



International Ferro Alloys Trade Meet

17-18 April 2015 THE LALIT, NEW DELHI

Indian Chrome Industry and Stainless Steel : Looking Ahead



By N C Mathur
President
Indian Stainless Steel Development Association

Outline

- Global and Indian Chrome Ore, Ferro Chrome Production
- Global and Indian Stainless Steel Scenario
- New Government , New Opportunities
- Forecast : Stainless Steel output 2020
- Conclusion

**Global and Indian
Chrome Ore &
Ferro Chrome Production**

Chromite usage



Refractory



Foundry sands



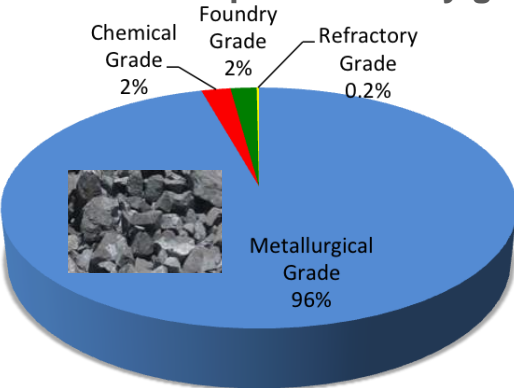
Chemical



Metallurgical

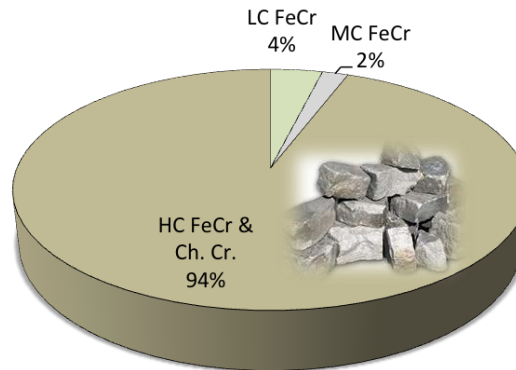


Chrome ore production by grade



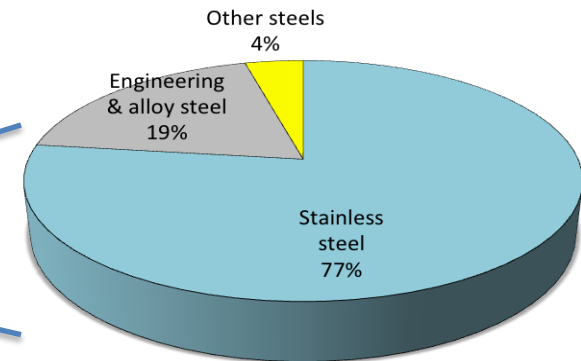
Source: ICDA

Ferrochrome production by type



Source: ICDA

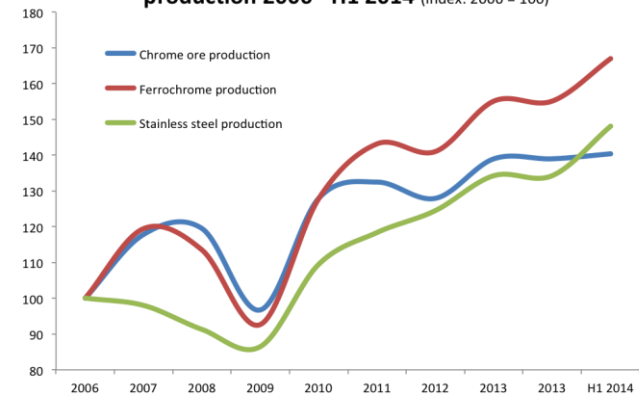
Ferrochrome applications



Industry sources

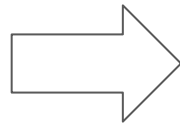
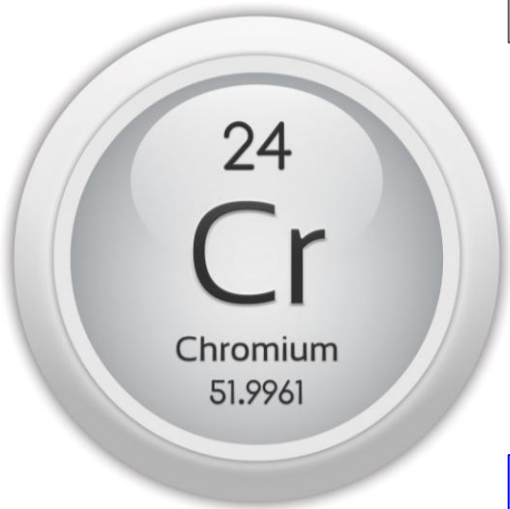
- 96% of total chrome ore production is used in metallurgical applications in 2014.
- High-carbon ferrochrome & charge chrome production represents 94% of global ferrochrome production in 2014.
- Around 3 quarters of ferrochrome production is used to produce stainless steel.
- Chrome ore, ferrochrome and stainless steel are highly correlated!

Global chrome ore, ferrochrome & stainless steel production 2006 - H1 2014 (index: 2006 = 100)



Source: ICDA, ISSF

Functions of Chrome in Alloying of Steel

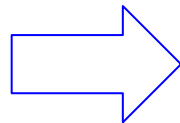


Increase Toughness, carbide forming
Tool & HSS, Creep and Wear
Resistant steels

Increase Hardness Penetrability
Case Hardening, Quenched &
Tempered steels

Scale Resistance
Heat Resisting steels

60% of all “alloy”
steels contain Cr



Passive layer formation
“**Cr makes it stainless**”
(min 10.5% Cr)
Stainless steels

