PRE-FEASIBILITY REPORT

ON

AMMONIA / UREA FERTILIZER PROJECT

WITHIN PLANT PREMISES OF

OF

FERTILIZER CORPORATION OF LIMITED (FCIL)

SINDRI UNIT, DHANBAD, JHARKHAND

FOR ENVIRONMENTAL CLEARANCE

Prepared By

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1.0 EXECUTIVE SUMMARY

Fertilizer Corporation of India Limited (FCIL) has the credit to be the first Public Sector Undertaking of Government of India operating since 1951. Sindri unit of FCIL was commissioned in 31st October, 1951 in the name of Sindri Fertilizer Factory for production of ammonia and urea. Fertilizer Corporation of India Limited (FCIL), incorporated in January 1961, operated four fertilizer units namely Sindri (Jharkhand), Ramagundam (Andhra Pradesh), Talcher (Orissa) and Gorakhpur (Uttar Pradesh).

Sindri Modernisation Plant, 900 MTPD single stream ammonia and 1000 MTPD urea plants were commissioned on 1st October 1979. In addition to the main plants, fertilizer complex at Sindri has self-contained utility and off-site facilities including township. The complex also has plants to produce products like Ammonium bi-carbonate, Ammonium Nitrate, Nitric acid and a power generation plant of 80 MW.

The existing unit of closed Ammonia-Urea fertilizer complex at Sindri of Fertilizer Corporation of India Limited (FCIL), at that time, was one of the new generation fertilizer plants based on LSHS / Fuel-oil as a feed stock.

Due to under performance of all the plants, FCIL had made huge losses. These losses had their own cascading effect. The company was declared sick and was referred to BIFR in 1992. The Sindri unit was declared shut down in January 1999. The Government of India had decided to close down the company in December 2002. Subsequently all the units of FCIL including Sindri were closed down and all the employees, barring a few (5 to 10 in each unit), were released under VSS on 31-12-2002.

In August, 2011, the Cabinet Committee on Economic Affairs (CCEA) had approved the Draft Rehabilitation Scheme (DRS) for revival of all the Units of FCIL. DRS envisaged revival of Talcher Unit by the consortium of M/s. Rashtriya Chemical & Fertilizers Limited (RCF), M/s Coal India Limited (CIL) and M/s Gas Authority of India Limited (GAIL), revival of Ramagundam Unit by M/s. Engineers India Limited (EIL) and M/s. National Fertilizers Limited (NFL) and revival of Sindri unit by M/s Steel Authority of India Limited (SAIL). Gorakhpur and Korba units of FCIL to be revived through bidding route.
Further, in its meeting held on 9.5.2013, CCEA, inter-alia, approved waiver of Government of India loan and interest to facilitate FCIL to arrive at positive net worth. This enabled FCIL to get de-registered from the purview of Board for Industrial and Financial reconstruction (BIFR).

1.1 PROJECT LOCATION
The proposed project shall be located in the existing premises of FCIL Sindri unit in the free unencumbered available land.

The existing Sindri unit of FCIL is located in the District of Dhanbad in the State of Jharkhand. Sindri is well connected with major cities by rail / road. Dhanbad district headquarter is about 26 km from Sindri is an important divisional headquarter of East Central Railway. The historical Grand Trunk Road and National Highways NH-02 connecting Kolkata and Delhi passes only about 25 km from Sindri Factory area. Other major highways NH-32 is also passing nearby. Nearest Airport having regular commercial flights are at Ranchi 180 km, Kolkata 256 km and Patna 296 km away from Sindri. Kolkata 256 km on Bay of Bengal is the most important seaport of the eastern India where all major sea liners of world have anchors.

1.2 SCOPE OF PROJECT
The proposed Urea Fertilizer Project will include the following units.

- Single Stream Ammonia plant with a nominal capacity of 2200 MTPD
- Single Stream Urea plant with a nominal capacity of 3850 MTPD
- Urea bagging and loading facilities etc.
- All offsite & Utilities (Power, steam, water, inert gas, instrument air, effluent treatment, cooling tower, safety/fire fighting, Gas Metering and refurbishment of Non-Plant building facilities).
1.2.2 Engineering Consultant

1.2.2.1 Ammonia Plant

The most prominent ammonia process technology suppliers at present are as follows:

- Haldor Topsoe (HTAS), Denmark
- Kellogg Brown & Root (KBR), USA
- Uhde, Germany

1.2.2.2 Urea Plant

The current global leading licensors of urea technology are as follows:

- Stamicarbon, Netherlands
- Saipem, Italy
- Toyo Engineering Corporation (TEC), Japan

Stamicarbon and Saipem have been market leaders in terms of installed capacity with approximately 90 per cent of the total.

1.3 RAW MATERIAL AND UTILITIES

The requirement of raw material and utilities for the proposed project has been worked out on the basis of rated capacity operation of the ammonia urea plants. The requirements of various inputs for 2200 MTPD ammonia and 3850 MTPD urea plants are summarized in Table- 7.1:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Raw Material/Utilities</th>
<th>Unit</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Natural Gas (LHV 8653 kcal/Nm³)</td>
<td>Nm³</td>
<td>90910</td>
</tr>
<tr>
<td>2.0</td>
<td>Treated Water</td>
<td>m³</td>
<td>1100</td>
</tr>
<tr>
<td>3.0</td>
<td>Neem Oil</td>
<td>kg</td>
<td>56.15</td>
</tr>
</tbody>
</table>
1.4 PROJECT IMPLEMENTATION PLAN & TIME SCHEDULE

1.4.1 Project Implementation Plan
Sindri unit of FCIL is to be revived through nomination route. The selected entrepreneur in the bidding process will make his own strategy for technology selection, appointment of engineering consultants/contractors, identifying and selecting the project team, organisational structure, funding arrangement for implementing the project. For the present study, LSTK mode of implementation has been considered.

1.4.2 Time Schedule
The expected implementation time may be around 36 (33 months mechanical completion and 3 months commissioning) months after the zero date.

1.5 Estimated Project Capital Cost
The Project Capital Cost of the proposed project 2200 MTPD ammonia and 3850 MTPD urea along with associated offsite & utility facilities, as per the scope above, is estimated at Rs. 5820.31 Crores.

