

Indian Institute of Metals

“Stainless Steel/Alloy Special Steels and Super Alloys

2nd April 2016

New Delhi.

**Growth of Stainless Steel Industry & Its End Use
Transformation in India**



**N C Mathur
President**



Indian Stainless Steel Development Association

OUTLINE

Global Stainless Steel Industry Overview

Analysis of Indian Stainless Steel Industry

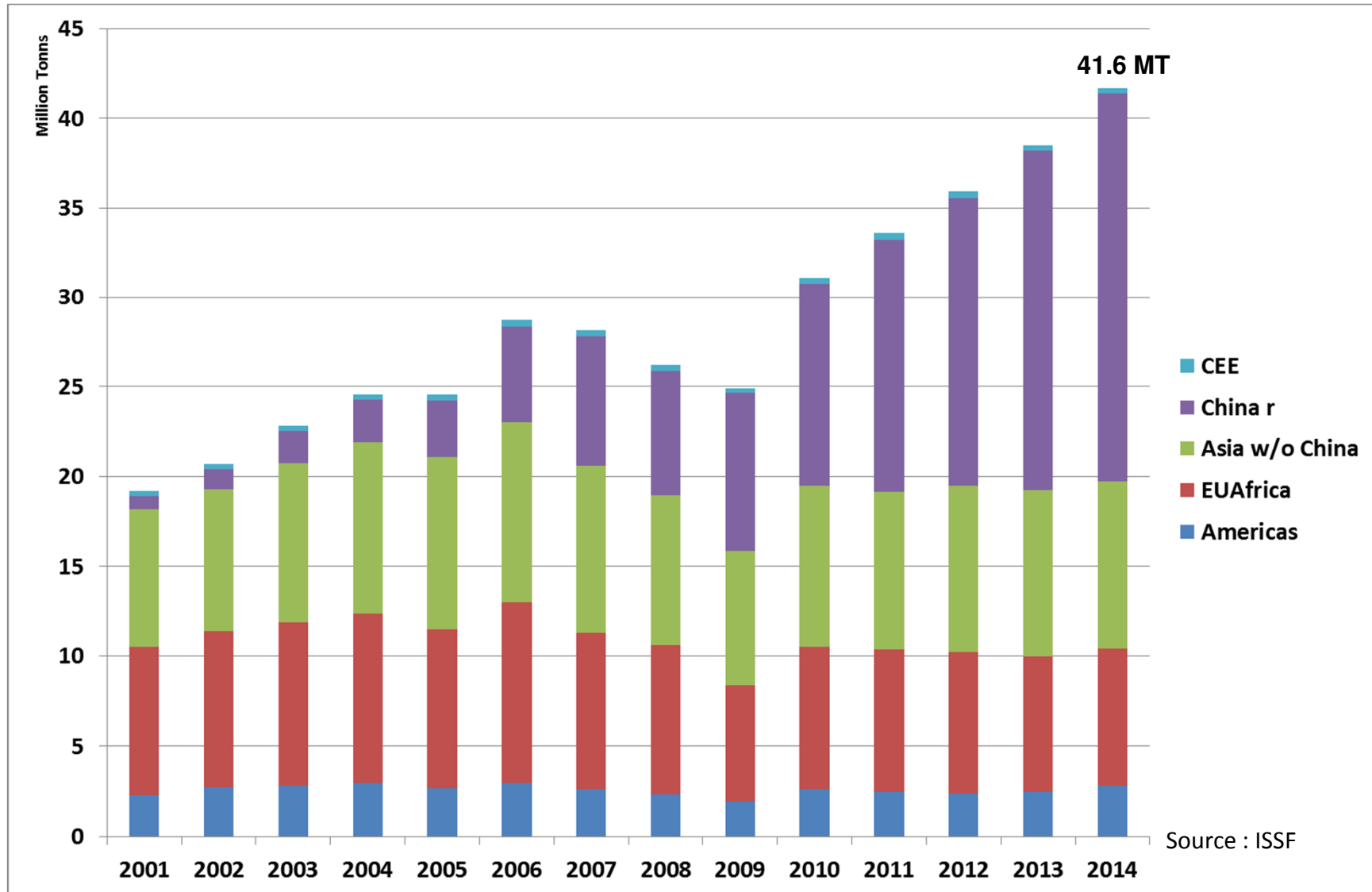
Stainless Steel End Use

Global & Indian Economy

Conclusion

Global Stainless Steel Industry Overview