100% of stainless
steels contain Cr

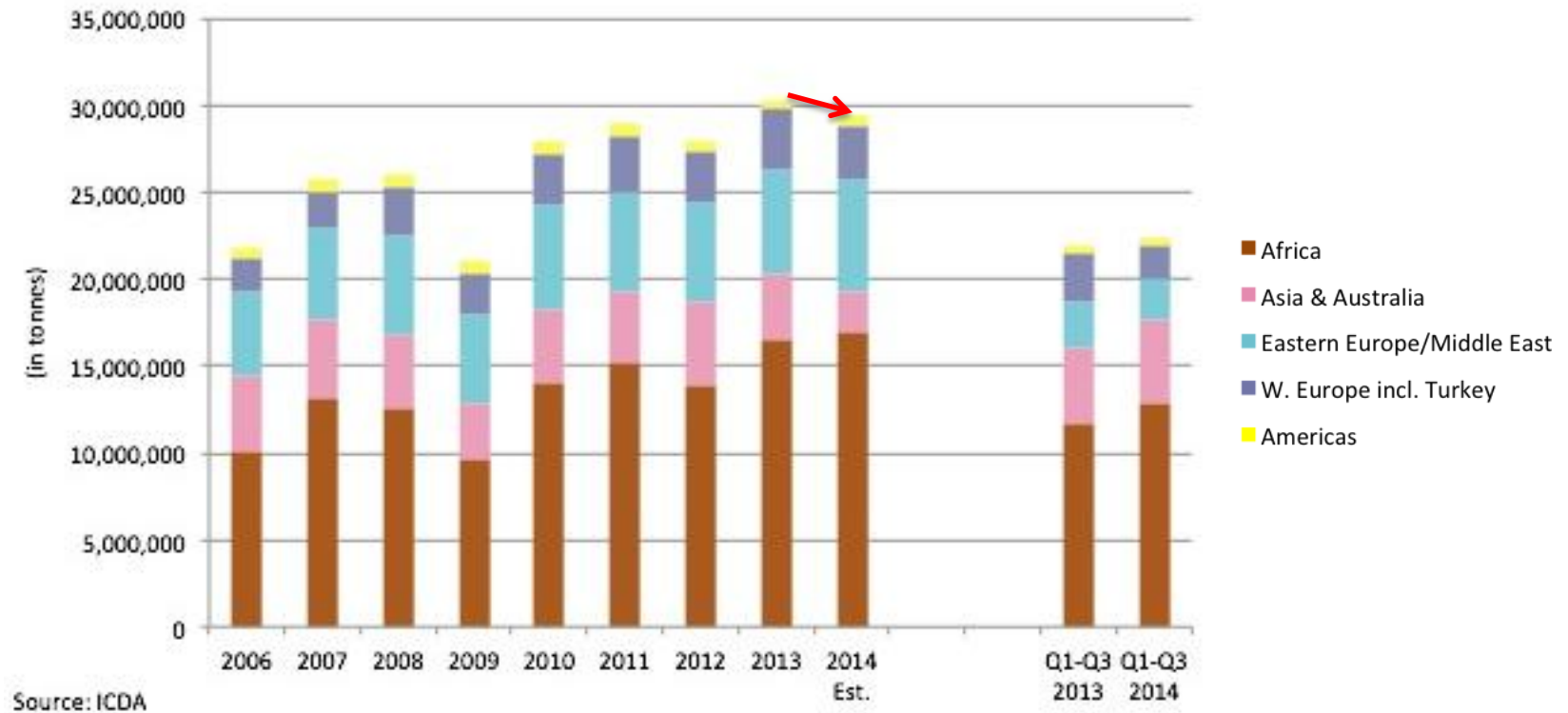
No



No
Stainless!

Global Chrome Ore Production

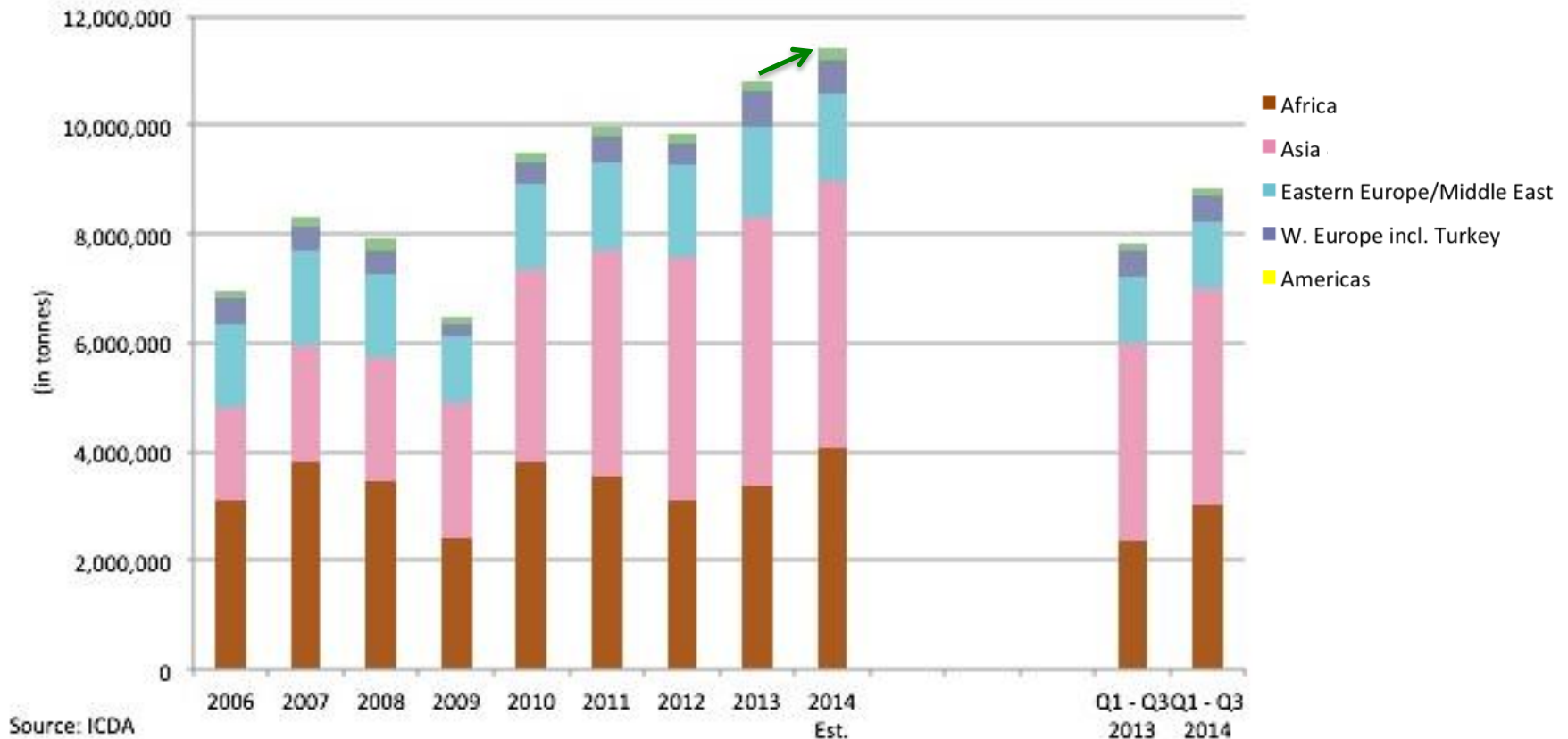
by region 2006 – 2014



- Global chrome ore and concentrate production (est.): **29.4 MT** in 2014, **down 3%** from 2013 (30.2MT)