1.6 FINANCIAL ANALYSIS OF PROJECT
The overall saving in Urea specific energy at each Unit and the financial analysis is as under:

| Table-1.6  
| Financial Analysis |
|-------------------|------------------|
| Urea Plant Capacity | MTPD | 3850 |
| Post-tax IRR (Project) | % | 13.60% |
| IRR (Equity) | % | 16.10% |
| Estimated Investment | Rs. Crore | 5820 |
| Profit | % | 61.56 |
| Cash-break even point | % | 73.87% |
| Payback | Years | 6.17 |
1.7 NEED & JUSTIFICATION

The need and justification of the proposed project is summarized as under:

➢ It will reduce overall gap between demand and supply in the country especially in northern region.

➢ The revival of ammonia/urea plant at FCI-Sindri in Dhanbad district of Jharkhand can be seen as a corrective step towards reducing the growing supply gaps for fertilizer urea in eastern zone.

➢ It will maintain stability in indigenous / domestic market for Urea.

➢ It will check the import possibility of fertilizers to some extent and yield national savings

➢ It will generate employment opportunity for the people in the region.

➢ It will ease the availability of chemical fertilizers to farmers.

1.8 Conclusion

Thus, the proposal of revival of ammonia/urea plant at FCI-Sindri in Dhanbad district of Jharkhand state can be seen as a corrective step towards reducing the growing supply gaps for fertilizer urea in eastern zone and to minimize import dependence to fill the supply-gap. Indirectly, by producing the fertilizer within the consumption region, it will lessen the pressure on the long distance transport network as well as the transport cost involved in such long distance movement between production units and the consuming points.

There will be reduction in the emission levels from FCIL Sindri Unit with implementation of new technology which consumes approximately 7.005 Gcal/Te of ammonia and 4.904 Gcal/Te of Urea.
2.0 INTRODUCTION

2.1 Background

The first fertilizer complex under the name of Sindri fertilizer factory was commissioned on 31st October 1951. A number of new plants were added to the factory as need arose time to time.

Fertilizer Corporation of India Limited (FCIL), incorporated in January 1961, operated four fertilizer units namely Sindri (Jharkhand), Ramagundam (Andhra Pradesh), Talcher (Orissa) and Gorakhpur (Uttar Pradesh).

Due to various reasons, all the units of FCIL including Sindri Unit continued to make financial losses. The company became financially sick and was referred to Board for Industrial and Financial Reconstruction (BIFR) in 1992. Subsequently BIFR gave its consent to wind up the company in the absence of any rehabilitation proposal. Finally, Govt. of India also approved the closure of fertilizer units.

2.2 Revival of Sindri Unit of FCIL

Sindri unit of FCIL under the name of Sindri Fertilizer Factory was commissioned in 1951 for urea production with coal as feedstock.

In addition to the main plants, fertilizer complex at Sindri has self contained utility and off-site facilities including township. The complex also has plants to produce products like Ammonium bi-carbonate, Ammonium Nitrate, Nitric acid and a power generation plant of 80 MW. The existing unit of closed Ammonia-Urea fertilizer complex at Sindri of Fertilizer Corporation of India Limited (FCIL), at that time, was one of the new generation fertilizer plants based on LSHS / Fuel-oil as a feed stock. However, the operation of the plant has been suspended from 1990, due to non-viable economic operations. The unit was declared closed by Govt. of India on 10.09.2002.

Cabinet Committee of Economic Affairs (CCEA), in its meeting held on 4th August, 2011, approved the proposal for revival of closed units of FCIL including Sindri unit. As per cabinet decision, Sindri unit of FCIL is to be revived through bidding route. In its meeting held on 9.5.2013, CCEA, inter-alia, approved waiver of Government of India loan and interest to facilitate FCIL to arrive at positive net worth. This enabled FCIL to get de-registered from the purview of Board for Industrial and Financial reconstruction (BIFR).
2.2.1 Facilities available at old & closed FCIL Sindri

2.2.1.1 Land

The total land available under FCIL - Sindri unit ownership is around 6653 Acres including factory area and township. The total land is having free hold status.

Out of the total available 6652.61 Acres, almost 693 Acres land has been leased to CPSU/State Govt. and other organizations. Around 478 Acres of land has been permanently transferred to organizations like BIT, Jharkhand Housing Board, Bokaro Industrial Development Authority. Presently, the land available with FCIL is 5481.59 Acres. The distribution of land area available with FCIL is as follows:

Total factory area and factory utility excluding Gowai Barrage (467.15 Acres) is 1194.77 Acres.

Township area including parks, agricultural land, education, recreation play ground, market etc. is 1993.61 Acres.

Air Strip including approach road is 196.07 Acres.

Other undeveloped area is around 1630 Acres.

2.2.1.2 Township

The total number of quarters in the township is around 5026 of various sizes. The other facilities in the township include Guest House, Officers Club, Kalyan Kendra, Model English High School, JET Hostel etc.

2.2.1.2 Railway Siding inside Factory

Around 17 km of railway siding exists inside the factory complex which can be used after refurbishment.

2.2.2 Raw Water & Power

Damodar river which acted both as source of water and electricity for the Sindri. A hydro-power power project called Damodar Valley Corporation (DVC) is located at Maithon and Panchet near Sindri. However, a captive power plant has been considered for the proposed project.
2.2.2.1 Infrastructure Facilities

The other infrastructure facilities available with the existing plant premises include administrative building, canteen, first aid, central stores and yard, workshops, telephone exchange etc.

As the Sindri unit is closed since last 13 years most of the facilities are not in usable condition.

2.2.3 Proposed Project Facilities & Description

2.2.2.1 Project Facilities

The proposed project consists of new ammonia and urea plant of 2200 MTPD & 3850 MTPD capacity respectively and related offsite and utility facilities considering utilization of the existing facilities to the maximum extent possible. The details of the facilities of proposed Fertilizer Complex are given below in Table 4.1.