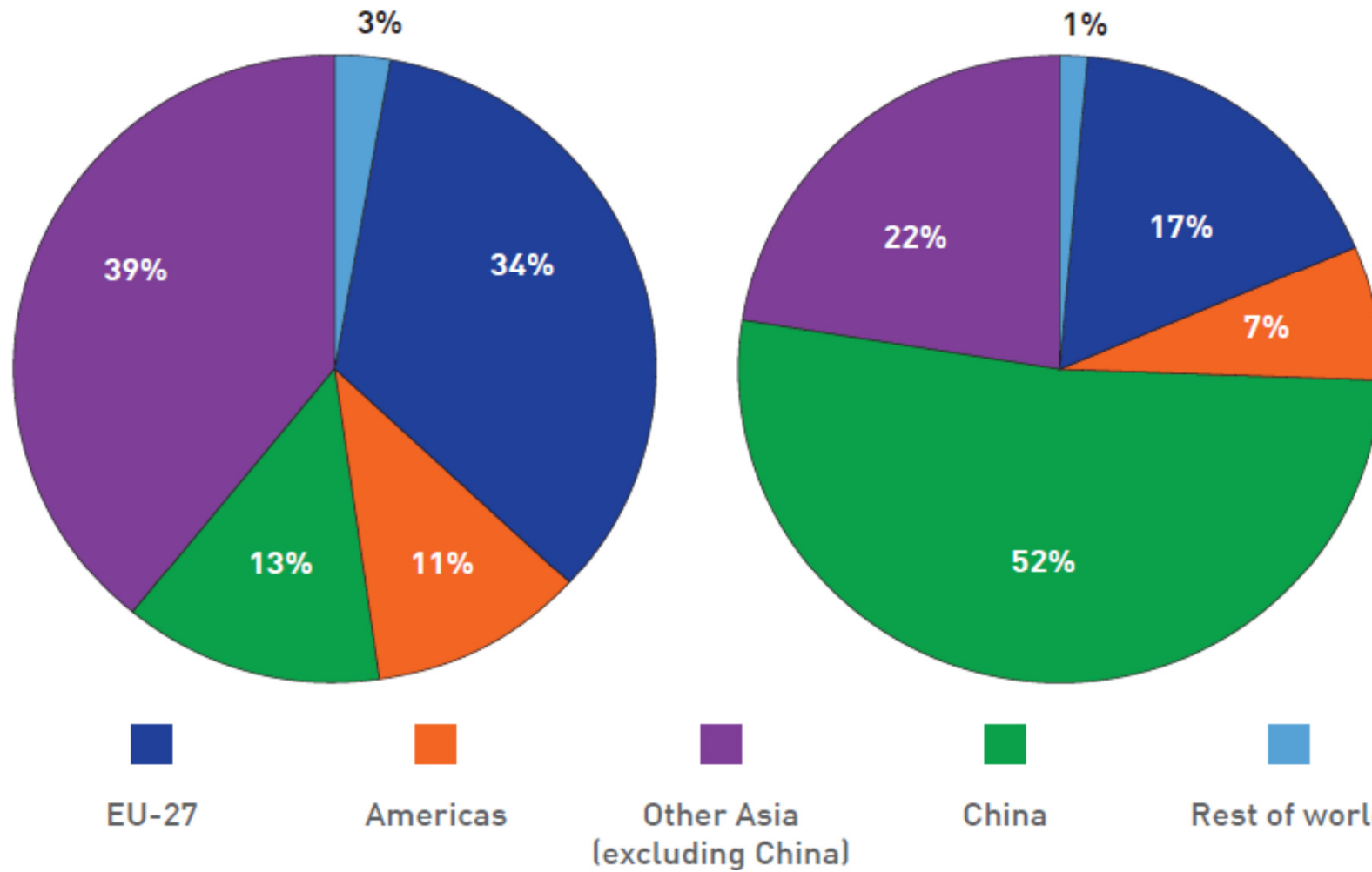
World Stainless Steel Melt Production



Source : Stainless Steel in Figures 2015 by ISSF

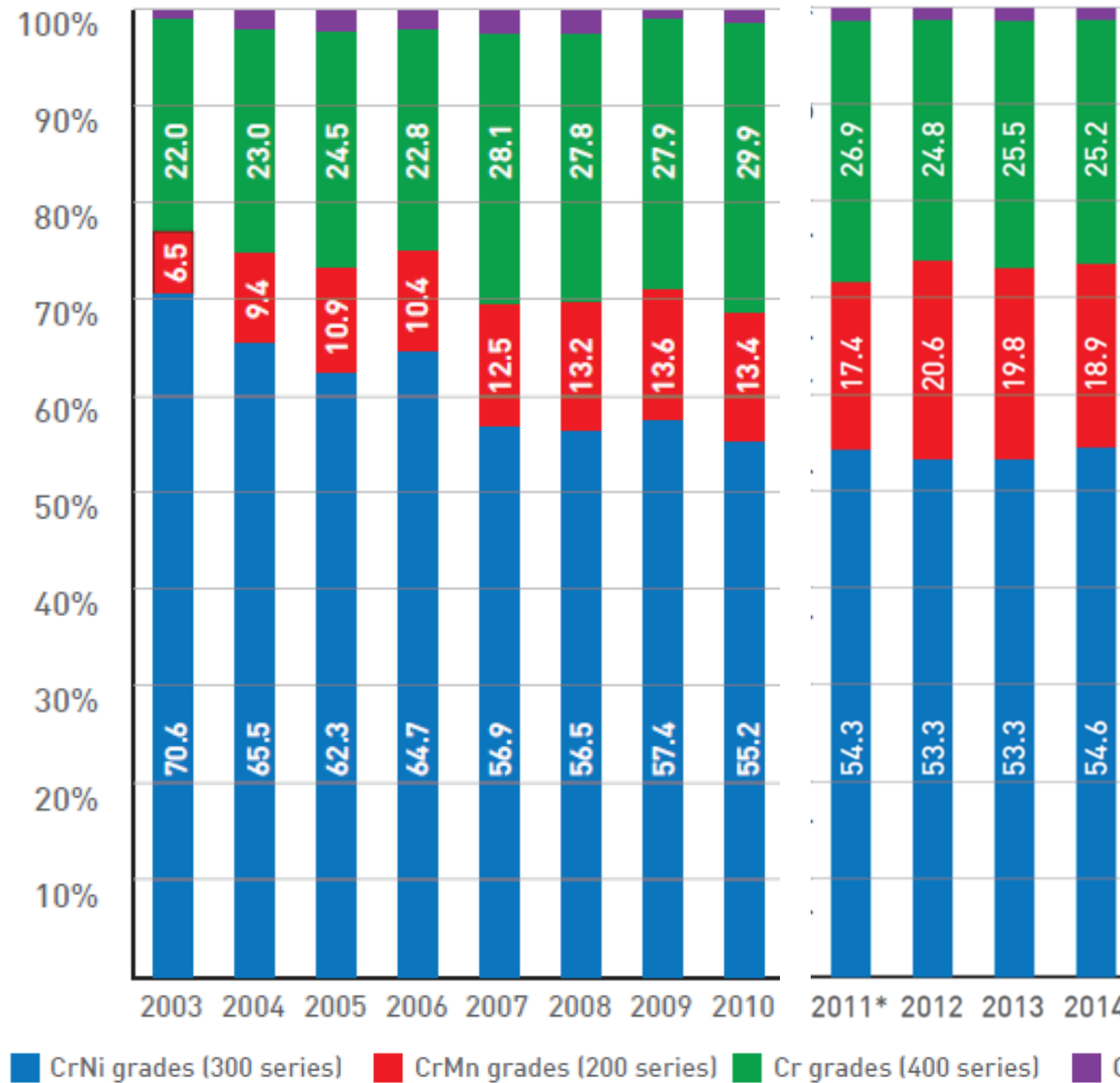
Source : ISSF

Regional share of stainless steel production: 2005 (left) and 2014 (right)



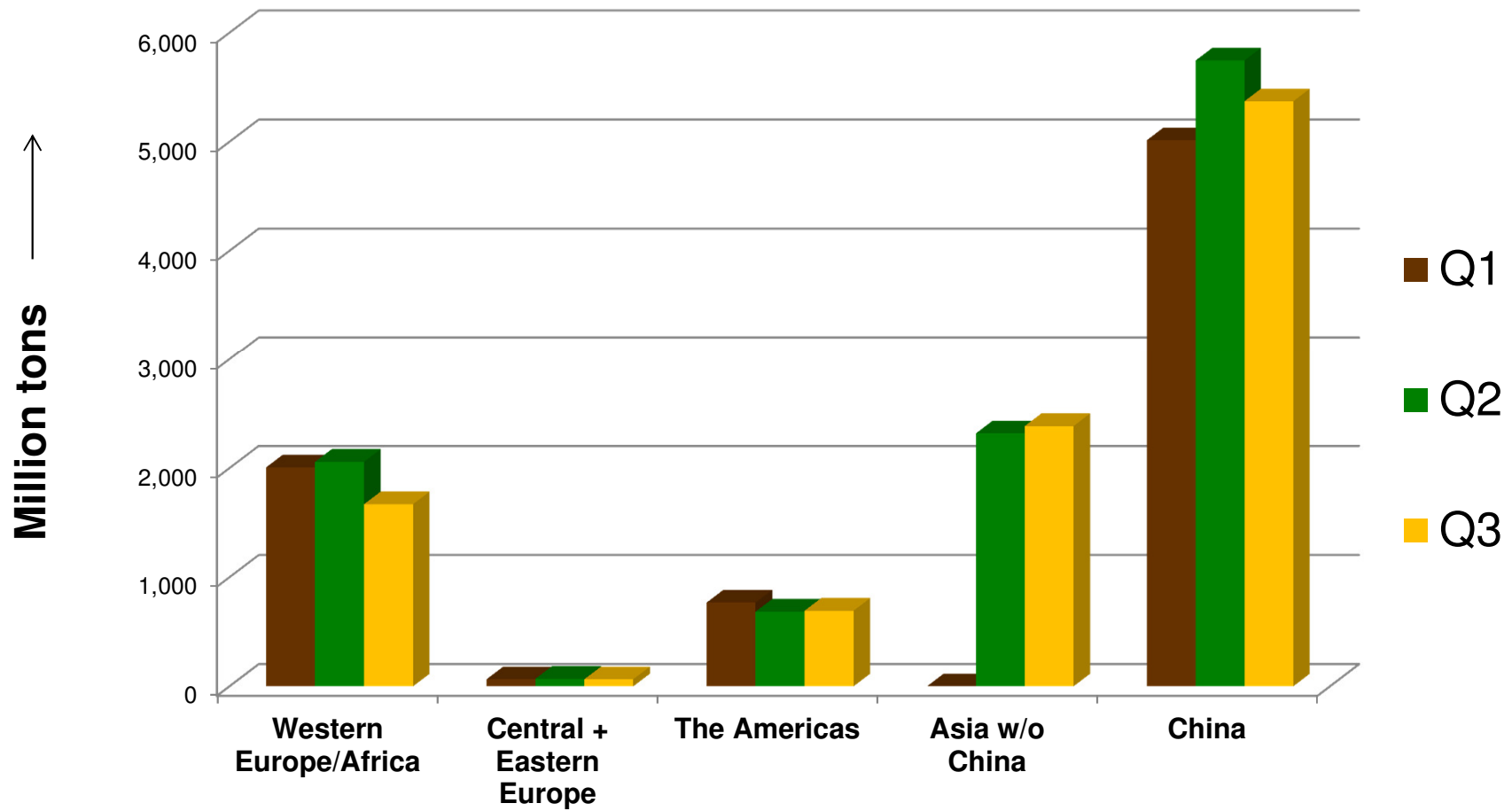
Source : ISSF

Stainless melt shop production (slab/ingot equivalent) by grade: 2003-2014



Source : ISSF

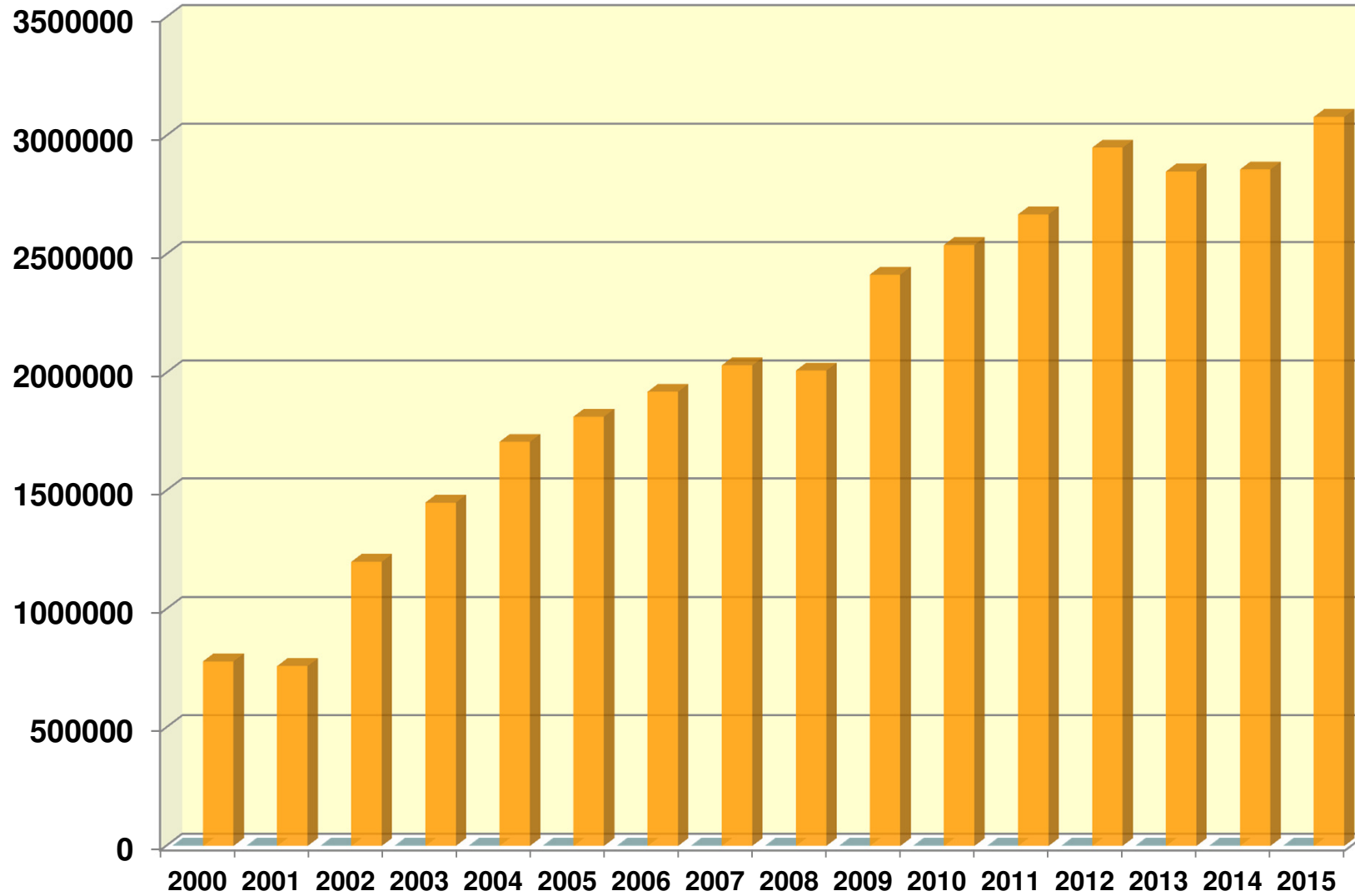
World Stainless Steel Melt Production - Year 2015 ('000 tons)



