

# Addressing Climate Change Issues ..... through Sustainable Steel Making



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STEEL AUTHORITY OF INDIA LIMITED

Climate change, induced by anthropogenic activities, is challenging our planet with its gravest threat ever, threatening widespread disappearance of species and elimination of natural habitats.



# What is Climate Change?

- Climate change is a change in the statistical distribution of weather patterns when that change lasts for an extended period of time (i.e., decades to millions of years).
- Climate change is largely irreversible.
- Climate change is attributed to GHG emissions from anthropogenic activities, biotic processes, variations in solar radiation received by Earth, plate tectonics and volcanic eruptions.

# Effects of Climate Change?

- **Higher Temperatures** - Five hottest years on record have all occurred since 1997 and average surface temperatures could increase by 3 to 10 degrees Fahrenheit by the end of the century.
- **Changing Landscapes** - Changing temperatures are causing vegetation shifts and conservation challenges.
- **Extinction of Species** - One-fourth of the Earth's species could be headed for extinction by 2050 due to climate change.
- **Rising Sea Levels** - sea levels could continue to rise between 4 inches and 36 inches over the next 100 years displacing tens of millions of people.
- Increased Risk of Drought, Fire and Floods
- **Frequent & Stronger Storms** and Increased Storm Damage
- More Heat-Related Illness and Disease
- Declining crop yields



# India - Spearheading Climate Solutions



# Steel Industry and Climate Change

- ❑ Steel is versatile, strong and recyclable material and plays a significant role in the global economic infrastructure and development.
- ❑ Steel as a product is eco-friendly; however steel making process is associated with environmental ramifications, including energy consumptions & GHG emissions
- ❑ Being one of the largest producer of steel in the country, SAIL is committed to meet the demand for steel in a safe and sustainable way, without



# Paris Agreement--- Post 2020

- **The Paris Agreement:** An agreement within the **United Nations Framework Convention on Climate Change** dealing with **greenhouse gas (GHG) emissions mitigation**, adaptation and finance starting in the year 2020.
- The Agreement entered into force on 4 November 2016
- According to **Article 4 paragraph 2** of the Paris Agreement, each Nation (Party) shall prepare, communicate and maintain successive **Nationally Determined Contributions (NDCs)** that it intends to achieve.
- India ratified the Paris Agreement on 2<sup>nd</sup> Oct 2016.
- Govt. of India has committed to reduce the **GHG Emissions per unit of its GDP by 33-35% by 2030 from 2005 level.**

# Way Forward : Indian Iron & Steel Industry

- In consonance with this, Ministry of Steel has already submitted the **Intended Nationally Determined Contributions (INDC)** for **reducing GHG emissions in Iron & Steel sector** which inter alia projects CO<sub>2</sub> emissions of:
  - **2.2 -2.4 T/TCS in BF-BOF route**
  - **2.6- 2.7 T/TCS in DRI- EAF route****by the terminal year 2030, from 3.1 T/ TCS during 2005 for the overall steel industry.**





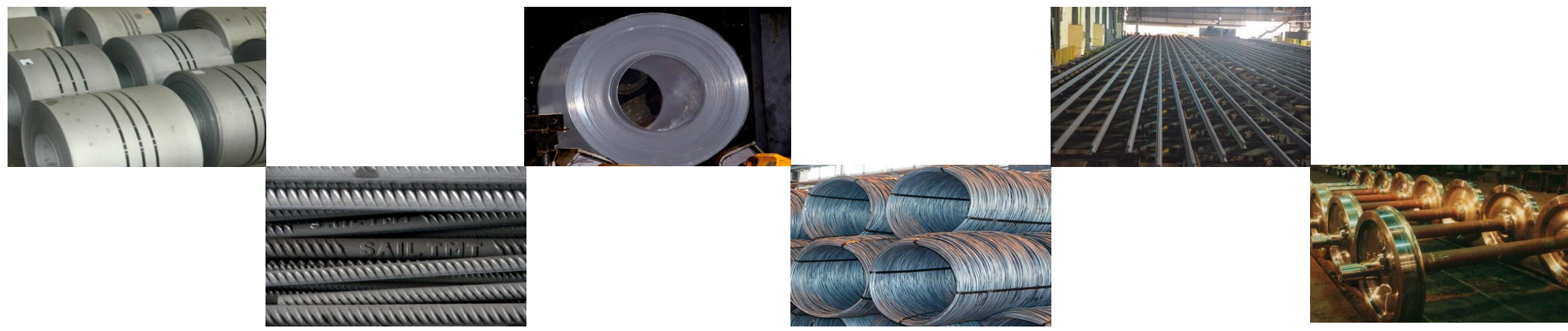
# Way forward for GHG Emissions Mitigation