Table – 2.2

List of Facilities in the proposed Fertilizer Complex

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Facility</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>NG/LNG Receiving &amp; Metering</td>
<td>Corresponding to 2.2. MMSCMD Natural Gas</td>
</tr>
<tr>
<td>2.0</td>
<td>Process Plants</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Ammonia Plant</td>
<td>2200 MTPD</td>
</tr>
<tr>
<td>2.2</td>
<td>Prilled Urea (Neem Coated) Plant</td>
<td>3850 MTPD</td>
</tr>
<tr>
<td>3.0</td>
<td>Offsite Facilities</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Ammonia Storage (Atm.)</td>
<td>(2x5000) MT &amp; associated facilities</td>
</tr>
<tr>
<td>3.2</td>
<td>Urea Storage &amp; Handling Facilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silo</td>
<td>60000 MT</td>
</tr>
<tr>
<td></td>
<td>Empty Bag Storage</td>
<td>2.0 Million</td>
</tr>
<tr>
<td></td>
<td>Bagged Storage</td>
<td>1000 MT (on platform)</td>
</tr>
<tr>
<td></td>
<td>Bagging Plant</td>
<td>(7+1) Slats of 60 MTPH each</td>
</tr>
<tr>
<td>4.0</td>
<td>Utility facilities</td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Raw water pipeline and pumping from source</td>
<td>Corresponding to 1265 m³/hr capacity</td>
</tr>
</tbody>
</table>
### 4. Feasibility Report for Ammonia/Urea Project at FCIL Sindri (Jharkhand)

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Facility</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2</td>
<td>Raw water storage and pumping</td>
<td>Corresponding to 1265 m³/hr capacity</td>
</tr>
<tr>
<td>4.3</td>
<td>DM water system including storage and pumping</td>
<td>(1+1) x100 m³/hr</td>
</tr>
<tr>
<td>4.4</td>
<td>Condensate Polishing Unit</td>
<td>(2+1) x250 m³/hr</td>
</tr>
<tr>
<td>4.5</td>
<td><strong>Cooling Tower</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a] Ammonia Plant &amp; CPP</td>
<td>(8+1) Cell of 3500 m³/hr each</td>
</tr>
<tr>
<td></td>
<td>b] Urea Plant</td>
<td>(5+1) Cell of 3500 m³/hr each</td>
</tr>
<tr>
<td>4.6</td>
<td><strong>Instrument &amp; Plant Air System</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a] Compressor (Centrifugal)</td>
<td>(1+1)×3000 Nm³/hr</td>
</tr>
<tr>
<td></td>
<td>b] Drying Unit</td>
<td>(1+1)×3000 Nm³/hr</td>
</tr>
<tr>
<td></td>
<td>c] Receiver</td>
<td>Provided</td>
</tr>
<tr>
<td>4.7</td>
<td>Inert Gas System</td>
<td>600 Nm³/hr</td>
</tr>
<tr>
<td>4.8</td>
<td><strong>Steam &amp; Power Generation System</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GTG</td>
<td>15 MW</td>
</tr>
<tr>
<td></td>
<td>STG</td>
<td>10 MW</td>
</tr>
<tr>
<td></td>
<td>Emergency D.G. Set</td>
<td>1 × 2000 kVA</td>
</tr>
<tr>
<td></td>
<td>HRSG</td>
<td>1 x 130 MTPH</td>
</tr>
<tr>
<td>4.9</td>
<td><strong>Transport Facilities</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Locomotive</td>
<td>(1+1) of 1200 HP</td>
</tr>
<tr>
<td></td>
<td>Railway Siding and lead line</td>
<td>Lead line available, 10 km existing railway siding considered after renovation. Provision made</td>
</tr>
<tr>
<td></td>
<td>Road Transport</td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>Construction equipment</td>
<td>Provided</td>
</tr>
</tbody>
</table>

### 2.4 DESCRIPTION OF PROJECT

#### 2.4.1 Ammonia Plant

The Ammonia Plant will be of single stream having a capacity of 2200 MTPD. The plant will be designed to use NG/RLNG as feed and fuel. The modern high capacity plant has the advantage of economy of scale as well as lower energy consumption thereby resulting in lower production cost. The Ammonia Plant will be self-sufficient in steam. Part of steam requirement for Urea Plant will be met from ammonia plant. The remaining steam requirement to urea plant will be met from the steam generated in HRSG of Gas Turbine (GT) driven captive power plant.
2.4.2 Urea Plant

The Urea plant will be laid out in single stream having nameplate capacity of 3850 MTPD prilled urea plant with stripping process technology. High-pressure steam imported from the Ammonia Plant will be used to drive the CO₂ Compressor with extraction arrangement for meeting the process requirements.

2.5 Raw Material Consumption

The consumption of raw material of proposed project is as under:

Table-2.3

Hourly Raw Material & Utility Requirement

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Raw Material Utilities</th>
<th>Unit</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Natural Gas (LHV 8653 kcal/Nm³)</td>
<td>Nm³</td>
<td>90910</td>
</tr>
<tr>
<td>b)</td>
<td>Treated Water</td>
<td>m³</td>
<td>1100</td>
</tr>
<tr>
<td>c)</td>
<td>Neem Oil</td>
<td>kg</td>
<td>56.15</td>
</tr>
</tbody>
</table>

2.5.1 Estimated Project Capital Cost

The Project Capital Cost of the proposed project 2200 MTPD ammonia and 3850 MTPD urea along with associated offsite & utility facilities is estimated at Rs. 5820.31 Crores.

2.5.2 Need & Justification

The need and justification of the proposed project is summarized as under:

- It will reduce overall gap between demand and supply in the country especially in northern region.
- The revival of ammonia/urea plant at FCI Sindri in Jharkhand can be seen as a corrective step towards reducing the growing supply gaps for fertilizer urea in northern zone.
- It will maintain stability in indigenous / domestic market for Urea.
- It will check the import possibility of fertilizers to some extent and yield national savings
- It will generate employment opportunity for the people in the region.
➢ It will ease the availability of chemical fertilizers to farmers in Dhanbad and adjoin areas.
➢ The proposed project is based on recent technology with minimum energy consumption per tonne of ammonia and urea.
➢ Implementation of new technology which consumes approximately 7.005 Gcal/Te of ammonia and 4.904 Gcal/Te of Urea shall facilitate low emission from proposed ammonia / urea plants.
➢ It will recover maximum energy due to implementation of new technology.

2.6 MARKET SURVEY

2.6.1 Gap in Production and Consumption

Though the level of fertilizer consumption in the country has all along been very low, the indigenous production of urea in India has always been lagging behind the consumption requirement except for the year 2000-01.