Global Ferrochrome Production

by region 2006 – 2014

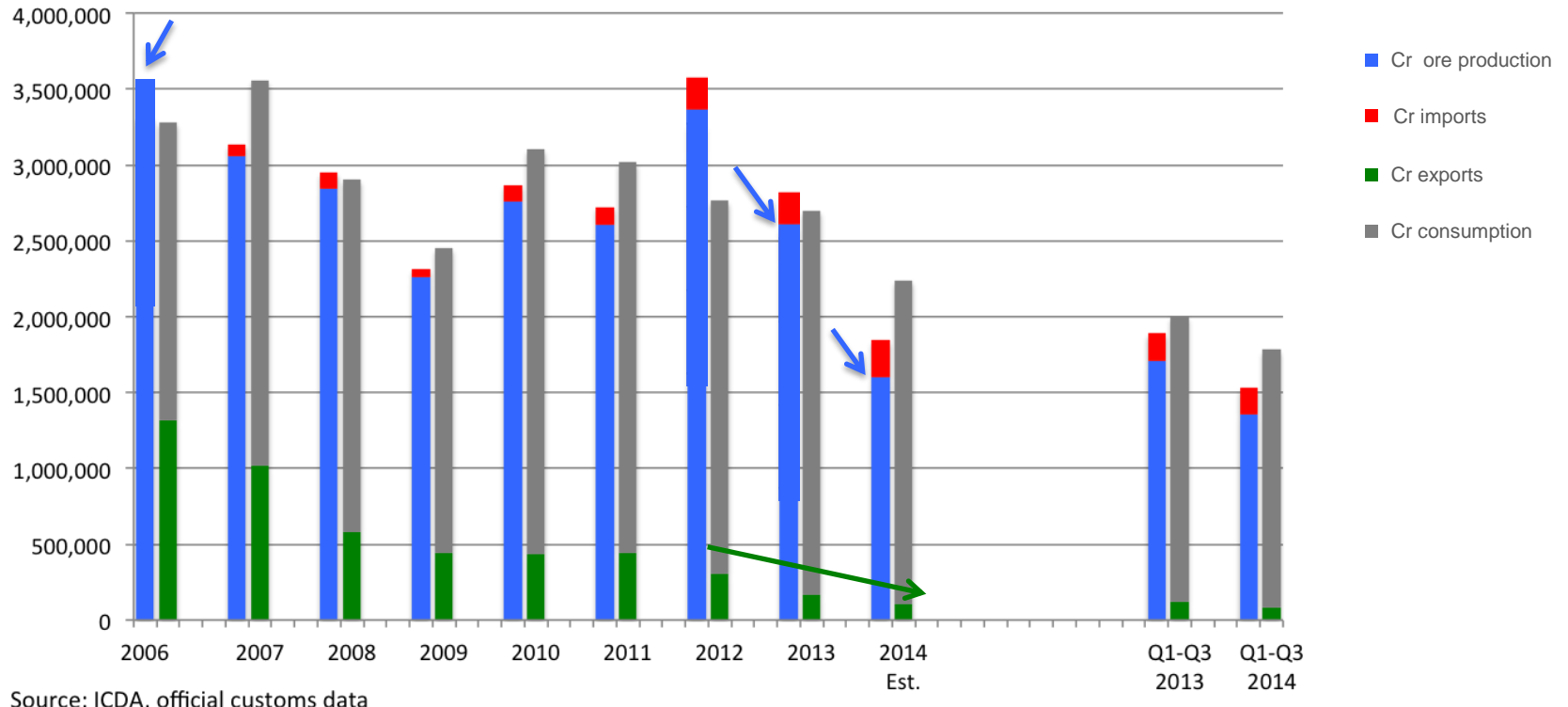


Global ferrochrome production (est.):

11.4 MT in 2014 **up 5.5 %** from 2013

India's Chrome Ore Production and Trade

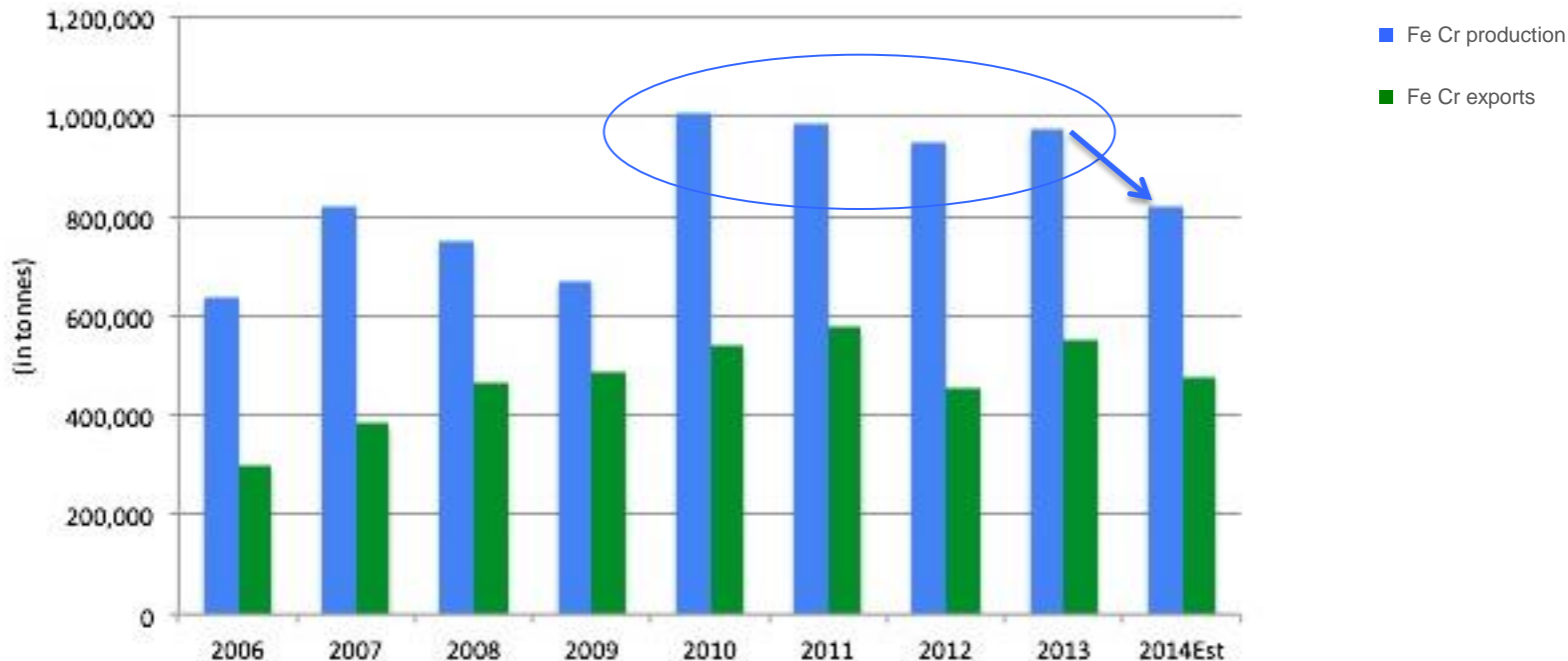
2006 - 2014



In **2014**, India reduced its chrome ore production because of mines closure in Odisha due to mining lease renewal problems.

