	'000 Ha	5	2000-01	3176.66				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A27,AR10,MA14,MZ13,ME12,N11,TR13,
Total Area under Reserved Forest	≈	Sq.Kms	5	2005-06	10365.43				Economic Survey Assam 2006-07, State Statistical Handbook 2007 Nagaland, Statistical Abstract 2007 Mizoram, Statistical Abstract 2007 Tripura, Statistical Abstract 2006 Arunachal Pradesh, Statistical Handbook Meghalaya 2007, Economic Survey Manipur 2007-08	A28,AR11,MA15,MZ14,ME13,N11,TR14,
	Impacts									
	↑	Positive	↓	Negative	≈				May or May Not	

Table 5.3 M&E Framework for PIA

Table 5.3 M&E Framework for PIA										
Selected Indicators	Expected Impact	Unit	Period of Monitoring	Base Year	Baseline Data for PIA	YEARS			Source	References
						1	-----	10		
Economic/Development										
GDDP at current prices (Only for PIA within Assam) at Current 03-04 prices	↑	Rs Crores	1	2003-04	12781				Statistical Handbook Assam 2007	PIA-28
Annual Per Capita GDDP at Current 03-04 prices	↑	Rs	1	2003-04	28000				Derived from Combined GDDP and Population	
Urban Population	↑	%	10	2001	16.13				Census of India 2001	
Literacy Rate	↑	%	10	2001	70.06				Census of India 2001	
Agricultural Labourers as a % of Total Workers	↑	% of total workers	10	2001	7.02				Census of India 2001	
Sector/Specific										
No. of SSI Units	↑	No.	1	2006-07	6388				Economic Survey Assam 2007-08	
No. of Plastic Processing Units	↑	No.	1	2006-07	16				District Industries Centre, Dibrugarh	Verbal Discussions with the officials at DIC
Infrastructure										
of NH's	Length	↑	Km	5	2006-07	471			PWD Guwahati ,Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007	PIA-1,PIA-13

Length of SHs	↑	Km	5	2006-07	716				PWD Guwahati , Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007	PIA-1
Total Road Length	↑	Km	5	2006-07	9365				PWD Guwahati , Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007	PIA-22,PIA-13-14
Road Length per sq.km	↑	Km	5	2006-07	0.49				PWD Guwahati ,Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007	PIA-25
Total Surfaced Road Length	↑	Km	5	2006-07	3586				PWD Guwahati , Statistical Handbook Assam 2007, Airport Authority of India, Official website of Tinsukia District (www.tinsukia.nic.in), Statistical Handbook Changlang 2006-07, Statistical Handbook Nagaland 2007	A-12, N-6, PIA-22

Number of Government Hospitals	↑	NO	1	2006	6				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-26, PIA-8-9, PIA-36
Number of Medical Colleges	↑	NO	1	2008-09	1				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-27
Total Beds	↑	NO	1	2006	1526				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-26, PIA-9, PIA-37,38
Beds to Population Ratio	↑	Per lakh Population	1	2006	30				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	Derived
Number of High Schools	↑	NO	1	2005-06	786				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-27, PIA-41
Number of Higher Secondary Schools	↑	NO	1	2005-06	119				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-27, PIA-4, PIA-41

Number of Intermediate/ Junior colleges	↑	NO	1	2005-06	25				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-27,
Number of Engineering Colleges	↑	NO	1	2008-09	2				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-27
Percentage Households occupying Permanent Houses	↑	%	10	2001	30.4				Census of India 2001	
Percentage of Villages having access to safe drinking water	↑		10	2001	99				Census of India 2001	
Net Sown Area	≈	'000 Ha	5	2003-04	514.05				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA-17,PIA-3,PIA-40
Total Area under Reserved Forest	≈	000 Ha	5	2003-04	137				Statistical Handbooks of Assam-2007; Statistical Handbooks of Changlang District-2006-07; Statistical Handbook of Nagaland 2007	PIA18-19,PIA-40,PIA-30-33
	Impacts									
	↑	Positive	↓	Negative	≈				May or May Not	