Table-2.4
Gaps between Consumption & Production of Urea

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
<th>Production</th>
<th>Gap</th>
<th>% of Gap to Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-61</td>
<td>0.14</td>
<td>0.12</td>
<td>(-) 0.02</td>
<td>14.29</td>
</tr>
<tr>
<td>1970-71</td>
<td>11.78</td>
<td>10.96</td>
<td>(-) 0.82</td>
<td>6.96</td>
</tr>
<tr>
<td>1980-81</td>
<td>60.44</td>
<td>33.84</td>
<td>(-)26.60</td>
<td>44.01</td>
</tr>
<tr>
<td>1990-91</td>
<td>140.76</td>
<td>128.35</td>
<td>(-)12.41</td>
<td>8.82</td>
</tr>
<tr>
<td>2000-01</td>
<td>191.86</td>
<td>196.23</td>
<td>(+) 4.47</td>
<td>2.28</td>
</tr>
<tr>
<td>2005-06</td>
<td>222.95</td>
<td>203.10</td>
<td>(-)22.10</td>
<td>9.91</td>
</tr>
<tr>
<td>2006-07</td>
<td>233.38</td>
<td>203.10</td>
<td>(-)30.28</td>
<td>12.97</td>
</tr>
<tr>
<td>2007-08</td>
<td>259.63</td>
<td>198.60</td>
<td>(-)61.03</td>
<td>23.51</td>
</tr>
<tr>
<td>2008-09</td>
<td>266.49</td>
<td>199.22</td>
<td>(-)67.27</td>
<td>25.24</td>
</tr>
<tr>
<td>2009-10</td>
<td>266.73</td>
<td>211.12</td>
<td>(-)55.21</td>
<td>20.85</td>
</tr>
<tr>
<td>2010-11</td>
<td>281.13</td>
<td>218.72</td>
<td>(-)62.41</td>
<td>22.20</td>
</tr>
<tr>
<td>2011-12</td>
<td>295.65</td>
<td>219.92</td>
<td>(-)73.73</td>
<td>25.61</td>
</tr>
<tr>
<td>2012-13</td>
<td>300.02</td>
<td>225.86</td>
<td>(-)74.16</td>
<td>24.72</td>
</tr>
<tr>
<td>2013-14 (P)</td>
<td>304.54</td>
<td>227.18</td>
<td>(-)77.36</td>
<td>25.40</td>
</tr>
</tbody>
</table>

(-) deficit (+) surplus

It may be seen from the above table that gap increased from 0.82 Lakh MT in 1970-71 to 26.61 Lakh MT in 1980-81 and to 77.36 Lakh MT in 2013-14. Surplus availability of
urea in the year 2000-01 has been due to decline in consumption on one hand and excess domestic availability particularly in view of high opening stock on the other.

2.6.2 Future Supply Estimates

2.6.2.1 Indigenous Existing Supply
To meet the domestic demand for urea, production from the existing units in the country stood at 227.18 Lakh MT during 2013-14, an increase of 1.32 Lakh MT over 2012-13. Almost 21 plants operated above 100% capacity utilization. It is likely that the same trend shall be continued in the near future.

2.6.2.2 Additional Capacity
Around 2.560 million tonnes of additional capacities through de-bottlenecking or revamp, which are under implementation or proposals by urea manufacturers, are under consideration with the Government.

2.6.3 Projected Demand-Supply Gap
The following Table-1.8 gives scenario of the demand-supply gaps that are likely to emerge by the end of 2016-17.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Estimates (FAI)</td>
<td>28755</td>
<td>29733</td>
<td>31789</td>
<td>32870</td>
<td>33987</td>
</tr>
<tr>
<td>Supply Estimates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Plants under Operation</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
</tr>
<tr>
<td>• OMIFCO</td>
<td>1652</td>
<td>1652</td>
<td>1652</td>
<td>1652</td>
<td>1652</td>
</tr>
<tr>
<td>• Revamp/ Debottlenecking</td>
<td>2560</td>
<td>2560</td>
<td>2560</td>
<td>2560</td>
<td>2560</td>
</tr>
<tr>
<td>Total Supply</td>
<td>24212</td>
<td>24212</td>
<td>24212</td>
<td>24212</td>
<td>24212</td>
</tr>
</tbody>
</table>

There is almost 3-4 lakh tones of urea demand per annum for manufacturing of complex fertilizers and for exports to neighbouring countries like Nepal, Myanmar etc. This will increase the projected deficit level of urea further.

The projected deficit level of about 46 lakh tonnes of urea by 2011-12 is based on certain assumptions on the demand as well as supply side. On the supply side, a critical assumption is that the existing installed capacity is not only retained in good working condition but is also able to maintain the high capacity utilization levels. As much as 35
lakh tonnes of urea capacity is from plants based on costlier feedstock such as naphtha/fuel oil. It would call for change over of feedstock, if the Country were to continue to have this much capacity available for production. Even the gas based plants commissioned in 1980’s and thereafter would call for timely revamping and retrofitting to ensure that they are able to maintain present operating rates and low energy consumption.

2.6.4 Import of Urea

The Government of India policy objective in the fertilizer sector, as reflected in the various five year plans, has been directed towards achievement of maximum degree of self-sufficiency in ‘N’ production, leaving only marginal quantities to be met through imports. The role envisaged for imports in the overall supply planning was essentially "residue" in nature so as to provide a reasonable cushion against demand fluctuations on the one hand and to take advantage of the global demand-supply situation for sourcing material at competitive prices, depending on the trends in availability and prices.

The steep growth in demand for nutrient nitrogen during the initial plan periods necessitated large imports of urea. In spite of very impressive growth in indigenous production, the gap between consumption and availability from indigenous sources remained at a high level necessitating high level of imports. However, the pragmatic approach of the government towards achieving self-sufficiency helped in substantially narrowing down the gap. Imports of urea were brought down to almost negligible level during the seventh plan period. Subsequently, however, the production could not keep pace with the growth in consumption, consequently imports of urea, which had come down to nil during 2000-01, has steadily risen back to a level of 31.87 Lakh MT of nutrient N during 2007-08. Imports of urea were around 18 Lakh MT of nutrient (Product 70.87 Lakh MT) during 2013-14 in the country.

