<table>
<thead>
<tr>
<th>Region</th>
<th>2002</th>
<th>2003</th>
<th>%Growth</th>
<th>2004</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe / Africa</td>
<td>8,628</td>
<td>9,043</td>
<td>4.9</td>
<td>9,414</td>
<td>4.1</td>
</tr>
<tr>
<td>The Americas</td>
<td>2,750</td>
<td>2,830</td>
<td>3.7</td>
<td>2,929</td>
<td>3.5</td>
</tr>
<tr>
<td>Asia</td>
<td>9,049</td>
<td>10,645</td>
<td>17.6</td>
<td>11,896</td>
<td>11.8</td>
</tr>
<tr>
<td>Central &amp; Eastern Europe</td>
<td>252</td>
<td>341</td>
<td>9.9</td>
<td>343</td>
<td>0.6</td>
</tr>
<tr>
<td>Total World</td>
<td>20,679</td>
<td>22,861</td>
<td>10.4</td>
<td>24,583</td>
<td>7.5</td>
</tr>
</tbody>
</table>

- India & China will contribute to maximum growth in Asia.
- Global production of Stainless Steel is likely to grow only by 2% in 2005 due to high raw material price and de-stocking.
- Estimated growth for 2006 + 6%.

Source: ISSF
Asia incl. China, South Korea, India, Thailand, Taiwan has become the largest user segment with share of almost 43% last year which is expected to increase to 50% going forward.

Above change in market dynamics to have substantial impact on raw material markets, pricing, material flow, product mix by grades and market development.

Data source: Heinz H. Pariser, Alloy Metals & Steel Market Research
China with its apparent consumption of 5.3mt has surpassed the aggregate demand of 5.2 mt from Japan & US

*Data source : Heinz H. Pariser, Alloy Metals & Steel Market Research*
Despite exponential growth of 25-30% over last 3-4 yrs, China still below other developed economies like US, EU & Japan

“Can India be the next China????”

Data source: Heinz H. Pariser, Alloy Metals & Steel Market Research
In order, to meet its apparent consumption of 5.3mt in 2004, China imported 2.9 mt of stainless steel.

*Data source: Heinz H. Pariser, Alloy Metals & Steel Market Research*
India still to go long way in development of its basic infrastructure

Only 1% of domestic stainless steel consumption goes into construction compared to 25% in China

Architecture, Building & Construction (ABC segment) and Automotives, Railways & Transport (ART) are expected to be drivers of demand growth in India.
Global Stainless Steel Production Categories
Indian Stainless Steel Industry

An Overview
Stainless Steel Production in India

- 1980: 50,000 tons
- 1985: 100,000 tons
- 1990: 250,000 tons
- 1995: 500,000 tons
- 2004: 1,700,000 tons

Average Growth: +18%
Growth: +12%
India with apparent consumption of 1.2 mt placed 7th in terms of global stainless steel consumption

- Indian consumption growth over last decade at 12%
- Indian per capita consumption of stainless steel of 1.1 kg is far lower than china 4.1 kg & developed countries in range of 15-20 kg
- Jindal Stainless contributes 35% to domestic stainless steel production
- Potential for high growth -
  - higher expected growth in GDP & Industrial production
  - existing low per capita consumption
  - Availability of key natural resources like manganese and chrome ore
  - low manpower cost

Indian stainless steel demand expected to grow by 12% annually
Evolution of Cr-Mn (200 Series) Stainless Steel in India
Indian Stainless Steel - 1990

- Production - 250,000 ton
- 95% of 300 Series (Grade 304)
- 85% of end use was in Kitchenware
- High Nickel prices in 1989 – $ 18,000 per ton
- Foreign Exchange Restrictions
- 15 years of R & D efforts of Jindal Stainless to develop special Cr-Mn grades for the domestic & international market.
Indian Stainless Steel Industry

Applications

Kitchenware
Stainless Steel Kitchenware

Indian usage is in Kitchenware at 74%
Applications

Architecture, Building & Construction
Stainless Steel

Parliament Library

Focal Dome
31 tonnes used

VIP dome
38 tonnes used
Over 350 tonnes of stainless steel has been used.

Majority of the applications strictly from the utilitarian point of view.