Source : ISSF

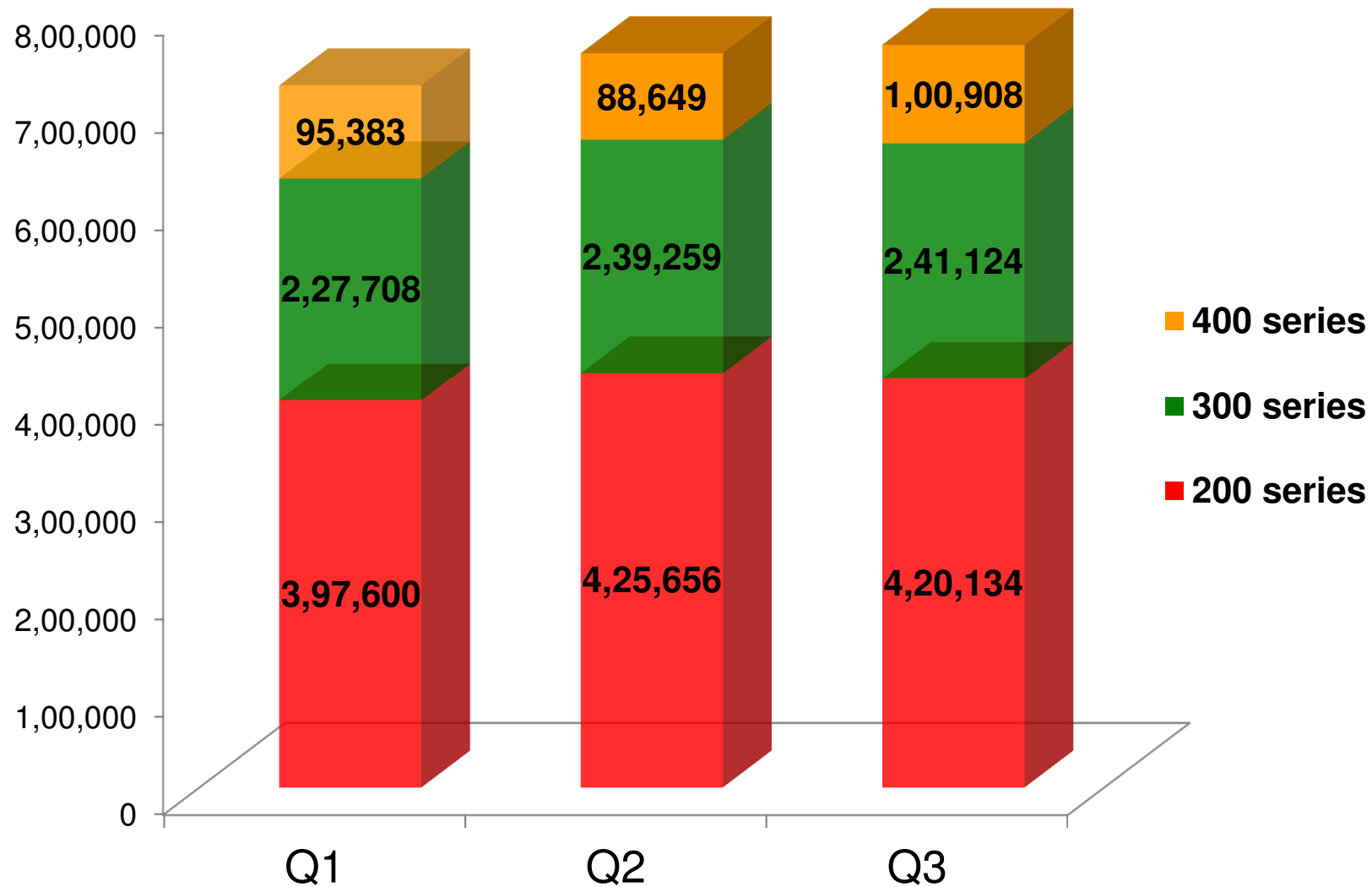
Analysis of Indian Stainless Steel Industry