2.6.5 Demand Projections for Urea

All-India demand forecast of fertilizer nutrients and product urea during 12th Plan & onwards as projected in the Report of the Working Group on Fertilizer Industry for the Twelfth Plan (2012-13 to 2016-17) based on Population Nutrition Method are presented in Table 2.7. In the population nutrition method, fertilizer nutrients demand has been projected by using the projections of population and per capita need for food grains.
Table-2.6

Demand Projections for Fertilizer

<table>
<thead>
<tr>
<th>Year</th>
<th>Fertilizer Nutrients Demand</th>
<th>Urea Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>P</td>
</tr>
<tr>
<td>2016-17</td>
<td>198.61</td>
<td>95.17</td>
</tr>
<tr>
<td>2017-18</td>
<td>201.65</td>
<td>98.68</td>
</tr>
<tr>
<td>2018-19</td>
<td>206.32</td>
<td>100.96</td>
</tr>
<tr>
<td>2019-20</td>
<td>210.92</td>
<td>103.22</td>
</tr>
<tr>
<td>2020-21</td>
<td>215.45</td>
<td>105.43</td>
</tr>
<tr>
<td>2024-25</td>
<td>230.60</td>
<td>115.30</td>
</tr>
</tbody>
</table>

To ensure uninterrupted supply in the eventuality of break down and unforeseen demand, buffer stock up to a limit of 5% of the seasonal requirement is to be maintained. Also taking into consideration 10% of the supply in the pipeline, projected production capacity should be 15% above the projected demand of Urea as indicated in Table above. Thus the Projected Production Capacity for Urea in the terminal year of 12th Plan should be around 400 Lakh MT.

2.6.6 Employment Generation (Direct & Indirect)

It is envisaged that the proposed project would generate sufficient employment opportunity during construction phase as well as operation basis. For carrying out construction related activities, it is envisaged to engage skilled, semi-skilled and unskilled workers from local area to the maximum extent.

2.6.7 Manpower Requirement

Based on the organizational pattern followed in the existing fertilizer plants, it is envisaged that, the total number of personnel required for operating in different plants and establishments during normal operation in three shifts and at full rated capacity would be about 460 directly employed & 1500 indirectly employed. The breakup of direct employment is given in Table-2.7.

Table- 2.7

Man Power Requirement

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description</th>
<th>Estimated Manpower Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Plant Head</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Production / Operation</td>
<td>210</td>
</tr>
<tr>
<td>3.</td>
<td>Maintenance</td>
<td>112</td>
</tr>
<tr>
<td>4.</td>
<td>Technical Services</td>
<td>22</td>
</tr>
<tr>
<td>5.</td>
<td>Materials Management</td>
<td>28</td>
</tr>
</tbody>
</table>
3.0 PROJECT DESCRIPTION

3.1 TYPE OF PROJECT

The proposed project is based on recent best available technology with an aim to reduce the energy consumption per tonne of production by adopting the modern proven, fail-safe technology. The project fulfills the aims and objective of environment by reduction in energy and natural resources like NG & water. This is a part of “India Low Carbon Strategy” and INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC) under UNEPCCC Protocol.

3.1.1 The proposed project is an independent project and not interlinked with any other project. Implementation of new technology which consumes approximately 7.005 Gcal/Te of ammonia and 4.904 Gcal/Te of Urea shall facilitate low emission from proposed ammonia / urea plants. It will recover maximum energy due to implementation of new technology.

3.2 LOCATION OF THE PROJECT

The existing Sindri unit of FCIL is located in the District of Dhanbad in the State of Jharkhand. Sindri is well connected with major cities by rail / road. Dhanbad district headquarter is about 26 km from Sindri is an important divisional headquarter of East Central Railway. The historical Grand Trunk Road and National Highways NH-02 connecting Kolkata and Delhi passes only about 25 km from Sindri Factory area. Other major highways NH-32 is also passing nearby. Nearest Airport having regular commercial flights are at Ranchi 180 km, Kolkata 256 km and Patna 296 km away from Sindri. Kolkata 256 km on Bay of Bengal is the most important seaport of the eastern India where all major sea liners of world have anchors.
3.2.1 Co-ordinates of the project
The Geo Co-ordinate of Sindri fertilizer complex is at Longitude 23º 39’ 43.56” N and Latitude 86º 29’ 14.43” E at an elevation of 160 m above mean sea level (MSL).

3.3 Details of Alternate Site
The choice for selection of alternate site is not open as the proposed Ammonia / Urea Plants shall be installed within plant premises of old existing Sindri fertilizer complex. The project shall be centrally located within the battery limit of the complex.

3.3 Size & Magnitude
The proposed Fertilizer Project will include the following units.

- Single Stream Ammonia plant with a nominal capacity of 2200 MTPD
- Single Stream Urea plant with a nominal capacity of 3850 MTPD
- Urea bagging and loading facilities etc.
- All offsite & Utilities (Power, steam, water, inert gas, instrument air, effluent treatment, cooling tower, safety/fire fighting, Gas Metering and refurbishment of Non-Plant building facilities).

The project shall be implemented within existing old Sindri fertilizer complex premises which is spread over around 6653 acres of land under the ownership of FCIL.

3.4 Project Description
3.4.1 Ammonia Plant
The Ammonia Plant will be of single stream having a capacity of 2200 MTPD. The plant will be designed to use NG/RLNG as feed and fuel. The modern high capacity plant has the advantage of economy of scale as well as lower energy consumption thereby resulting in lower production cost. The Ammonia Plant will be self-sufficient in steam. Part of steam requirement for Urea Plant will be met from ammonia plant. The remaining steam requirement to urea plant will be met from the steam generated in HRSG of Gas Turbine (GT) driven captive power plant.
3.4.2 **Urea Plant**

The Urea plant will be laid out in single stream having nameplate capacity of 3850 MTPD prilled urea plant with stripping process technology. High-pressure steam imported from the Ammonia Plant will be used to drive the CO₂ Compressor with extraction arrangement for meeting the process requirements.

3.4.3 **Ammonia Storage**

The provision of two new (2x5000) MT atmospheric ammonia storage tank with all associated facilities have been considered for the proposed Project.

3.4.4 **Urea Storage, Handling and Bagging**

The new urea silo of 60000 MT capacities has been envisaged keeping product inventory of about 15 days. Provision of new automatic bagging plant has been considered. For the proposed project, (7+1) bagging streams, each of 60 MTPH, have been considered. Modern and automatic system has been conceived for bagging and loading of product into railway wagons/trucks. The system broadly consists of lifting of empty bags from the sack magazine, placement of empty bags on the bag holder, stitching of filled bags and flattening of filled bags on subsequent flat belt conveyor, loading of filled bags into rail wagons/trucks shall be completely automatic involving very little manual labour.

