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

National Missions under NAPCC

- Solar
- Enhanced Energy Efficiency
- Sustainable Habitat
- Water
- Sustaining Himalayan Ecosystem
- Sustainable Agriculture
- Green India
- Strategic Knowledge for Climate Change
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 compromising the need of the future generation.
• **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\(^{nd}\) 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.
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 CO2 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

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 CO₂ emissions at SAIL has been reduced by more than 9% over last 10 years.
Introduction of Clean & Green Technologies

During recent modernization-cum-expansion of SAIL Plants, number of CO$_2$ 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$_2$ Sink.

• Target for plantation – At least 5 lakhs saplings per year
Carbon Sequestration through Afforestation at RSP

- Objectives is to assess CO₂ 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

Mined out Area --Before Eco restoration

Mined out Area after Eco restoration
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