Sharp decline in exports after imposition of export duty (30%) & focus on value addition

India's Ferrochrome Production and Export

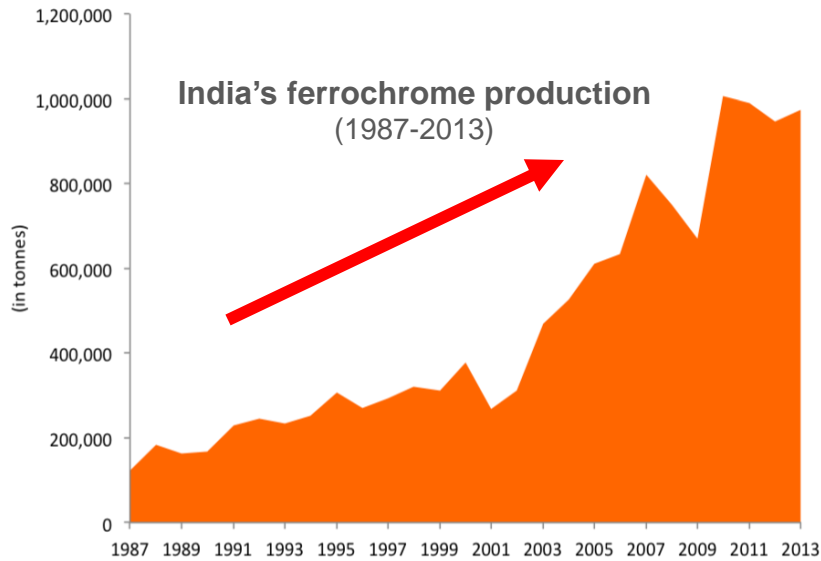


Source: ICDA, ISSB

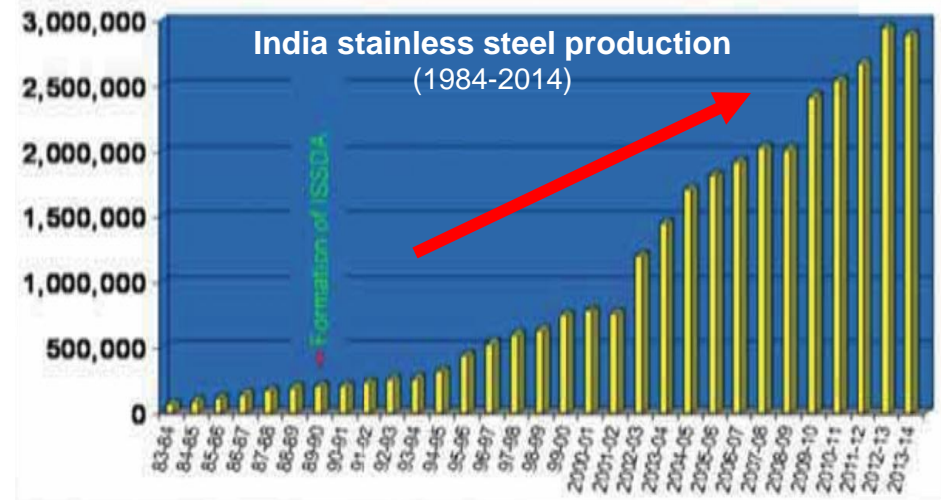
Ferrochrome production in India stabilized at around 1 MT per year since 2010. About 50% domestic consumption with the rest being exported.

In 2014 Fe Cr **decreased** (est.): **0.82 MT down 15.8 %** from 2013

Indian Ferrochromium Production follows the growth of the Indian Stainless Steel Production