3.4.5 **Water Supply, Treatment and Distribution**

Raw water is considered to be sourced from nearby Damodar River through pump houses with intake well pumps. Necessary facilities have been considered to get the required level of water for normal operation of the pumps. Water will be pumped from Damodar River to the Water Treatment Plant through pipeline. A new reservoir, pump house and pre-treatment plant have been considered.

For the proposed fertilizer complex, DM Water Plant (1+1) 100 m³/hr capacity catering to the requirements of the DM Water to the Steam Generation and Process Units has been considered.

Considering the minimum condensate recovery from the complex, condensate polishing unit of capacity (2+1) 250 m³/hr has been considered.
3.4.6 Cooling Water System

The Cooling water system will cater to the cooling water requirements of all facilities of the complex. The bearing cooling water requirements of pumps, compressors etc. shall also be met from cooling water system. The cooling water system envisaged for the proposed fertilizer complex is fresh water recirculating type.

The cooling water system provides cooling water to all users and controls the chemical composition of circulating cooling water to prevent corrosion, biological growth and solids deposits in piping etc. Cooling water return from various units is to be routed to the cooling tower.

The cooling water system will consist of two independent cooling water generation & distribution systems:

Ammonia, CPP and OSBL Cooling Water System

This cooling water system will cater to the cooling water requirement of the following main units:

- Ammonia Unit
- CPP
- DM plant + CPU
- Ammonia storage
- Other Misc. facilities

The rated capacity of the system is 28000 m$^3$/h. Cooling tower will have nine (8+1) cells each of capacity 3500 m$^3$/hr.

Urea Cooling Water System

The total cooling water demand of Urea plant will be met from Urea Cooling Water System. The rated capacity of the system is 17500 m$^3$/h. Cooling tower will have six (5+1) cells each of capacity 3500 m$^3$/hr.

3.4.7 Steam & Power Generation System (Captive Power Plant (CPP))

In order to have best optimized energy consumption for the complex the CPP has been integrated with Ammonia unit. The CPP will meet all the requirements of ammonia unit for normal as well as start-up/emergency operations; in addition CPP shall supply the required power and steam to rest of the facilities of the complex.
CPP is the central unit supplying steam (HP/ MP/ LP) and power to all process units, utility systems & offsites. It consists of GTG/ HRSG, Deaerators and other auxiliaries.

i) Steam System

Steam is consumed in the complex at three levels, viz. High Pressure (HP) Steam, Medium Pressure (MP) Steam, Low Pressure (LP) Steam. Steam is also generated at all three levels within process units / facilities of complex either in process steam generators or through steam turbines for process pump / compressor turbine drives.

Steam is used in the fertilizer complex mainly for the following purposes besides the internal demand of CPP:

- Process use (Chemical reaction, Stripping steam etc.)
- Steam drives for some of the compressors/pumps
- As heating medium for steam heated exchangers
- Steam tracing of lines
- De-aeration
- Intermittent requirement like decoking, purging etc.

ii) Power System

Power is used in the complex for following main purposes, besides the internal power demand of captive power plant (CPP):

- For driving motors to run various rotating machinery (pumps, compressors, blowers, etc.)
- For meeting the power demand of instruments
- For operating electric heaters (like instrument air dryer heater, electric tracing of lines if specified, etc.)
- For plant lighting and other miscellaneous purposes, etc.

To meet the requirement of the proposed fertilizer complex, provision of natural gas based gas turbo generator (GTG) set (1) of 15 MW ISO rating capacity and STG (steam turbine generator) of 10 MW capacity has been kept to ensure uninterrupted power supply to the plant. The exhaust gas from the gas turbine (GT) shall be utilised for generating HP steam required in urea plant and STG.
3.4.8 Instrument Air Facilities

The normal instrument air requirement for the plant will be met from the Process Air Compressor. However, as instrument air is very vital for process control instruments, (1+1) Centrifugal Air Compressors each having a capacity of 3000 Nm$^3$/hr along with air dryer and receiver units have been provided for the Project. This arrangement will add to the fail-safe system of instrument control.

3.4.9 Fire Fighting System

Fire-fighting system including firewater storage, pumps etc. shall be provided which will be adequate to meet the requirement of proposed plant. Provision has been made for firewater ring and other fire & safety equipment including fire tenders.

3.4.10 Effluent Treatment

Urea plant shall be provided with deep Urea Hydrolyser System, which will generate condensate for re-utilization in the Plant itself. Ammonia Plant shall be provided with Condensate Stripper for stripping and re-using of ammonia. Disc. oil separator shall be provided for removal of oil from oil bearing effluents generated in various compressors system.

The occasional effluent generated during plant upset conditions shall be stored in effluent delay pond from where it shall be discharged to treat effluent pond at controlled rate after treatment in steam stripper. The capacity of existing untreated and treated effluent pond is not sufficient to meet the requirements hence provision has been made against this head in the Project.

3.4.11 Auxiliary & General Welfare Facilities

The following facilities have been considered under this head.

- Safety
- Smoke detection system
- Workshop Equipment
- Communication System
- NDT Equipment
- Laboratory Equipment incl. Lab Chemicals
- Weigh Bridges
- Public address system
- Computers & Software
• Pollution Monitoring System
• Furniture’s & Fittings (Plants & Township)
• Office, Canteen, First Aid etc.
• Hospital Equipments

3.4.12 Transport Facilities

Provision for (1+1) locomotives each of 1200 HP, two nos. of cars, two nos. of jeeps, one ambulance and one bus, etc. has been provided for the Project. Existing railway siding of about 10 km has been considered after necessary renovation. Development of parking area for truck movement within the complex has been also provided.