Stainless Steel Melt Production (tons) : India

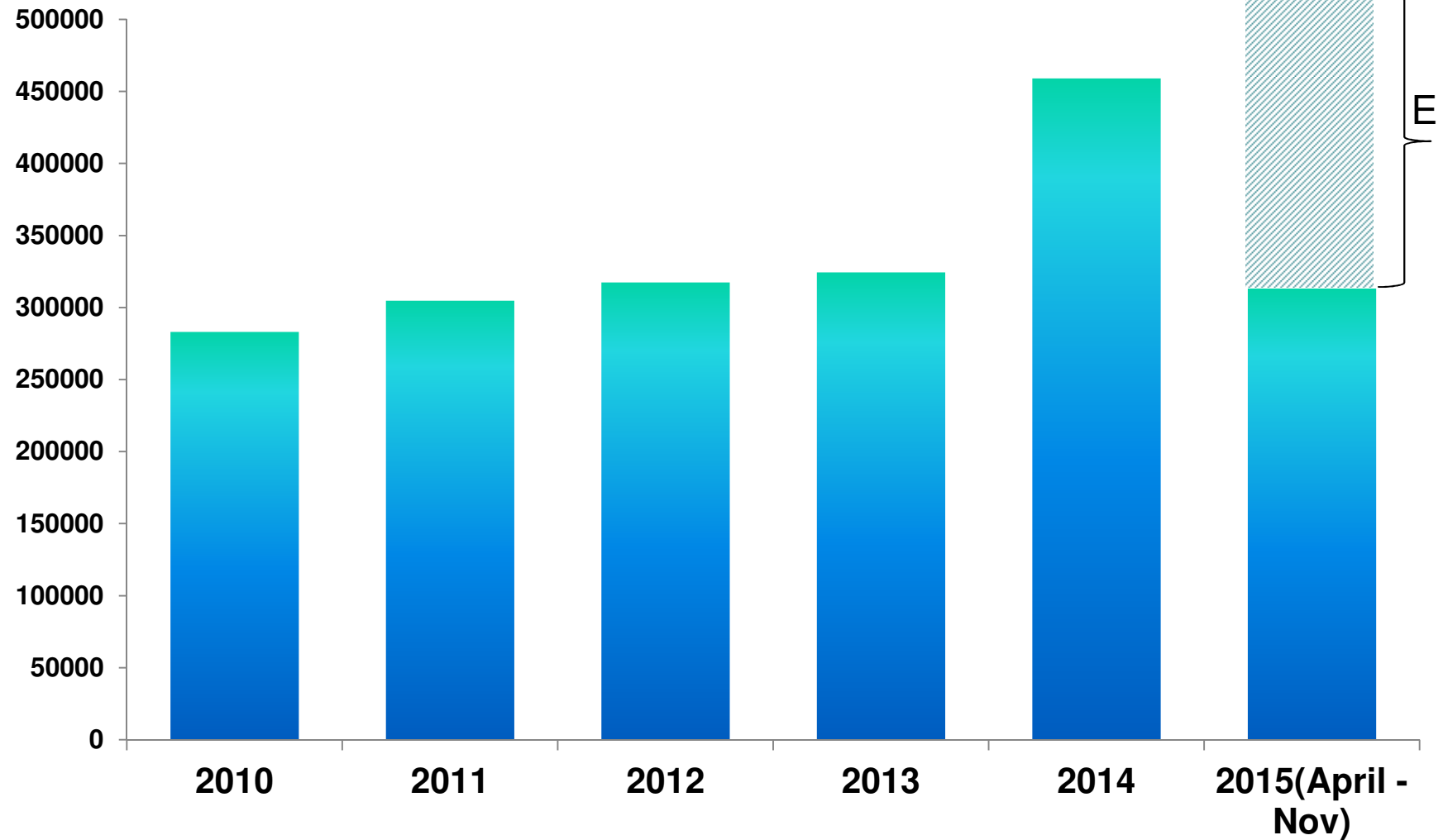


Source : ISSDA

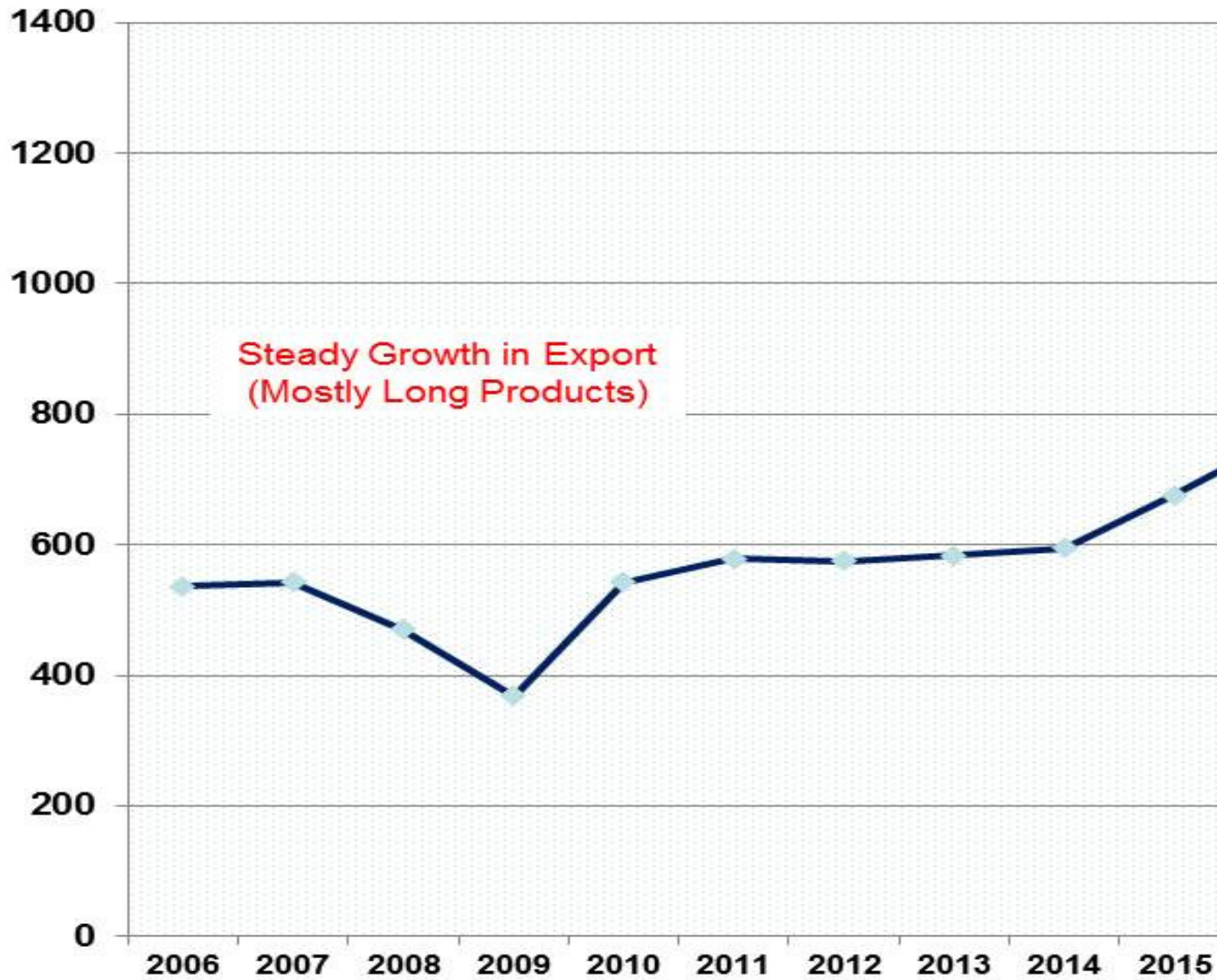
Stainless Steel Melt Production Year 2015 : Grade-wise (tons)



Total Stainless steel import (in Mt)