- Through Technology Deployment
- Improvement in Quality of Raw Materials
- Improvement in Fuel rate
- Increase in recycling & Reuse (4R principle)
- Promotion of Renewable Energy
- Afforestation for creation of Carbon Sink



# National Steel Policy -2017

- The National Steel Policy projects production of 255 MT crude steel by 2030-31 & Finished steel per capita consumption of 158 Kgs by 2030 - 31.
- This automatically necessitates addressing Climate Change and Global warming issues as a major thrust area for the Iron & Steel Industry in India.
- As producers of steel, it is our responsibility to meet the demand for steel in a safe and sustainable way.



# SAIL- Continued Commitment towards Climate Change Mitigation

SAIL in its Corporate Environmental Policy has committed to:

**“Contribute towards mitigation of climate change through the adoption of cleaner and energy efficient technologies.”**

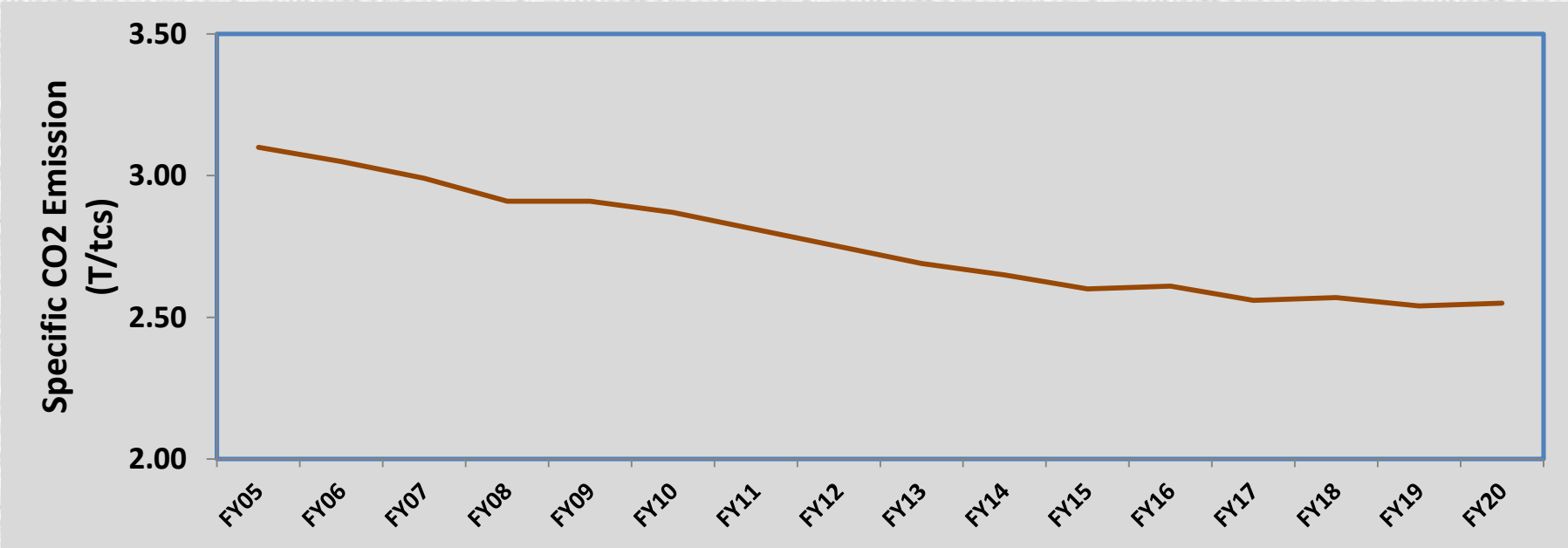




# SAIL's Initiatives to reduce GHG Emissions

Taken up various programmes for Climate Change Mitigation through:

- ☐ Technology up-gradation
- ☐ Integration of sound environmental practices
- ☐ Sourcing of good quality of raw materials
- ☐ Retrofitting and revamping of old pollution control systems.