3.4.13 Construction Facilities

The following facilities have been considered under this head.
• 400 Te Crane (1 no.)
• 75 Te Crane (1 no.)
• 12.5 Te tyre mounted crane (1 no.)
• 5 Te tyre mounted crane (2 nos.)
• Tractor with trailer (2 nos.)
• Fork Lift (4 nos.)
• Bull dozer (2 nos.)
• Fire Tenders (2 nos.)
• Tools and Tackles
• Hutments & Shelters
• Shed yards
• Fencing

3.4.14 Township and other facilities

The Existing Sindri plant has about 5026 Quarters of different type, along with Guest House, Officers Club, Kalyan Kendra, Model English High School, JET Hostel, Overhead tank with Water Supply System, Road, Drainage & sewerage system. Initially 500 Quarters will be refurbished /repaired for use of employees. Further to this, other facilities will be refurbished /repaired.
3.5 Raw Material & Utilities

3.5.1 Raw Material Consumption

3.5.1.1 Consumption Norms

The requirement of raw material and utilities for the proposed project has been worked out on the basis of rated capacity operation of the ammonia urea plants. The requirements of various inputs for 2200 MTPD ammonia and 3850 MTPD urea plants are summarized in Table-2.8:

<table>
<thead>
<tr>
<th>Raw Material/Utilities</th>
<th>Unit</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas (LHV 8653 kcal/Nm3)</td>
<td>Nm3/hr</td>
<td>90910</td>
</tr>
<tr>
<td>Treated Water</td>
<td>m3/hr</td>
<td>1100</td>
</tr>
<tr>
<td>Neem Oil</td>
<td>Kg/hr</td>
<td>56.15</td>
</tr>
</tbody>
</table>

3.5.1.2 Natural Gas

NG will be available for the proposed project through GAIL’s Jagdishpur-Phulpur-Haldia pipeline. The Jagdishpur - Phulpur - Haldia pipeline will consist of a 36 inch diameter, 922 km mainline, and 1,128 km of spur lines and feeder lines of between 12 and 30 inches diameter.

The material and energy balance for the project has been developed assuming LHV of natural gas as 8653 kcal/Sm3. The total requirement of natural gas at rated capacity operation of the plants is estimated at about 90910 Nm3/hr (about 2.22 MMSCMD) including energy as natural gas which is generally consumed during planned shut-down and start-up of the complex. This requirement includes the gas to be used as raw material for the ammonia plant and utilities as power generation etc.

The Cabinet Committee of Economic Affairs (CCEA) has recently approved the gas pooling mechanism for the fertilizer industry. The proposal provides uniform delivery cost of natural gas for all gas-based urea plants by pooling their gas supply and averaging out the different rates of domestic and imported gas. While the policy is yet to be notified, it will be implemented from June 1, 2015 and would level the playing field for all the manufacturers. Pooling of gas would also provide clarity on gas prices for new projects to be set up under NUIP 2012 and would make gas more affordable. It is anticipated that the landed gas price for the urea industry shall be at USD 10/MMBtu. In view of this, natural gas price of 10.0 US$/MMBtu at battery limit inclusive of all taxes and duties has been considered for the proposed project.
3.5.1.3 Water

The total requirement of raw water for the complex is envisaged to be around 1265 m$^3$/hr. Water requirement will be made available from Damodar river through pipeline. Pre-treatment of raw water has been considered for process use.

3.5.1.4 Bags

Urea will be sold in 50 kg bags. The provision has been made for the use of polyethylene bags. The delivered price of bag has been considered as rs. 19.0/bag.

3.5.1.5 Catalysts

The following catalysts would be required for the project:
- Hydro-desulphurisation
- Primary Reformation
- Secondary Reformation
- HT Co-Shift Conversion
- LT Co-Shift Conversion
- Methanation
- Synthesis

3.5.2 Resource Recycling/Reuse

The proposed project envisages resource recycling and reuse. The entire amount of effluent is treated efficiently and reused either in plant or in gardening of green belt areas.

3.5.4 Availability of Water, Energy & Power

Water

Water Consumption of proposed Ammonia/ Urea Plants is about 1265 m$^3$/hr and the source of water is Damodar river located at a distance of around 500 m from the boundary of fertilizer complex.

Energy

To meet the requirement of the proposed fertilizer complex, provision of natural gas based gas turbo generator (GTG) set (1) of 15 MW ISO rating capacity and STG (steam turbine generator) of 10 MW capacity has been kept to ensure uninterrupted power supply to the plant. The exhaust gas from the gas turbine (GT) shall be utilised for generating HP steam required in urea plant and STG.
3.5.5 Quantity of Waste (Solid & Liquid)

The main solid wastes to be generated will be spent catalysts, spent resins, activated carbons, etc. Spent catalyst shall be stored, handled as per Hazardous Waste (Management Handling & Transboundary Movement) Rules 2008 and shall be disposed of through SPCB authorized recyclers. The quantity of wastes are as under:

Spent catalyst (Non-ferrous): Approx. 800 MT in 4 – 5 years.

Spent oil: Approx. 1 KL per month (max.)

WTP sludge = 100 Kg/hr (max.)

ETP sludge =100 Kg/hr (approx.)

4.0 SITE ANALYSIS

The proposed project shall be located in the existing premises of FCIL Sindri unit in the free unencumbered available land.

The existing Sindri unit of FCIL is located in the District of Dhanbad in the State of Jharkhand. Sindri is well connected with major cities by rail / road. Dhanbad district headquarter is about 26 km from Sindri is an important divisional headquarter of East Central Railway. The historical Grand Trunk Road and National Highways NH-02 connecting Kolkata and Delhi passes only about 25 km from Sindri Factory area. Other major highways NH-32 is also passing nearby. Nearest Airport having regular commercial flights are at Ranchi 180 km, Kolkata 256 km and Patna 296 km away from Sindri. Kolkata 256 km on Bay of Bengal is the most important seaport of the eastern India where all major sea liners of world have anchors.

4.1 Ownership of the Land

FCIL Sindri Unit is the sole owner of entire 6653 acres of land.

4.2 Township

The total number of quarters in the township is around 5026 of various sizes. The other facilities in the township include Marketing Buildings, Hospital, Guest house, Entertainment Centre, Hostels, and Schools and others.
4.3 Eco-sensitive Areas
Wild Life Sanctuary, National Park and Reserved Forest have not been identified in the vicinity of Sindri fertilizer complex.

5.0 Environmental Status
Though Dhanbad industrial area falls in the list of 88 industrial clusters identified for preparation of Comprehensive Environmental Pollution Index (CEPI). FCIL Sindri which is located at a distance 28 kms, does not fall in the list of 88 industrial clusters identified for preparation of Comprehensive Environmental Pollution Index (CEPI). It is also worth mentioning that the moratorium has been lifted in 2013.

The rate of growth of nearby towns, is similar to the rate of growth of other towns. All the required civic amenities like School, College, medical facilities etc are available within 15 km radius of FCIL.