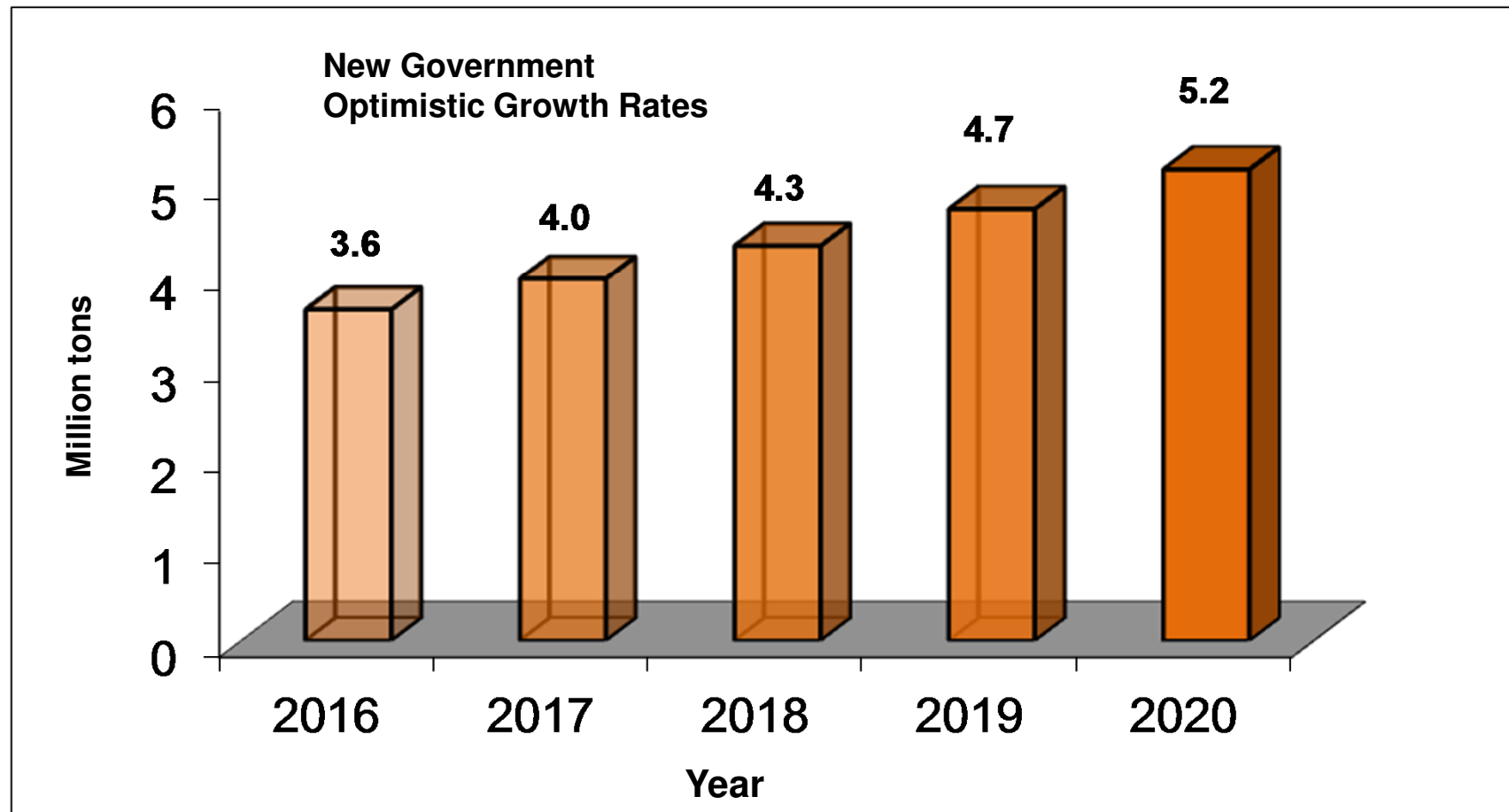


Growth in Exports (Long + Flat), '000 tons



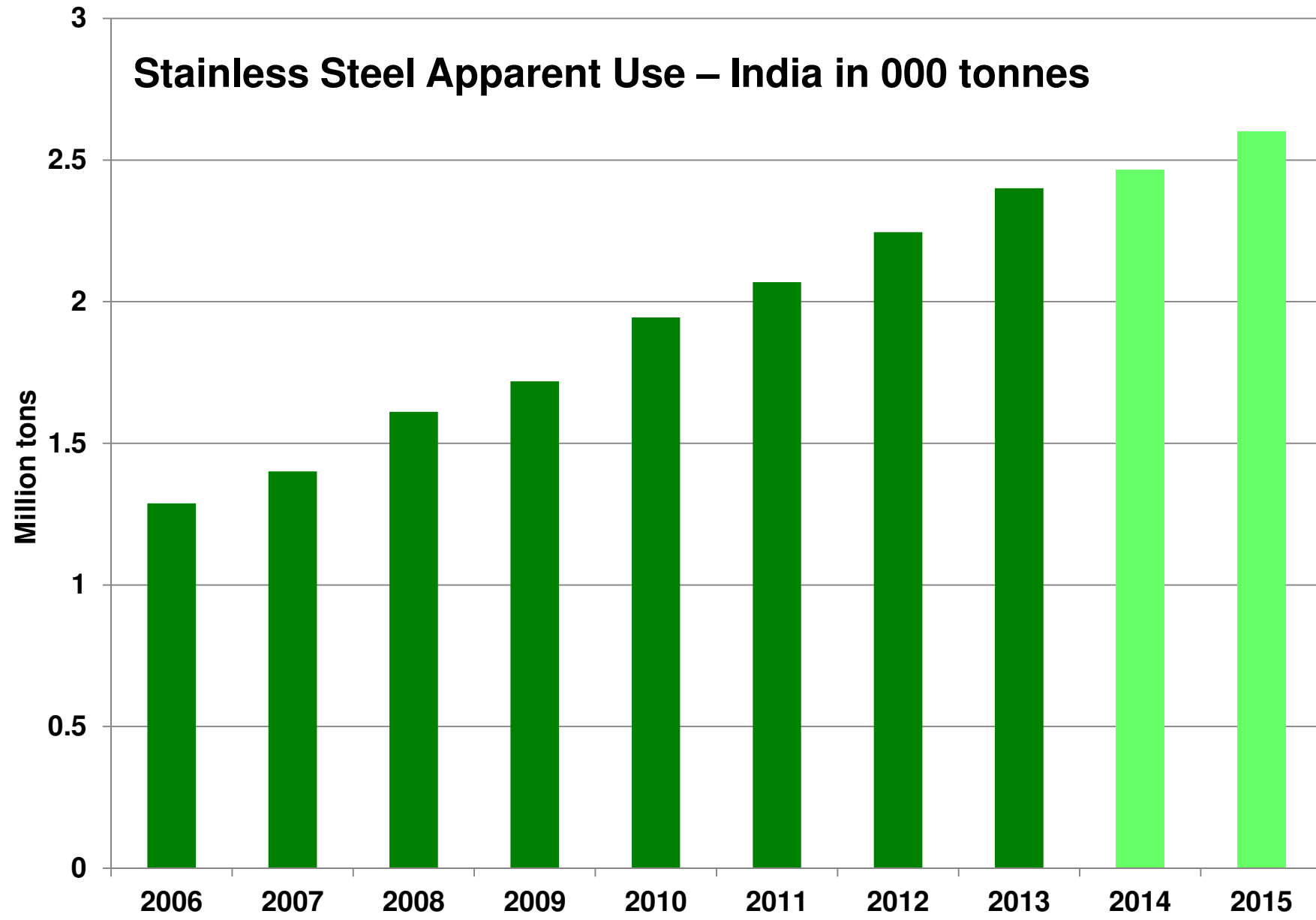
Source : JPC Market Survey Report, Ministry of Steel, GOI

India : Forecast Stainless Steel Melt Production



Source : JPC Market Survey Report, Ministry of Steel, GOI

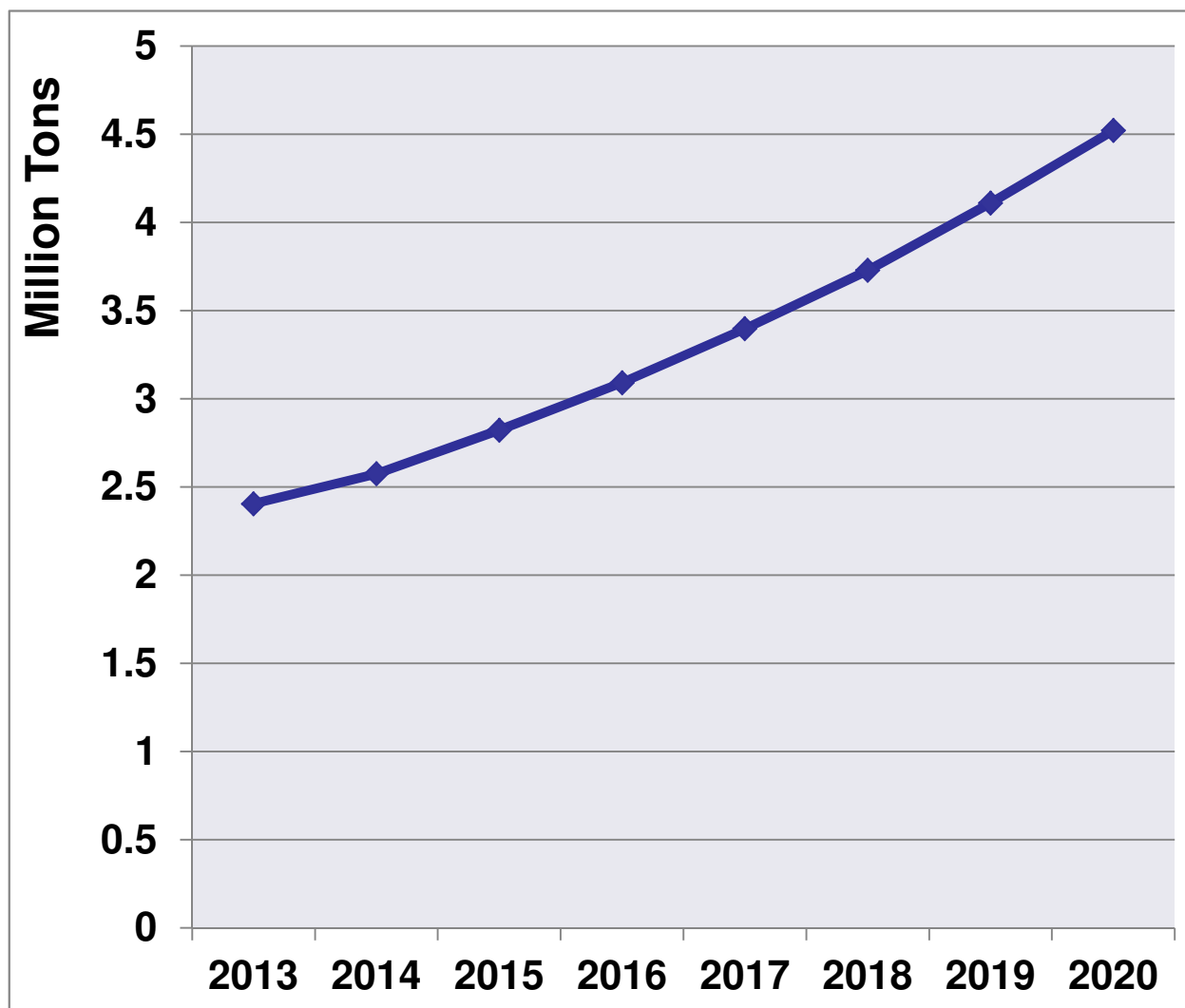
Stainless Steel Apparent Use – India in 000 tonnes



Source : JPC Market Survey Report, Ministry of Steel, GOI

Source : ISSDA

India : Forecast Apparent Consumption of Stainless Steel



Factors (+ve)

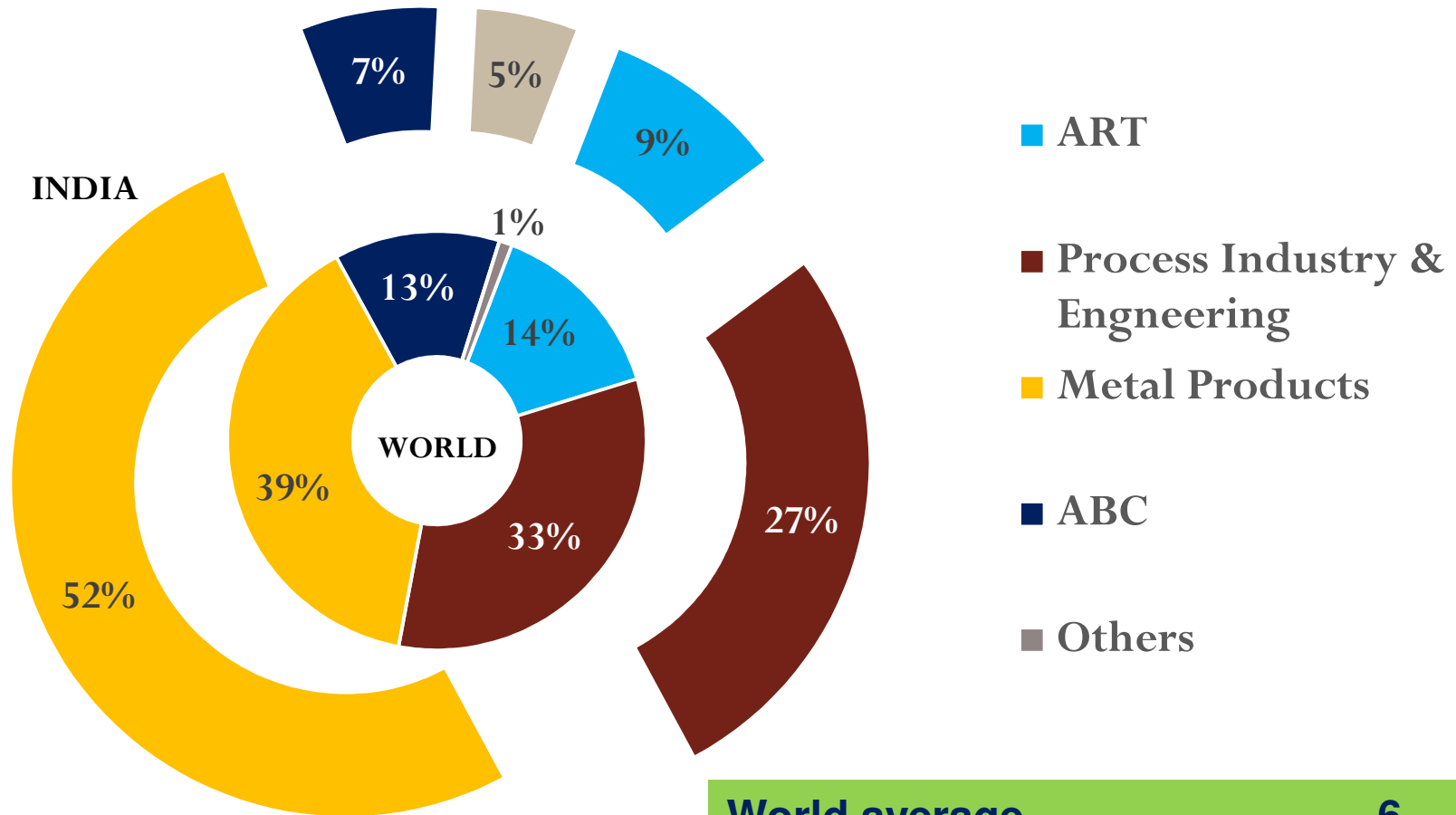
- Stable Government - Robust GDP
- Rapid Urbanization - Infrastructure Growth
- Rapid Industrialization
- Per capita need