Structural use of stainless steel emphasized.
Stainless Steel

Apollo Tyres Corporate Office, Gurgaon

Internal glass staircase with front wall cladding, in stainless steel
Stainless Steel
ABC

Entrance Gate
Jindal Stainless, Hisar

Tulsi Bhawan, R&D Center,
Jindal Stainless, Hisar
Koperkhairane Railway Station
Platform Roof, New Bombay.
BFL Software Office, Bangalore

CAD Designed CNC Laser cut Sculpture hanging in ING-Vysya Bank, Bangalore.

TIMKEN Engineering and Research India Ltd., Electronic City, Bangalore.
Stainless Steel

Delhi Metro Station

Escalators & Handrails
Information Board
Dividers
Bench
Dustbin
Stainless Steel

ONGC - Fuel Retail Outlet, Mangalore
Stainless Steel

ABC

The Atrium

Entertainment Plaza

Source: Morphogenesis Architecture Studio

Escalators in a shopping mall
Stainless Steel
ABC

EDM Plaza, Ghaziabad,
Developed by Jindal Stainless- Architectural Divn, Delhi.
Stainless Steel

ABCD

Shop Interiors
Stainless Steel
ABC - New Products & Services

PVR Cinema Multiplex
Mumbai

New Design Letterbox for Indian Post

Signage for Unitech Amusement Park in Rohini & Noida.

Developed by Jindal Stainless Arc Division
### Stainless Steel ABC Sector in India

<table>
<thead>
<tr>
<th>Segment</th>
<th>Rs. Million (Investment)</th>
<th>Estimated SS Consumption in tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail outlets</td>
<td>160,000</td>
<td>12000 – 18000</td>
</tr>
<tr>
<td>Food outlets</td>
<td>600</td>
<td>350 – 400</td>
</tr>
<tr>
<td>Petrol retail</td>
<td>3,000</td>
<td>1200 – 1800</td>
</tr>
<tr>
<td>IT Parks</td>
<td>50,000</td>
<td>8000 – 12000</td>
</tr>
<tr>
<td>Commercial Complexes</td>
<td>25,000</td>
<td>4000 – 6000</td>
</tr>
<tr>
<td>Metro Stations-Phase II Delhi</td>
<td>1,000</td>
<td>1000 – 1500</td>
</tr>
<tr>
<td>Non Metro Airport Modernization</td>
<td>20,000</td>
<td>1600 – 2400</td>
</tr>
<tr>
<td>Delhi – Mumbai Privatization</td>
<td>120,000</td>
<td>12000 – 18000</td>
</tr>
<tr>
<td>New Airports – Hyderabad/Bangalore</td>
<td>50,000</td>
<td>5000 – 10000</td>
</tr>
<tr>
<td>Total</td>
<td>480,000</td>
<td>45,000 – 65,000</td>
</tr>
</tbody>
</table>

**Investment in Architecture, Building & Construction related to above areas is estimated to be 48000 Crores (USD 10 billion).**

**S S demand in ABC Sector to increase by 25% for next 5 years from present low level.**
Applications

Street Furniture
Stainless Steel Street Furniture

A New Age Bus Shelter in Delhi
Designed & Developed by Jindal Stainless- Architectural Division
Walkeshwar, Mumbai

Case Study
Stainless Steel
Street Furniture

Stainless Steel Dustbins
Stainless Steel
Street Furniture

‘Silver Trees’ at the Prestige Poseidon, Bangalore

‘Pinwheel Tree’ at Garden of Five Senses, New Delhi
Stainless Steel
Street Furniture

12 snail-shaped stainless steel water spouts

Signature Towers, Gurgaon
Applications

Automotive, Railways & Transportation
Delhi Metro Rail Corporation

Delhi Metro-type mass transit systems is being considered for Ahmedabad, Bangalore, Chennai, Hyderabad, Mumbai etc.