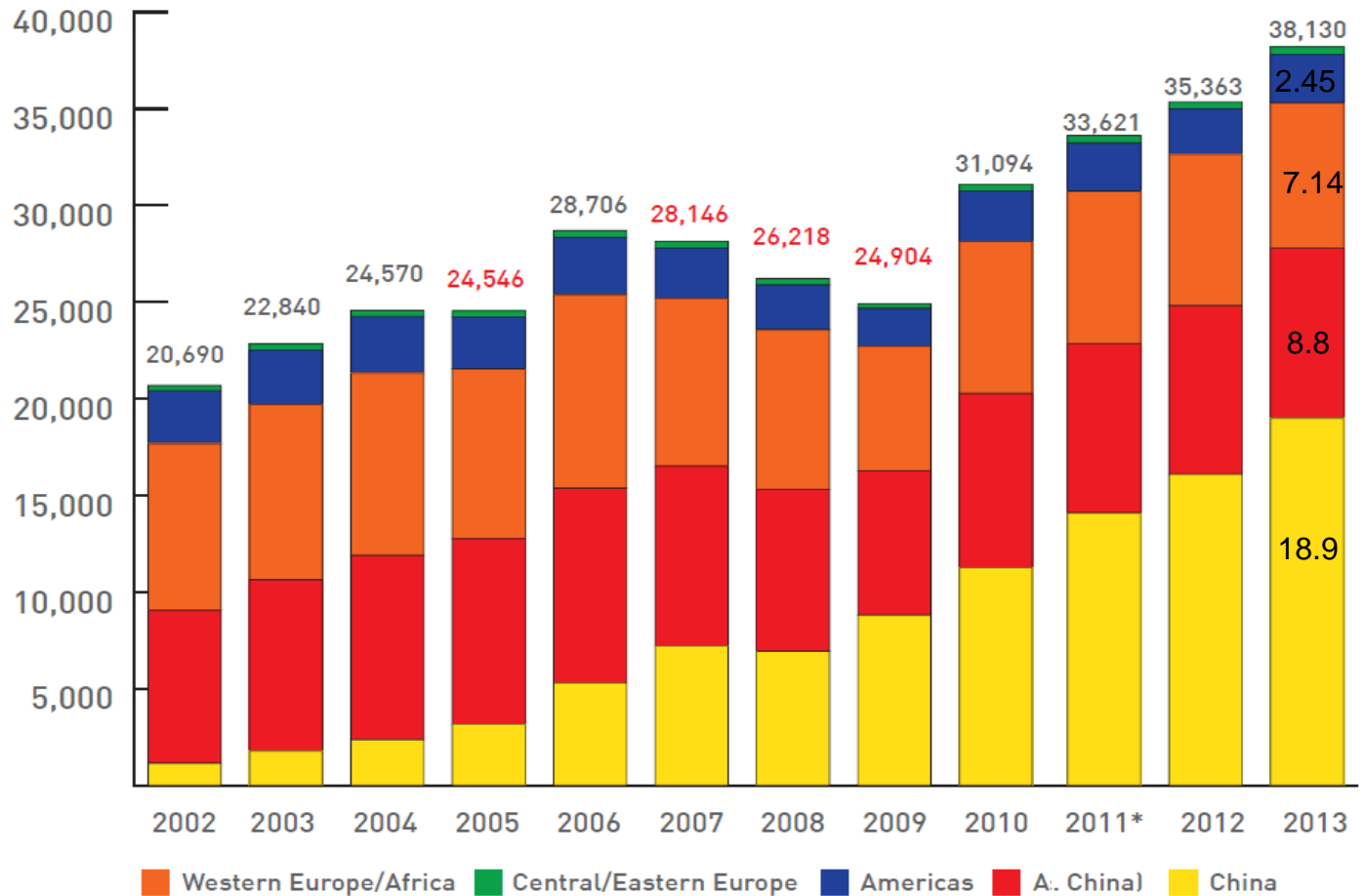


Source: ICDA



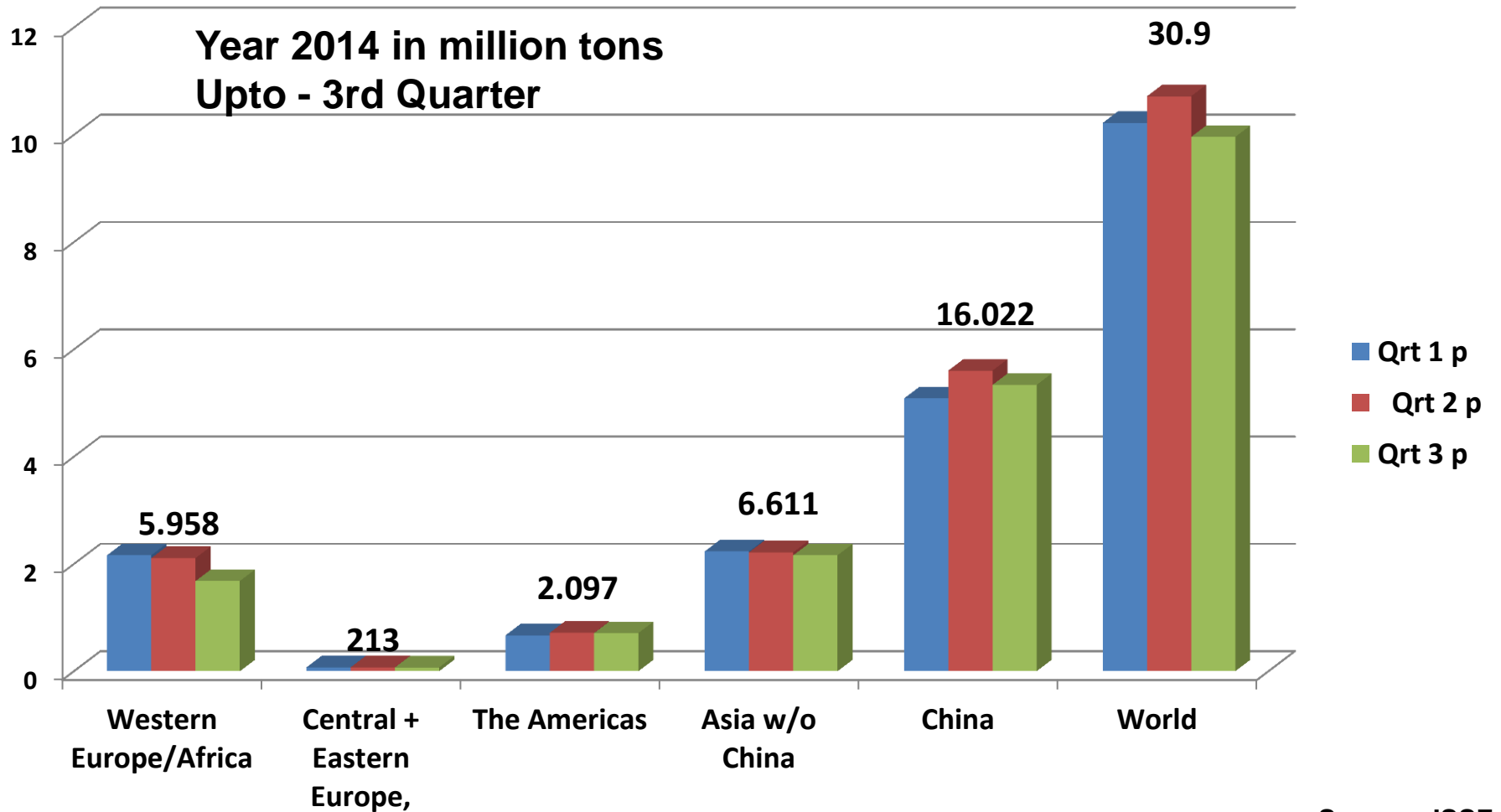
Global and Indian Stainless Steel Scenario