Role of Stainless Steel Development Association

Market Development	<ul style="list-style-type: none">• Jointly work with Industry to develop new application areas – example – Railways etc
Free Technical help	<ul style="list-style-type: none">• Handle Queries• Offer solutions
Educational Programmes	<ul style="list-style-type: none">• Workshops & Training for various end user segment• For fabricators , Students at technical colleges• Publications in magazines
Involvement with Government of India	<ul style="list-style-type: none">• Support Industry• Bridge between Industry and Government
Standardization	<ul style="list-style-type: none">• Work with Bureau of Indian Standards in formulation and revision of standards for stainless steel and its products
Sourcing Material	<ul style="list-style-type: none">• Help users in sourcing material or products
Coordination with ISSF & other SSDA's around the world	<ul style="list-style-type: none">• Global Unifying point• Learn from each other on market development activities

Stainless Steel End Use

Stainless Steel End-Use : World - India



World average	- 6 Kg
Developed Economy above	- 10 Kg
India	- 1.9 Kg

Indian Railways will remain a growth driver

ICF Chennai
RCF
Kapurthala
RCF Rae
Bareilly

All long distance passenger cars to be converted into stainless steel in a phased manner

Stainless steel type LHB German design coaches offers better speed, space and safety

power cars to provide electricity inside the coaches

Global tender for setting up - Rail coach factory (RCF) at Kanchrapara in West Bengal.

To manufacture and supply 500 electric multiple units (EMUs), mainline EMUs and metro coaches every year over a 10-year period.

ICF : 360 SS EMU coaches for Mumbai suburban network



Rail Coach Interiors: Innovation, Safety, Comfort

National Institute of Fashion Technology and National Institute of Design are in the process to design of the coach interiors.

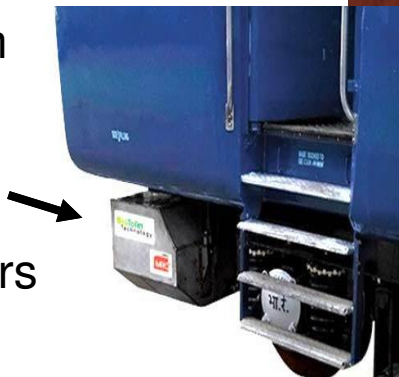
Upper berths will come with newly designed ladders
Dustbins in all 60,000 coaches soon



Image Courtesy: RUDOS Ružomberok Ltd

Vacuum
Toilets

Bio
Digesters



FREIGHT CARS

Indian Railways : Wagons -

- Stainless Steel Wagons – BCNHL, BOXNHL & others
- BCNHL – Goes back to High Strength Steel
- BOXNHL – Working Well
- ISSDA and Members helping RDSO & Railways workshops to solve maintenance related & other issues



Dedicated Freight Corridor will increase the demands for wagons by many fold

Wider rails – More tare weight – Bigger Wagons – Stainless Steels

FREIGHT CARS



85 per cent of land required for the project has been acquired

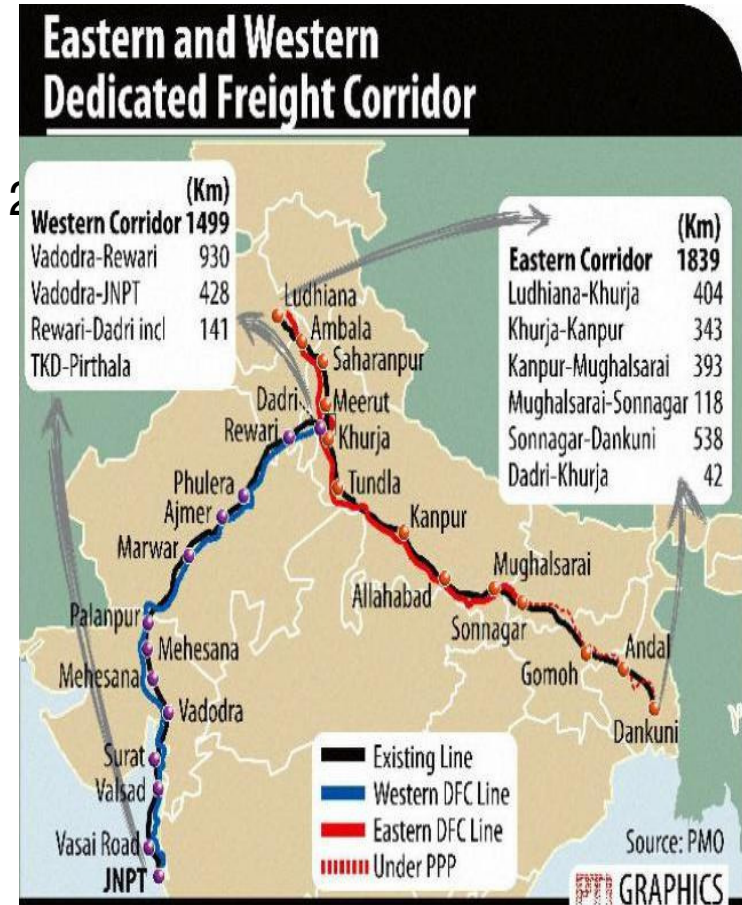
The 56-km stretch Operational Before December 2018

DFCC will divert 70 per cent of the one-billion tonne freight traffic from Indian Railways
Increase in Wagon requirements



Construction at one of the sites of dedicated

Image Courtesy : DFCCIL





Indian Railway Stations Development Corporation Limited
(A JV of IRCON & Rail Land Development Authority)

Indian railways move more than 23 million passengers in a day and maintenance of passenger facilities and amenities has always been a big challenge

400 railways stations in metros and major cities to be redeveloped

Stainless Steel to be used in hand rails, ticketing counters, dividers, bollards, claddings , elevators, escalators, dust bins, vending machines (ticket, water) , Gates & Grills, chairs, signage boards etc

Potential to be used in roofing's including rain water harvesting, Structural usage, water storage tanks, sanitation facilities, Vendor facilities etc

Model Railway Stations

ISSDA to promote - In all Food Contact Items
at Railway Stations

- **Food Kiosk –**
Single Vendor,
Outlets & Others
- **Serving area,**
Chairs, tables



End - Use

All Kitchen services for food preparation for Indian Railways – Stainless Steel



Image Courtesy : tss@timesgroup.com



Metro Rail



COACHES –
Stainless Steel a
success already

16 cities gearing up
for Metro rail

STATION AREA –
Inside , Outside



Stainless Steel for Water Tanker



Water and Stainless Steels are made for each other.

Maintains purity of water

Unpainted, Hygienic and Easy to clean

Stainless Steel for BUS Body

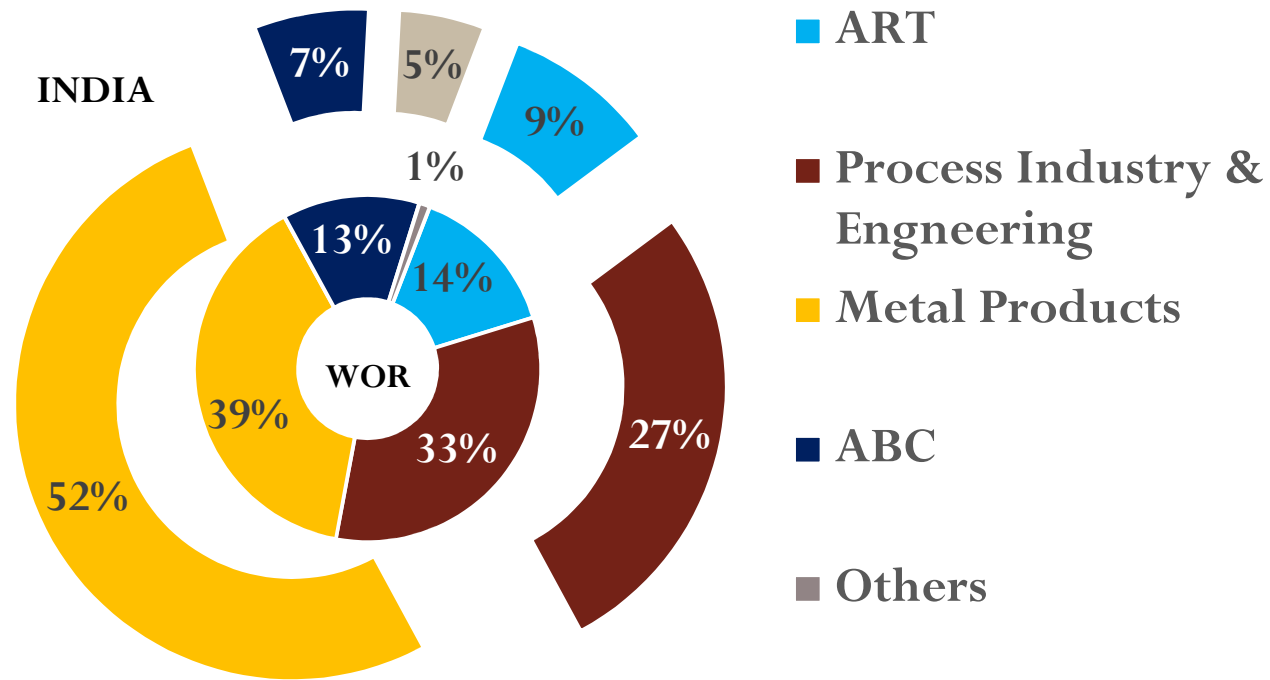
ISSDA and its member companies Promoting use of stainless steel for BUS body