All Stainless Steel coaches
Stainless Steel coach fabricated with LBH Design (Germany) at the Rail Coach Factory (RCF)

Delhi-Mumbai Rajdhani Express

Delhi-Lucknow Shatabdi Express
Stainless Steel

ART

- Exhaust Manifold
- Oil Level Gauge
- Gasket
- Wiper
- Air Bag Inflator
- Seat Belt Retractor
- Trim
- Antenna
- Front Pipe
- Flexible Pipe
- Convertor
- Center Pipe
- Wheel Cap
- Muffler
- Tail Pipe
- Exhaust Manifold
Stainless Steel

ART

Exhaust System

SS Auto LPG Tanks
Growth Potential for Stainless Steel in India

- Automotive, Railways & Transport
  - Airport, Hotels & Hospitals
  - Metro Railways
  - Indian Railways
  - Auto Sector

- Architecture, Building & Construction
  - Fast Food Chains
  - Entertainment Plazas
  - Shopping Malls

- Kitchenware
Indian Stainless Steel Market Research - 2005
Melting production of 1.87 Million tonne in 2004-05. India’s share of world production has accordingly increased from 2% in 1991-92 to around 7% in 2004-05.
### Current Apparent Consumption by SS Product Forms 2004-05

<table>
<thead>
<tr>
<th>Form</th>
<th>Production</th>
<th>Imports</th>
<th>Exports</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HRC/CRC/HRP</td>
<td>485</td>
<td>68</td>
<td>324.2</td>
<td>228.8</td>
</tr>
<tr>
<td>UG Sheets</td>
<td>872</td>
<td>-</td>
<td>100</td>
<td>772</td>
</tr>
<tr>
<td>Total Flats</td>
<td>1,357</td>
<td>68</td>
<td>424.2</td>
<td>1,000.8</td>
</tr>
<tr>
<td>Longs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>351</td>
<td>23</td>
<td>221</td>
<td>153</td>
</tr>
<tr>
<td>G Total</td>
<td>1,708</td>
<td>91</td>
<td>645</td>
<td>1,153.8</td>
</tr>
</tbody>
</table>
## Projected Consumption of SS by Forms

In 000 tonne

<table>
<thead>
<tr>
<th>Year</th>
<th>Flat</th>
<th>Long</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>1,000.8</td>
<td>153.0</td>
<td>1,153.8</td>
</tr>
<tr>
<td>2009-10</td>
<td>1,685</td>
<td>373</td>
<td>2,058</td>
</tr>
<tr>
<td>2015-16</td>
<td>3,185</td>
<td>900</td>
<td>4,085</td>
</tr>
<tr>
<td>Growth</td>
<td>11.5%</td>
<td>17.5%</td>
<td>12.3%</td>
</tr>
</tbody>
</table>
# Projected Consumption by Products Forms 2005-16 in India

*In 000 tonne*

<table>
<thead>
<tr>
<th>Product Forms</th>
<th>Growth %</th>
<th>2005-06</th>
<th>2009-10</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRP</td>
<td>14.7</td>
<td>47.4</td>
<td>84.6</td>
<td>189.5</td>
</tr>
<tr>
<td>CRC</td>
<td>19.5</td>
<td>185.6</td>
<td>394</td>
<td>1023</td>
</tr>
<tr>
<td>UG Flats</td>
<td>7.5</td>
<td>830</td>
<td>1108</td>
<td>1710</td>
</tr>
<tr>
<td>W. Tubes</td>
<td>20</td>
<td>42</td>
<td>95</td>
<td>253</td>
</tr>
<tr>
<td>Bars</td>
<td>16.7</td>
<td>57.7</td>
<td>113.6</td>
<td>270</td>
</tr>
<tr>
<td>Bright Bars</td>
<td>20</td>
<td>37.4</td>
<td>89</td>
<td>225</td>
</tr>
<tr>
<td>W. Rods</td>
<td>18</td>
<td>72.5</td>
<td>145</td>
<td>343</td>
</tr>
<tr>
<td>Seamless tubes</td>
<td>14.5</td>
<td>15.2</td>
<td>26.6</td>
<td>60</td>
</tr>
<tr>
<td>Misc</td>
<td>15.4</td>
<td>2.3</td>
<td>4.2</td>
<td>9.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12.2</strong></td>
<td><strong>1,290</strong></td>
<td><strong>2,059</strong></td>
<td><strong>4,083</strong></td>
</tr>
</tbody>
</table>
Conclusion

For Stainless Steel Growth
Future Action is in Asia

Trend will continue led by China & India with 40% of World’s population
Global Stainless Steel Outlook

Thank You

08th International Stainless Steel Conference
06-08 November, 2005, New Delhi

Presented By
Mr. N.C. Mathur
President - ISSDA
Director – Jindal Stainless

Organized By: