How the sector has performed?
Pollution and compliance

Of all the sectors rated by GRP, steel sector has the **worst compliance** record

**Air pollution**

Most companies were struggling to meet air pollution norms in one area or another – stack, fugitive or work zone

- Of the 45 recovery coke oven batteries assessed, only 11 were complying with leakage norms;
- Of the 14 plants with sinter process, only 3 were meeting the sinter plant stack emission norms;
- Most of the coal DRI kilns assessed were not meeting stack emission norms
Pollution and compliance

• Fugitive emissions from raw material storage, handling and transportation were very high in most plants – guidance and standards absent

• High air pollution from solid waste disposal, especially in DRI plants

Water pollution

Major problem with BF-BOF plants having by-product recovery coke oven

• Most not meeting Cyanide and Phenol norms;

• Metallurgical wastewater not meeting solids and heavy metals norms
Solid waste disposal
Major problem with Coal DRI plants; most disposing it outside the plant creating high air and water pollution.
Weak regulation and even poorer monitoring
• All have environment policy and environment department;
• Most have ISO 14001, OHSAS 18001 and some even have SA 8000 for social accountability, decent working condition and human rights.
• Only sector with no correlation between management systems and actual performance.
• Plants with ISO 14001 were found to be non-compliant with even minimum environment norms
• OHSAS 18001 certification had no correlation with OHS performance. OHS performance found very poor across the sector.

• As many as 144 fatalities reported in 3 years (2008-2010) in the 17 plants for which data was available; 63 fatalities in the 9 OHSAS 18001 certified plants.

• Health records not disclosed

• Health and safety of contract workers is a major concern; half of the workers are on contract.
The future: Production

- About 8% CAGR in steel production since 1991
- At this rate, four-folds increase in steel production by 2030
The future: Process route

2008-09

- Coal DRI-EF: 26%
- Gas DRI-EF: 11%
- BF-BOF: 49%
- Scrap-EF: 14%

2030-31

- Coal DRI-EF: 58%
- Gas DRI-EF: 2%
- BOF: 30%
- Scrap-EF: 10%
Solid waste disposal

- Current average: 0.5 tonne/tcs (0.3 tonne for BF-BOF and 1 tonne/tcs for coal DRI-EAF)
- Annual disposal: 30 million tonnes
- Projected disposal under BAU in 2030: 150-200 million tonnes

Example: Vizag Steel
- Current disposal: 0.24 tonnes/tonne; 0.72 million tonnes annually at 3 million tonne capacity
- Expanding to 10 million; 2.4 million tonnes to be disposed
Water: business-as-usual

- 2010-11: 700 Million m$^3$
- 2020-21: 1,600 Million m$^3$
- 2030-31: 3,400 Million m$^3$
Land: business-as-usual

Hectares:
- 2010-11: 75,000
- 2020-21: 96,769
- 2030-31: 142,264
The future: Resources

Coal

Iron Ore

<table>
<thead>
<tr>
<th>Year</th>
<th>Million tonnes coking coal equivalent</th>
<th>Million tonnes</th>
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<tr>
<td>2010-11</td>
<td>60</td>
<td>111</td>
</tr>
<tr>
<td>2020-21</td>
<td>130</td>
<td>216</td>
</tr>
<tr>
<td>2030-31</td>
<td>280</td>
<td>468</td>
</tr>
</tbody>
</table>
The future: CO$_2$ Emissions

- 2010-11: 167
- 2020-21: 360
- 2030-31: 778

Million tonnes
TWO KEY MESSAGES:

• First, there is a tremendous scope for improvement in all areas.

• The second message is a warning: If business-as-usual continues, soon the sheer size will create insurmountable ecological and social problems.

• Marginal improvement will not help; leapfrog solutions are required.