Stainless Steel for exhaust systems

<i>Figures in million units</i>	2005-06	2013-14	AMP 2006-16 growth % - Planned	Actuals 2006-14 growth % - Actuals	Automotive Mission Plan AMP 2016-26 to roll out soon
<i>Passenger vehicles</i>	1.3	3.1	13.0	11.3	BS V emission norms to be adopted by 2019; BS VI emission norms to be implemented by 2023 for passenger vehicle
<i>Commercial vehicles</i>	0.39	0.7	10.0	7.5	
<i>2 wheelers</i>	7.6	16.9	16.0	10.5	
<i>3 wheelers</i>	0.43	0.83	11.0	8.4	
<i>Automotive component</i>	USD 18.9	USD 35.1	14.3	9.5	
GLOBAL RAKING					
<i>PV</i>	13th	6th			Increase in Demand
<i>CV</i>	9th	8th			
<i>2 wheelers</i>	2nd	2nd			
<i>3 wheelers</i>	1st	1st			

Source: Ministry of Heavy Industries and Public Enterprises

Stainless Steel End-Use



World average	- 6 Kg
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Metal Goods



ABC – Huge Potential



Hand Rails, Building Interiors Furniture's , Sinks , Builders Hardware, Escalators & Lifts, Gates etc on high demand



Roofing, Plumbing, Cladding, Wall panels, windows on rise



Reinforcement Bars, Facades and use of colored stainless steel started but more promotion is required.



New Innovative uses on rise

End - Use

***Focus on
promotion
of new
designs,
surface
finishes***

No Painting

Higher Strength

Vandalism Proof design

**Cleanliness &
Maintenance minimal**

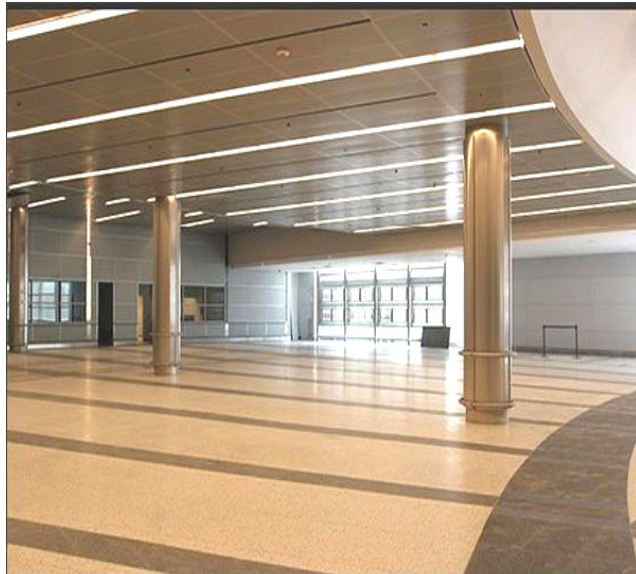
**Can be used in
combination with Wood**





Promotion linked to green building concept

Facades, Claddings and Wall
column claddings for
Aesthetics , Long Life and
Security

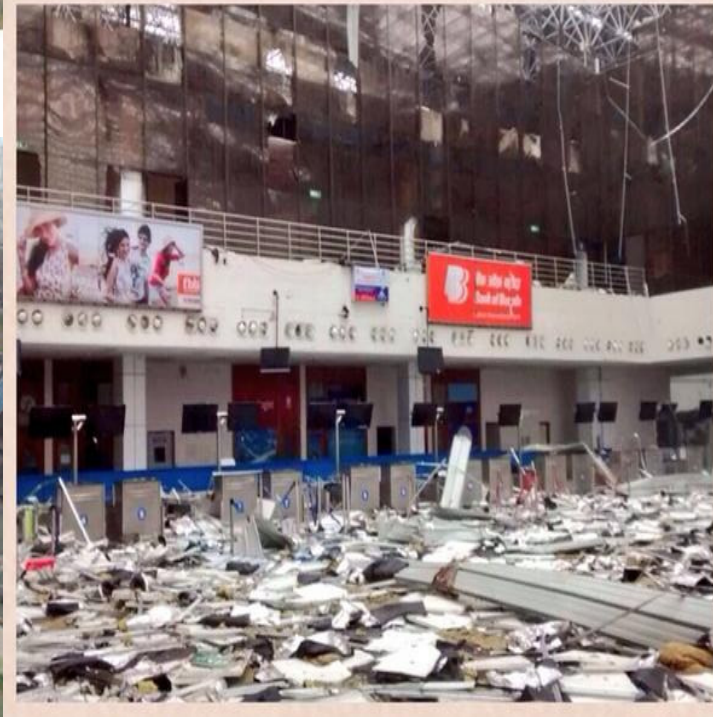


Roofing

Promotion based on Case Studies

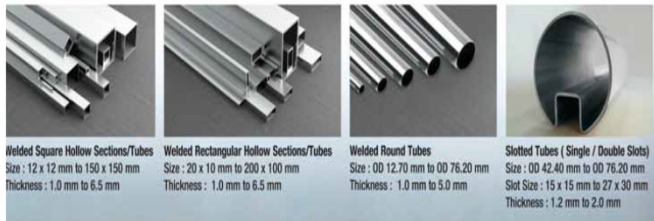


Roofing in SS @ AIRPORTS, STATIONS



Promoting the use of Stainless Steel Hollow sections for structures

Lighter , Stronger , Long Life



Promoting Plumbing in Stainless Steel

Hospitals & Hotel
Industry

Case Studies : Life Cycle
Cost & Project Cost



Water Supply Pipelines : in stainless steel

Central Public Works Department



IIT Delhi

Overhead Water storage tanks : Quality Product – ISI mark

- Hygienic – Water remains in its natural form and microbiological safe
- Reduces risk of water borne disease
- Compact and aesthetic design
- No algae/fungus formation
- Value for money for years
- Easy to clean and practically maintenance free
- Total drain out provision provided at bottom of tank for easy cleaning.



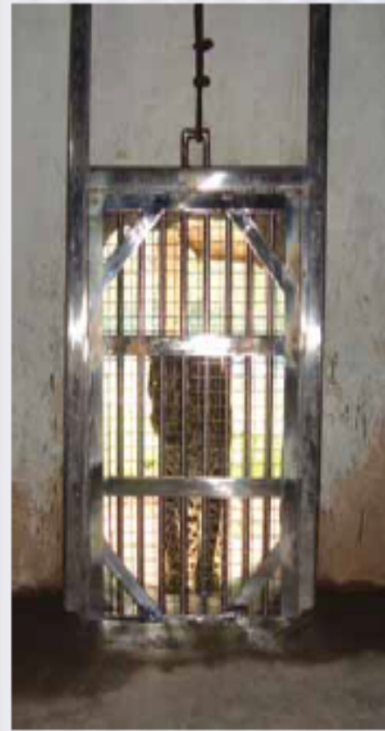
Campaign Clean India

A National level campaign by the Government of India covering 4041 statutory towns to clean the streets, roads and infrastructure of the country

A vision of 'cleaner India' by 2 October 2019, 150th birthday of Mahatma Gandhi and is expected to cost over **62000 Cr (US\$10 billion)**

Public Sanitation facilities in Stainless Steel





Zoo
Chenn
ai

The Big Boost --

Creation of 100 smart cities

- 24x7 availability of high quality utility services like water and power
- Transport system that emphasizes on public transport
- Proper facilities for entertainment and the Safety and Security of the people
- State-of-the-art Health and Education facilities
- Recycling of waste materials, Water conservation

MODI'S 'SMART' VISION TAKES SHAPE

The urban development ministry has identified almost all the places where the NDA's 100 smart cities will come up

INTELLIGENT TRANSPORT

- Smart cities have an integrated transit corridor, where Bus Rapid Transit corridors as well as suburban train networks are linked with pedestrian and cycle lanes. Furthermore, there are pods to carry people directly from point to point, with no stop at intervening stations.
- Smart cards facilitate travel in multiple modes of public transport.
- Real-time transport displays can provide visibility and information on availability of public transport as well as the condition of traffic on routes.
- Digital parking meters send information to mobile phones when a space opens up.

SMART CITIES

WHAT THEY ARE AND HOW THEY WILL HELP

- Smart cities, in the most basic terms, are urban settlements that exploit technology to offer more structured and hospitable living conditions for residents.
- Information and Communication Technology (ICT) forms the backbone of smart cities and is the main tool to address common problems like congestion and waste of energy.
- Such cities have a centralised control system which provides real-time inputs on availability of water, electricity, public transport, healthcare and education.
- Intelligent communication tools enable administrators to manage and respond to emergencies faster.
- Consumption of scarce resources like water and energy is streamlined through the use of technology.
- Better energy management systems help people automate energy-consuming systems in buildings.
- There is emphasis on the use of renewable sources of energy.