6.0 Rehabilitation & Resettlement Plan
Old & closed FCIL Sindri fertilizer complex is spread over an area of 6652 acres of land. The total area of land is under the administrative possession of FCIL Sindri. The proposed fertilizer project shall be implemented within plant premises of existing Sindri Fertilizer Complex. Hence, any planning with respect to rehabilitation & resettlement is not applicable.

7.0 Project Schedule & Cost Estimates
7.1 Project Schedule
The likely date of start of construction shall commence after getting Environmental Clearance (EC) from MoEF&CC. The project is scheduled to be completed within 36 months after issuance of EC.

7.2 Cost Estimates
The Project Capital Cost of the proposed project 2200 MTPD ammonia and 3850 MTPD urea along with associated offsite & utility facilities, as per the scope is estimated at Rs. 5820.31 Crores. Details of the estimated capital requirement are as under:

Table-2.9
Project Capital Cost Estimates
Feasibility report for Ammonia/ Urea Project at FCIL Sindri (Jharkhand)

(Rs. Lakhs)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>FC</th>
<th>IC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Main Plants</td>
<td>111893</td>
<td>189310</td>
<td>301203</td>
</tr>
<tr>
<td>2.0</td>
<td>Off-Site Facilities</td>
<td>3924</td>
<td>91151</td>
<td>95075</td>
</tr>
<tr>
<td>3.0</td>
<td>Spares</td>
<td>5764</td>
<td>10827</td>
<td>16591</td>
</tr>
<tr>
<td>4.0</td>
<td>Project Management Charges</td>
<td>74</td>
<td>11280</td>
<td>11354</td>
</tr>
<tr>
<td>5.0</td>
<td>Engineering fee &amp; Services</td>
<td>21798</td>
<td>28338</td>
<td>50136</td>
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<tr>
<td>6.0</td>
<td>Non Plant Building</td>
<td>0</td>
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<td>7.0</td>
<td>Township</td>
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<td>6000</td>
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<td>8.0</td>
<td>Piling</td>
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<td>5000</td>
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<td>9.0</td>
<td>Land Development</td>
<td>0</td>
<td>3859</td>
<td>3859</td>
</tr>
<tr>
<td>10.0</td>
<td>Total Manufacturing Facilities</td>
<td>143453</td>
<td>349765</td>
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<tr>
<td>11.0</td>
<td>Working Capital Margin</td>
<td>0</td>
<td>17278</td>
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<tr>
<td>12.0</td>
<td>Contingency</td>
<td>7173</td>
<td>15308</td>
<td>22481</td>
</tr>
<tr>
<td>13.0</td>
<td>Net Commission Expenses</td>
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<td>Usable Asset</td>
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<td>14.0</td>
<td>Interest During Construction</td>
<td>0</td>
<td>26283</td>
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<tr>
<td></td>
<td><strong>Total Project Cost</strong></td>
<td><strong>150626</strong></td>
<td><strong>431405</strong></td>
<td><strong>582031</strong></td>
</tr>
</tbody>
</table>

Note: FC - Foreign Currency, IC - Indian Currency

8.0 Cost of Production

8.1 Capacity and Level of Production

The capacities of ammonia and urea plants in the proposed Project have been considered as 2200 MTPD and 3850 MTPD respectively. The conversion of total ammonia to urea will result in production of about 3850 MTPD urea; there will not be any surplus ammonia. The cost of production of urea has been worked out assuming operation at rated capacity and 330 days annual on stream efficiency. The annual production of urea on these assumptions will be 12.70 Lakh MT, which is considered as the rated capacity of the plant. Annual productions at lower capacity utilization are based on percentage of annual rated capacity.

8.2 Cost of Production
The cost of production of Neem coated urea has been worked out at 95% and the rated production (100%) levels and presented below:

**Table-2.10**  
Cost of Production of Neem Coated Urea

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Level of Production</th>
<th>COP of Urea (Rs./MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>95% level</td>
<td>18532</td>
</tr>
<tr>
<td>2.0</td>
<td>100% level</td>
<td>18202</td>
</tr>
</tbody>
</table>

9.0  Analysis of Proposal

The final analysis of proposed may be briefed as under:

a) The revival of FCIL Sindri will narrow the gap between demand and supply of Urea in eastern zone of India.

b) Though Industrial clusture of Dhanbad has been identified as critically polluted zone but Sindri which is at a distance of 28 kms, has *never been identified as “CRITICALLY POLLUTED AREA/ ZONE” by CPCB*. Hence, the site is well suitable for establishment of proposed Ammonia/ Urea Plants at Sindri.

c) The implementation of recently developed Best Available Technology (BAT) which is a reliable and reproducible in different environment throughout the globe, will save energy consumption for production of ammonia to about 2.0 Gcal/te of ammonia. At present most of Indian fertilizer industries require about 9.0 Gcal/Te of ammonia. In case of FCIL energy consumption will be 7.5 Gcal/Te of ammonia.

d) The new technology will reduce the carbon load of the country and will be able to save and conserve the natural resources like NG, Water etc., in compliance to the resources conservation and reuse act.

e) The proposed project is a part of “India Low Carbon Strategy” and INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC) under UNEPCCC Protocol.

f) The policy for revival of FCIL Sindri is based on the recommendation of Cabinet Committee on Economic Affairs (CCEA) of Government of India held on 4.8.2011.
10.0 Conclusion

Based on the facts mentioned above, the proposed project proposal for revival of FCIL Sindri deserves a sincere consideration on priority basis for implementation of project in time.
Plate-1

Location of Old Closed FCIL Sindri Fertilizer Complex on Google Map
Plate-2

Location of Old Closed FCIL Sindri Fertilizer Complex on Geographical Map
PLATE-3
KEY PLAN OF FCIL SINDRI UNIT
PLATE-1.4
BLOCK DIAGRAM OF PROCESS OF PROPOSED AMMONIA PLANT
PLATE-1.5

BLOCK DIAGRAM OF PROCESS OF PROPOSED UREA PLANT
PLATE-1.6

BLOCK DIAGRAM OF RAW MATERIAL & UTILITY BALANCE
PLATE-1.7
BAR CHART SHOWING PROJECT COMPLETION SCHEDULE

Note: Zero date will start after issuance of EC from MoEF&CC