World : Stainless Steel Melt Production



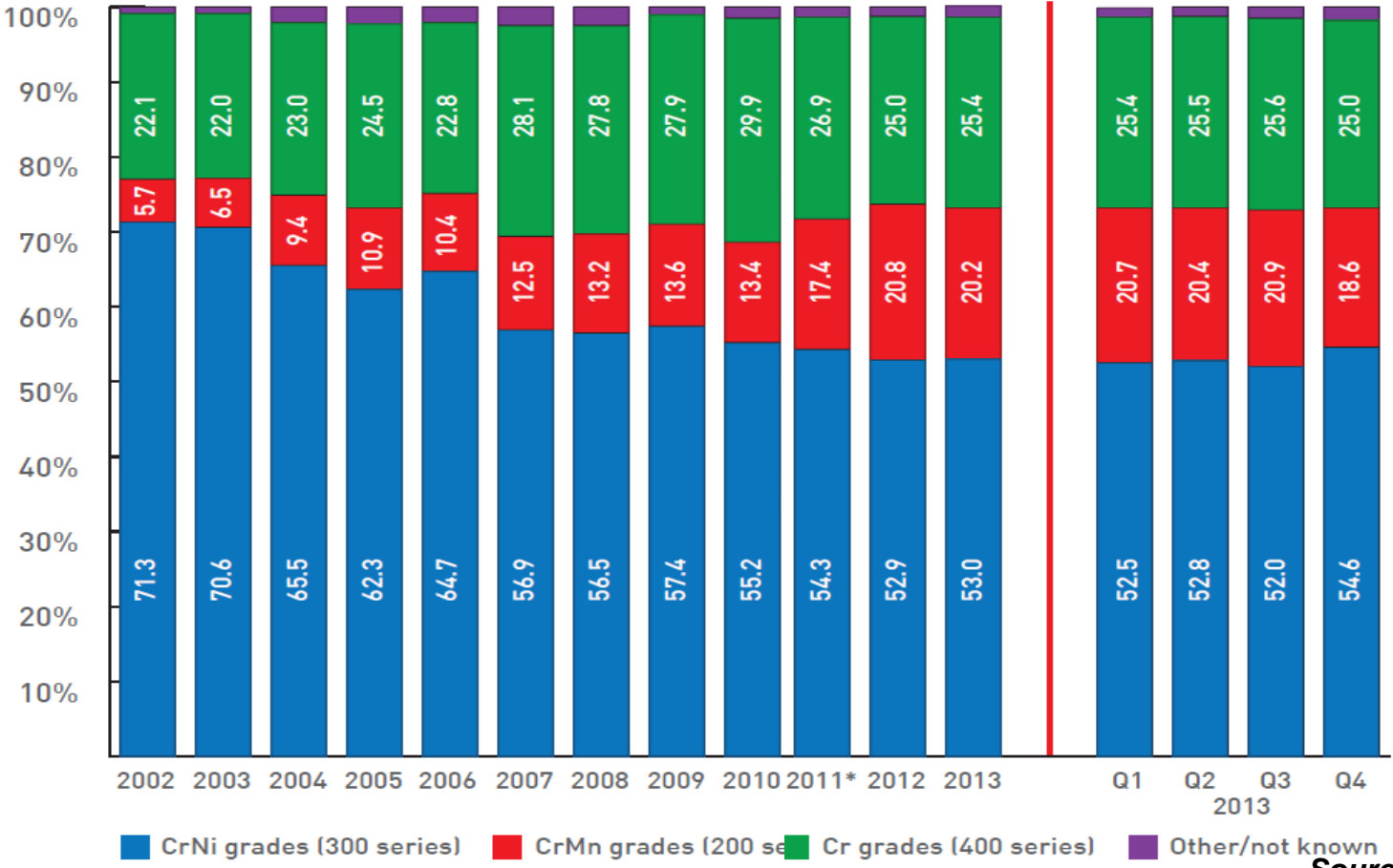
Source : ISSF

World : Stainless Steel Melt Production



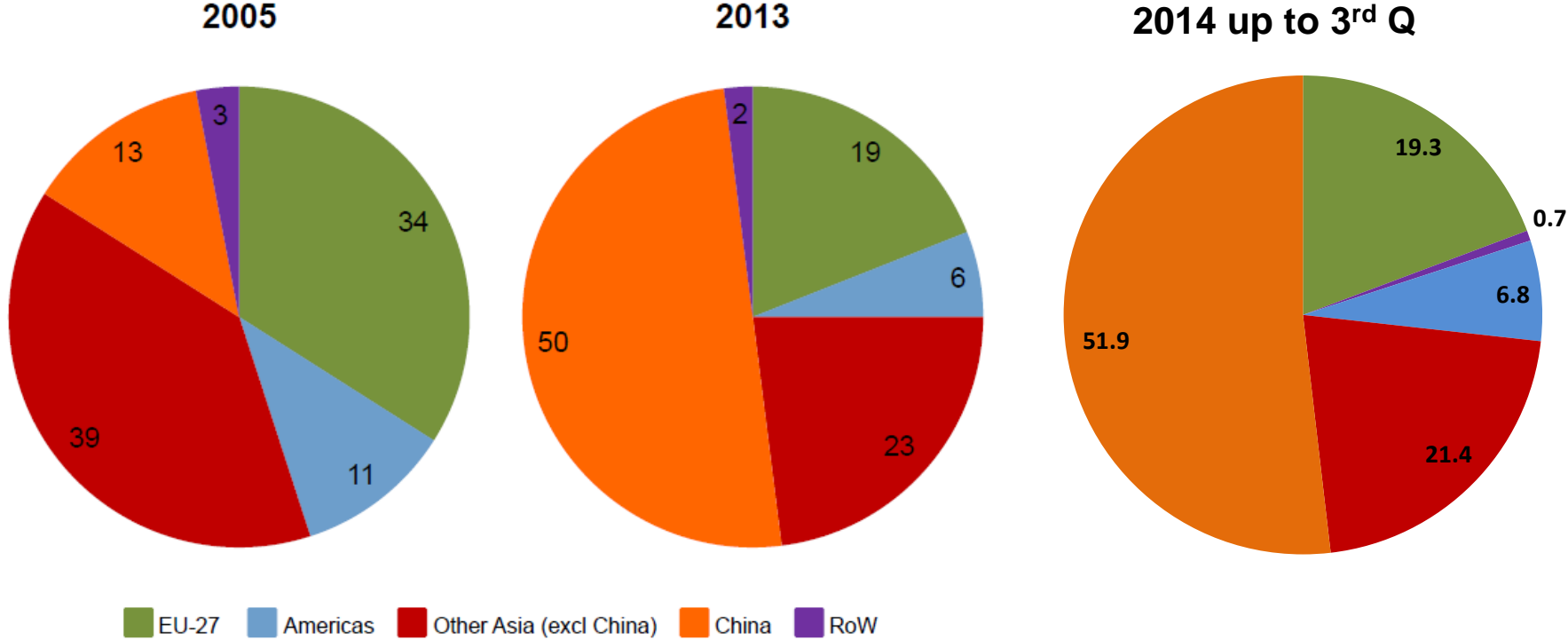
Source : ISSF

World: Stainless Steel Melt Shop Production By Grade Category%



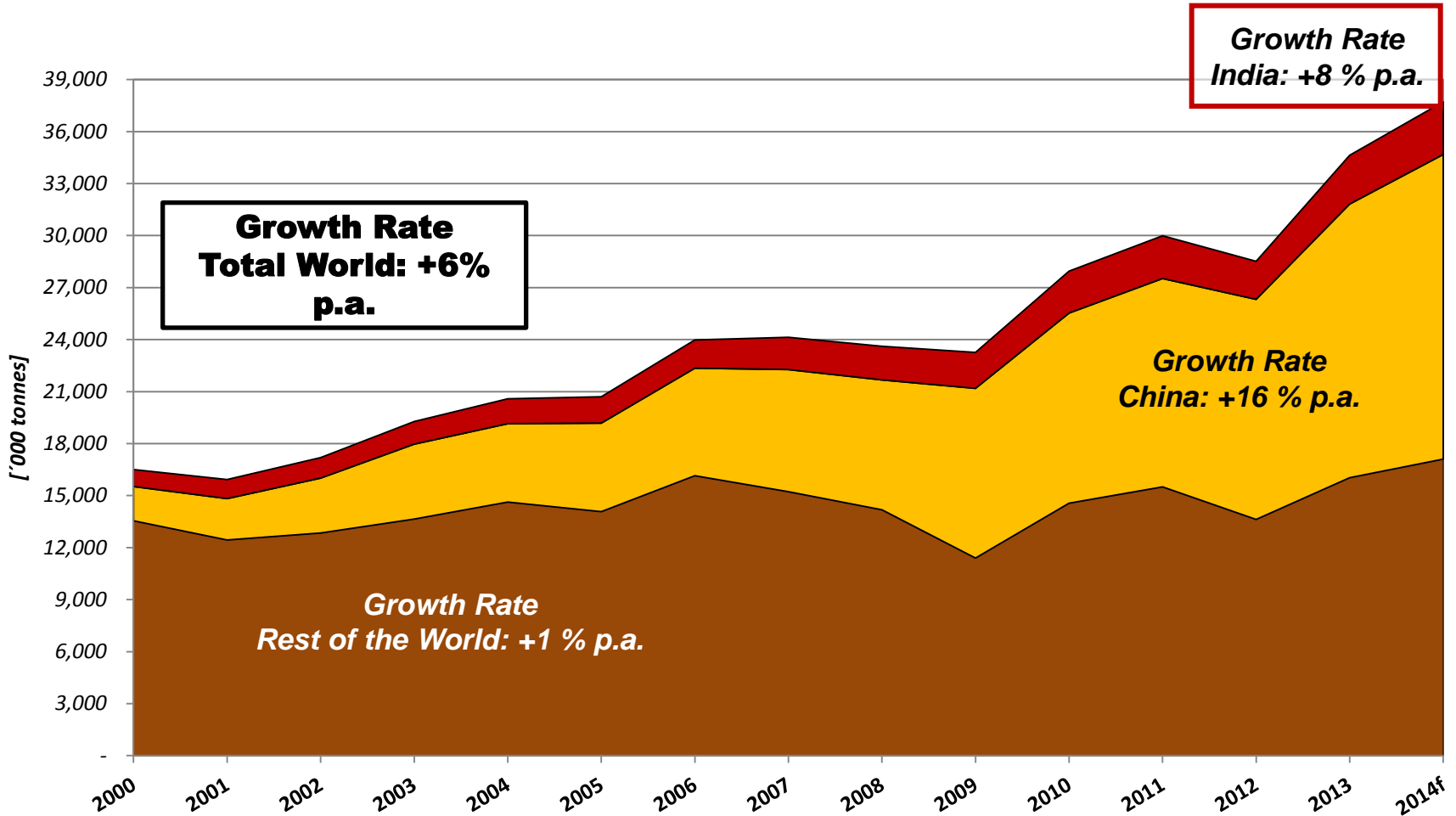
Source : ISSF

World: Regional Share of Stainless Steel Production [%]