Seven smart cities are being developed by states with foreign assistance as part of the Delhi-Mumbai Industrial Corridor (DMIC); work has already begun.

Seven smart cities each will be built in Rajasthan, Gujarat, Karnataka and Kerala

THE PRIME MINISTER'S DREAM PROJECT

- The Narendra Modi government plans to build 100 smart cities across India and made an allocation of ₹7,060 crore to this end in the Budget 2014-15.
- Cities such as Delhi, Hyderabad, Surat, Coimbatore, Bangalore, Mangalore, Jamshedpur, Mumbai and Chennai have launched initiatives for deployment of advanced communications systems, Metro networks, traffic management frameworks, smart meters, GPRS for solid waste management, online water quality monitoring, online building plan approval schemes, etc

States shown on the map: HARYANA, RAJASTHAN, GUJARAT, KARNATAKA, KERALA, UTTARAKHAND, BIHAR, MP, UP, JHARKHAND, WEST BENGAL.

Smart cities marked on the map include: Ambala, Dehradun, Mussoorie, Haridwar, Panipat, Gurgaon, Faridabad, Bikaner, Bharatpur, Jodhpur, Almer, Udaipur, Jaipur, Kota, Gwalior, Allahabad, Gaya, Biharsharif, Patna, Muzaffarpur, Faizabad, Lucknow, Kanpur, Varanasi, Jhansi, Jabalpur, Indore, Burhanpur.

Source :
ENN

Airport Authority of India

200 Low-cost airports in next 20 years

Challenge for stainless industry to offer low cost solutions

Expansion of High Flier Density Airports

Challenge for stainless industry to introduce new application areas such as stainless steel roofings and structural Innovation – Show additional benefits such as rain water harvesting, solar compatability etc

Process Industry , Power and Engineering – High Potential for quality grade consumption



Pulp and Paper
Industry



Oil and Gas ,
Petrochemical
Industry



Dairy Industry

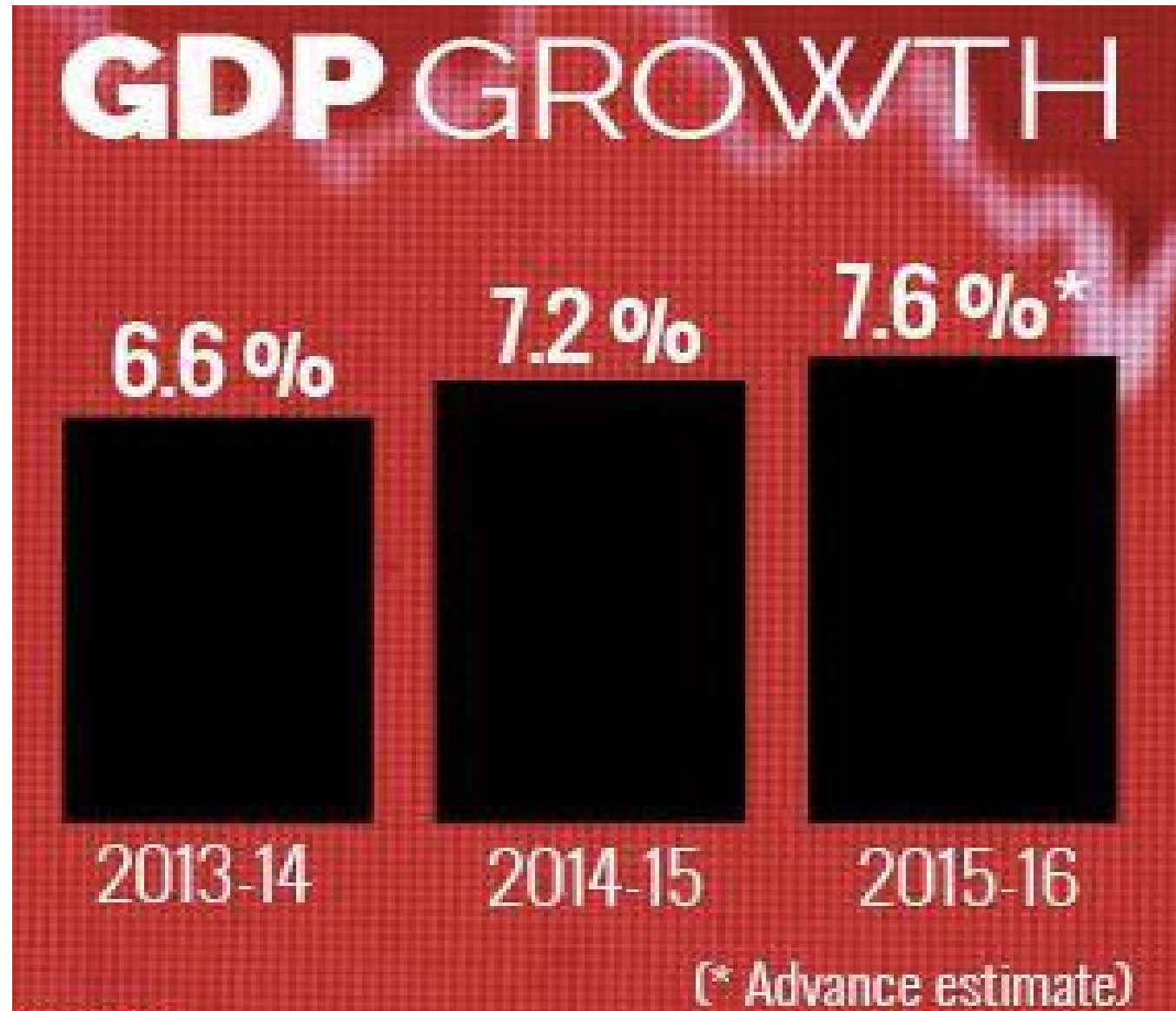


Food Processing
Industry

Global & Indian Economy



INDIA

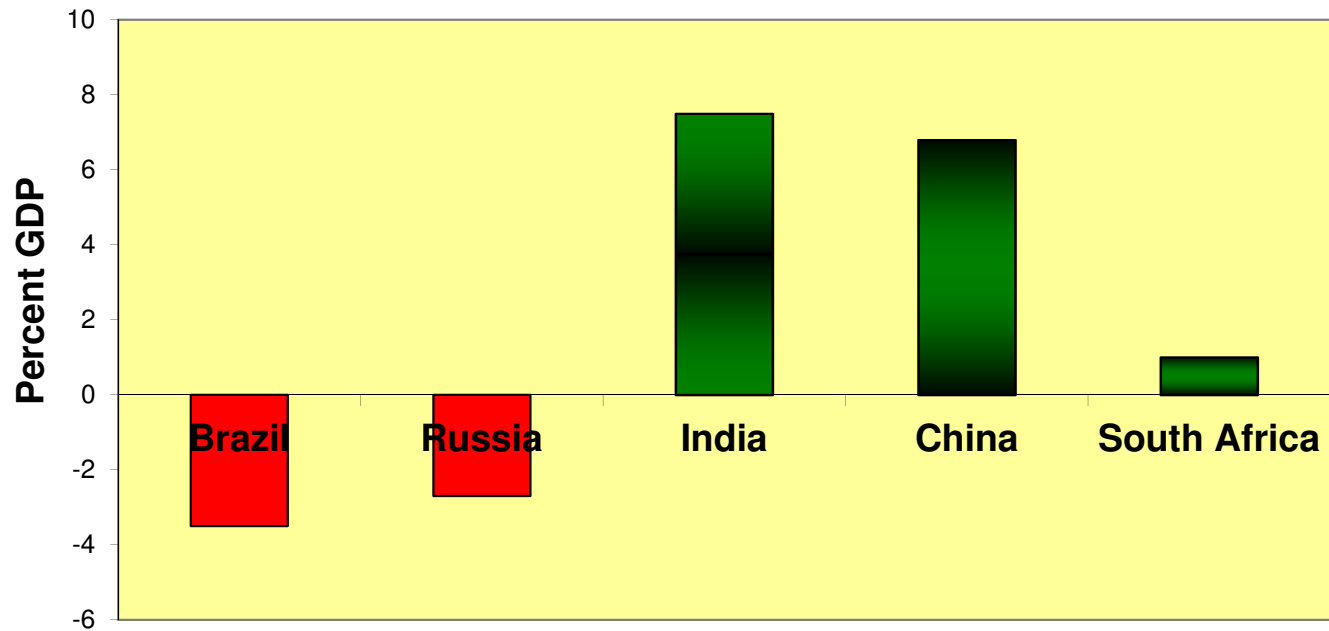


Source : Economic Survey 2015-16

*Moody's says India less exposed to external factors

Country ⇅	GDP Growth ⇅ (2015)
 Brazil	▼ -3.5%
 Russia	▼ -2.7%
 India	▲ 7.5%
 China	▲ 6.8%
 South Africa	▲ 1%

Comparison Of Real GDP of BRICS Countries



Big Spend on INFRASTRUCTURE

Allocates **2.21 trillion rupees (31 billion \$)** for infrastructure development for 2016/17, up 22.5 percent on last year

Allocation for roads and highways development at **550 billion rupees (8 billion \$)**

Capital expenditure on roads and rail development at **2.18 trillion rupees (32 billion \$)**

Conclusion

1. India is likely to have highest GDP growth among large economy
2. stainless steel demand likely to grow by 8-10 % each year in next 2-3 year.
3. Government program's of **Smart City**, **Infrastructure spending** and **Make in India** are positive for Stainless demand
4. **Low per capita** use sign of future growth

Thank You

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