Specific CO<sub>2</sub> emissions at SAIL has been reduced by more than 9% over last 10 years. 112

# Introduction of Clean & Green Technologies

During recent **modernization-cum-expansion of SAIL Plants**, number of CO<sub>2</sub> mitigation technologies have been implemented, such as:

- **Coke Making:**
  - Tall Coke Oven batteries with Coke Dry Cooling Plant
  - Computerized Combustion Control System
- **Sinter Making:**
  - Waste Heat Recovery from Sinter Coolers
  - Improved Ignition Oven Efficiency



# Introduction of Clean & Green Technologies

- **Iron Making (BF):**
  - Waste Heat Recovery from Stoves
  - Top-pressure Recovery Turbine (TRT)
- **Steel Making:**
  - Maximising BOF gas recovery.
- **Rolling Mills:**
  - Walking Beam type Reheating Furnace
  - Direct rolling of cast materials
  - Use of regenerative burners for heating





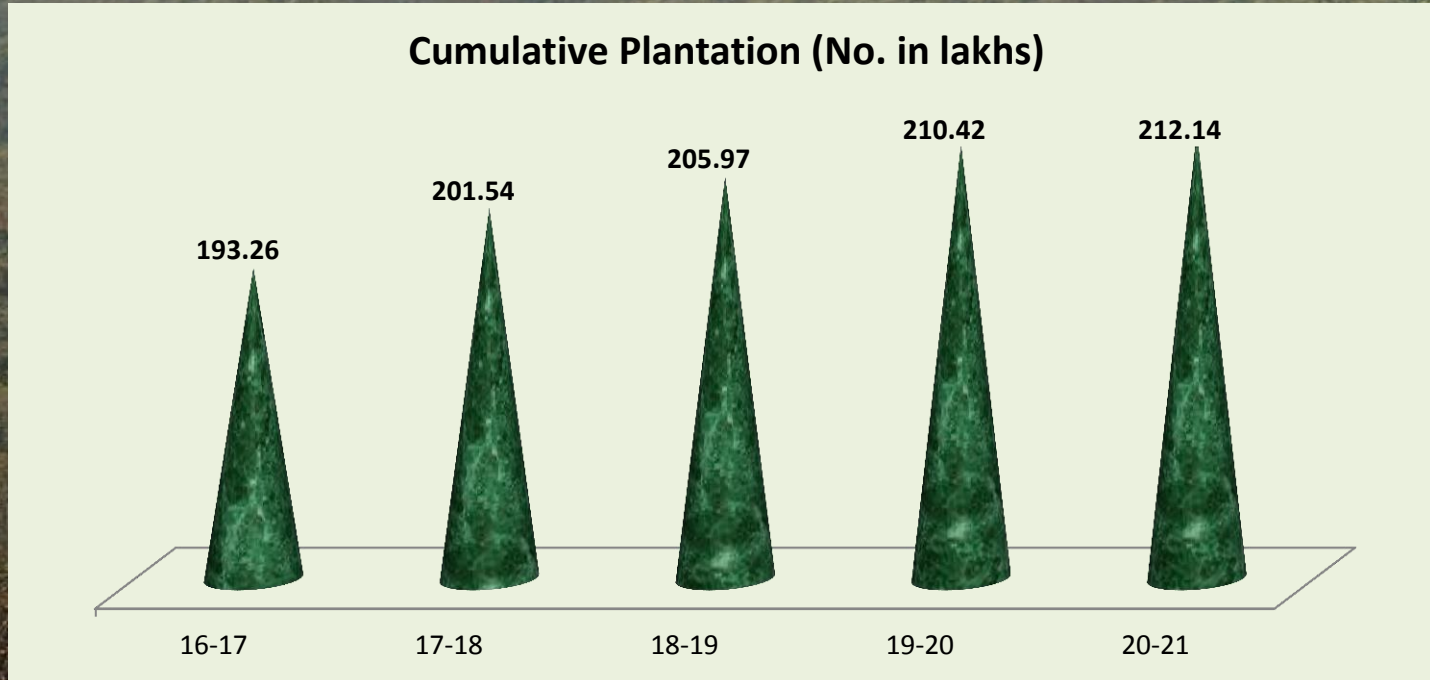
# Energy efficient Lighting System

- SAIL is promoting energy efficient lighting system in place of conventional lighting.
- Plants, Mines & Townships of SAIL are gradually switching over to LED Lighting System.