Source : ISSF

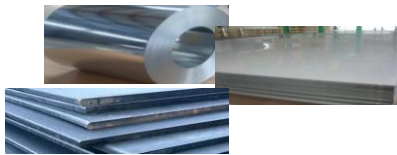
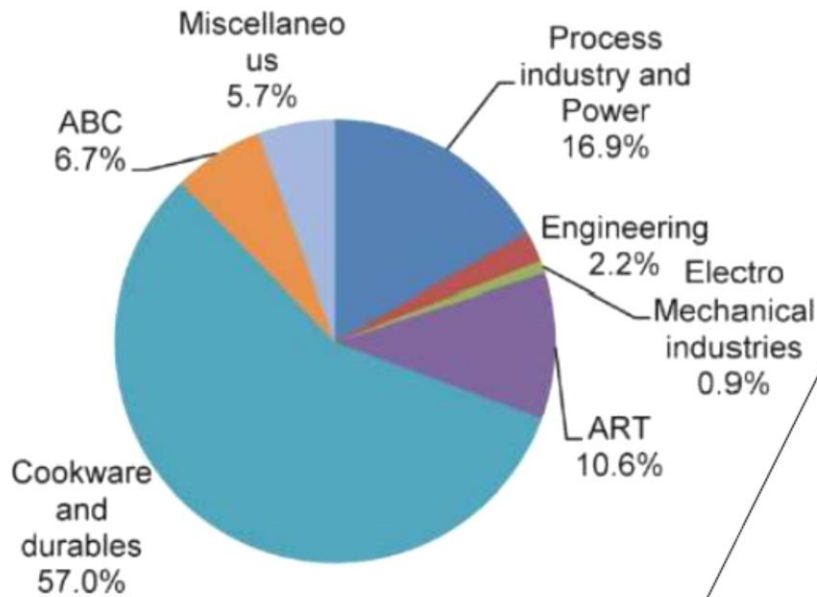
Stainless Steel Consumption Growth China & India vs. Rest of the World



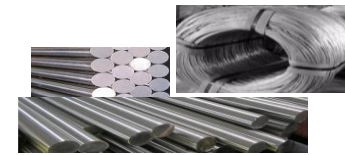
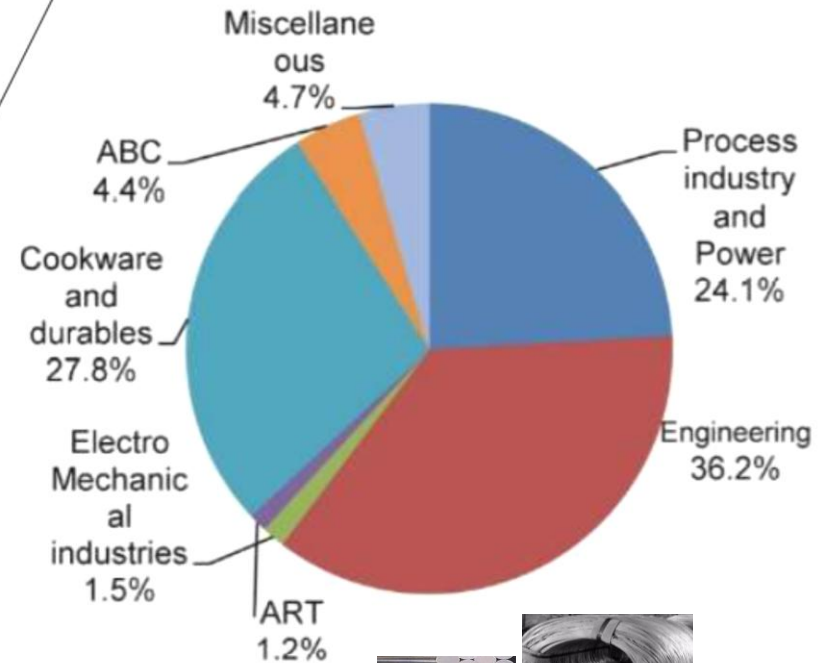
Source : SMR

India : Stainless Steel Consumption Trend by End use sector

Flat Product



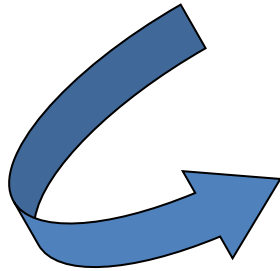
Long Product



**New government and
New opportunities**

New government and New opportunities

***India will surpass China in growth rate in 2016,
says the latest World Economic Report
released by **International Monetary Fund**
on January 20, 2015.***



***India Already Passes China to Become
Fastest-Growing Economy – World Bank
(Wall Street Journal, 11th Feb)***

India Budget 2015: A foundation for growth

The Finance Minister has laid out a clear roadmap with a particular focus on

Infrastructure

Fiscal Consolidation

Empowerment of States

Ease of doing business

Indian Economy : News Flash

- S&P revises GDP forecast to 7.9% Expecting Indian to be Aisa-Pacific region's brightest spot. (Business Line, 26th Feburary)
- Indian Economy to Grow 7.5% in FY16 : IMF – (TOI, 12th March)

India : Population 1.27 billion

By 2020, India is set to become the world's youngest country with median age reaching 29 years

Skill, Scale and Speed

to revive India's growth story

India has more than 65% of its population below the age of 35



Youth

The building blocks of a nation



Some Important Growth Drivers & Government of India Initiatives



→ **Red carpet NOT Red tape** ←

A major growth initiative every sector : Stainless Steel future linked to it



AUTOMOBILES



AUTOMOBILE COMPONENTS



AVIATION



BIOTECHNOLOGY



CHEMICALS



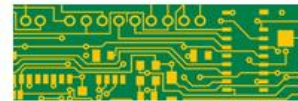
CONSTRUCTION



DEFENCE MANUFACTURING



ELECTRICAL MACHINERY



ELECTRONIC SYSTEMS



FOOD PROCESSING



IT AND BPM



LEATHER



MEDIA AND ENTERTAINMENT



MINING



OIL AND GAS



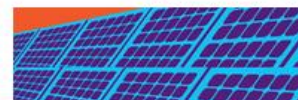
PHARMACEUTICALS



PORTS



RAILWAYS



RENEWABLE ENERGY



ROADS AND HIGHWAYS



SPACE



TEXTILES AND GARMENTS



THERMAL POWER



TOURISM AND HOSPITALITY



WELLNESS

Creation of 100 smart cities
An initiative by Honorable PM of India

Key Features of these cities will be

- 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

Smart means
'Use Stainless Steel'



Mid Day Meal Scheme : Stainless Steel for Hygiene

A Government of India initiative designed to improve the nutritional status of school-age children nation wide - free lunches on working days for children in Primary and Upper Primary Classes

Serving 120,000,000 children in over 1,265,000 schools

Largest such programme in the world



*Image Courtesy :
Naik Foundation*

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

Campaign Clean India

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





JSL
JINDAL STAINLESS
Modular Toilets

Economical convenient
Stainless Steel
Modular Toilet
from JINDALS

**Single Unit
Stainless Steel
Toilet**

TOILET - 2200x1000x1800mm (RATED)
Rs. 42000/- (Including water storage tank)

USP of Stainless Steel Modular Toilet :

- From the house of Jindal Stainless
- New Design more Production Friendly with minimum wastage
- Eco friendly and totally recyclable
- Competitive in pricing vs a vs FRP and brick and mortar toilets
- Complete Stainless Steel with PVD coated exterior.
- Completely Modular in Design can be transported in knock down condition and can be assembled at site in minimum time to save transportation cost.
- Can be upgraded to an Fully Automated Bio - Toilet.



**Community
Stainless Steel
Toilet**

6 Toilet set

8 Toilet set

Bio Disposal tank

MSP: Rs. 3,99,000/- (Taxies & Exclde Extra)
Rs. Factory including water storage tank

MSP: Rs. 4,99,000/- (Taxies & Exclde Extra)
Rs. Factory including water storage tank

MSP: Rs. 5,00,000/- (Taxies & Exclde Extra)

CONTACT : enquiry_modulartoliet@jindalsteel.com, JSL Architecture Ltd, Plot No. 68-65, 2nd Floor, Uday Nagar, Phase-IV, Gurgaon-122016. # +91 9609275155

Stainless Steel Bio Mass Stove : Toward Energy Conservation

Designed by The Energy and Resources Institute (TERI), an autonomous, not-for-profit research organization working globally with headquarters in New Delhi

AISI 304 grade of stainless steel - inner core
AISI 202 stainless steel grade. – Rest
Total 7 kg of stainless steel per piece



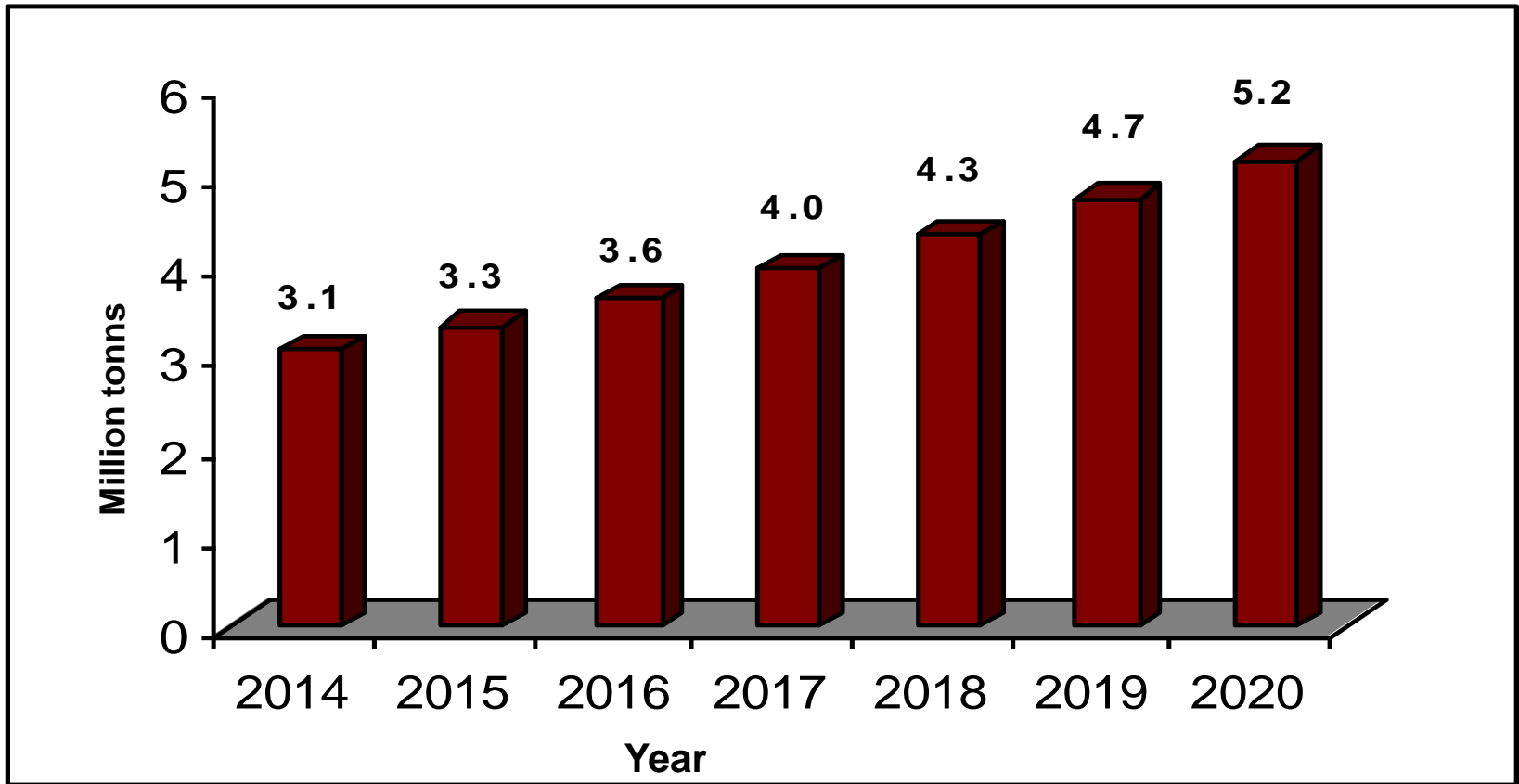
A Global Initiative



Cost : 3200 INR (~ 50 US\$)

Forecast : Stainless Steel output 2020

India : Forecast Stainless Steel Melt Production



Conclusion

- **Global stainless steel production will grow in 2015 and particularly in India**
- **India's per capita consumption of 1.9 kg is well below world average of 6 kg - Potential to Cover the Gap**
- **India GDP likely to grow 7-8 % in coming years and Domestic consumption of Stainless Steel likely to increase 9 to 10%**
- **New Government Initiatives like 'Make in India' , Building Smart Cities, Focus on Sanitation Facilities are likely to benefit the stainless steel Industry.**

Thank You



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