# Our Greenery efforts

- Since inception, more than 21 million trees have been planted to create CO<sub>2</sub> Sink.
- Target for planation – At least 5 lakhs saplings per year





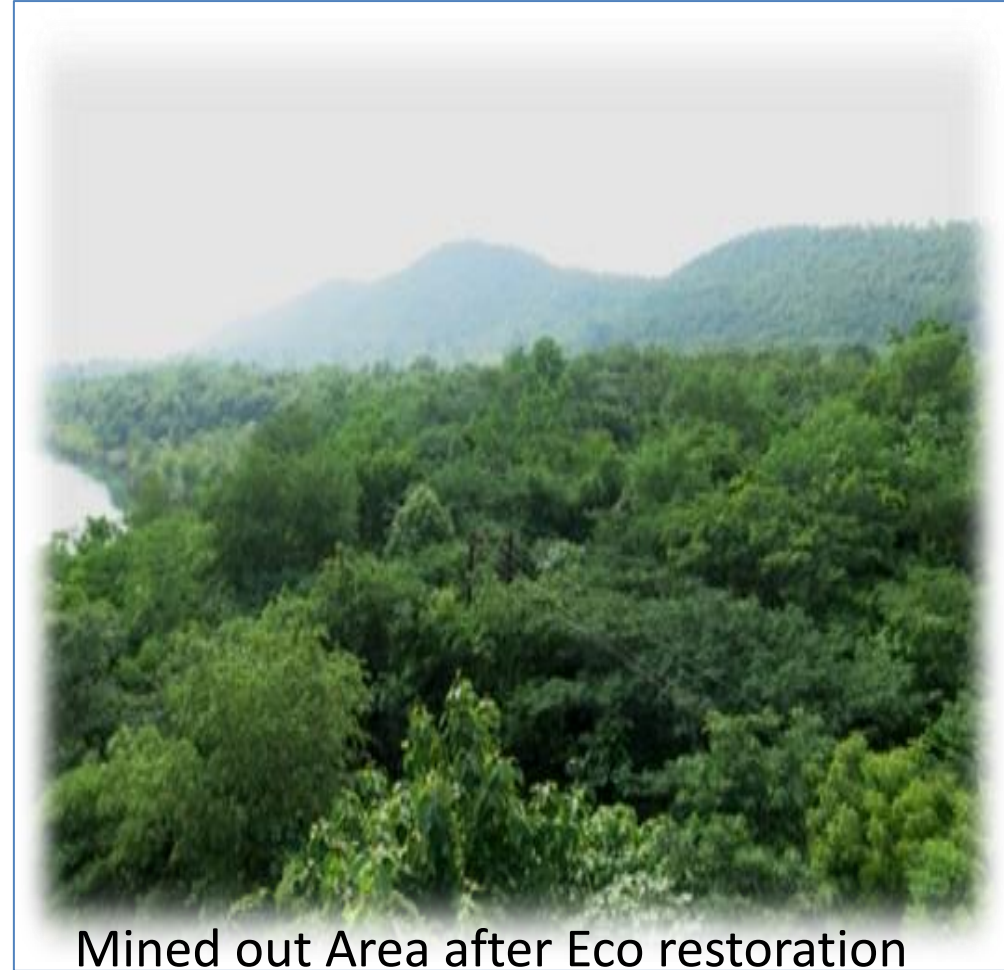
# Carbon Sequestration through Afforestation at RSP

- Objectives is to assess CO<sub>2</sub> generation, concentration in surrounding ambient air, carbon sequestration of vegetation and economic valuation and design & implement plantation programme for additional carbon sequestration.





# Eco-restoration and Development of Livelihood Options at Purnapani



# Harnessing Renewable Energy

Solar lighting systems have been installed at the hospitals, Guest Houses, Inside plant premises for street lighting and peripheral villages in a big way



# **SAIL – A climate Action member at World Steel Association**

SAIL is a Climate Action Member at World Steel Association and is regularly participating in the Climate Action recognition programme, World Steel Association.







**“We Do Not Inherit the Earth from Our Ancestors; We Borrow It from Our Children”,**

let us ensure that we will keep the planet safe.

**Thank You**