

# G20 Global Summit on Financing Energy Efficiency, Innovation and Clean Technology

## Activities of Japanese steel industry for a Low Carbon Society

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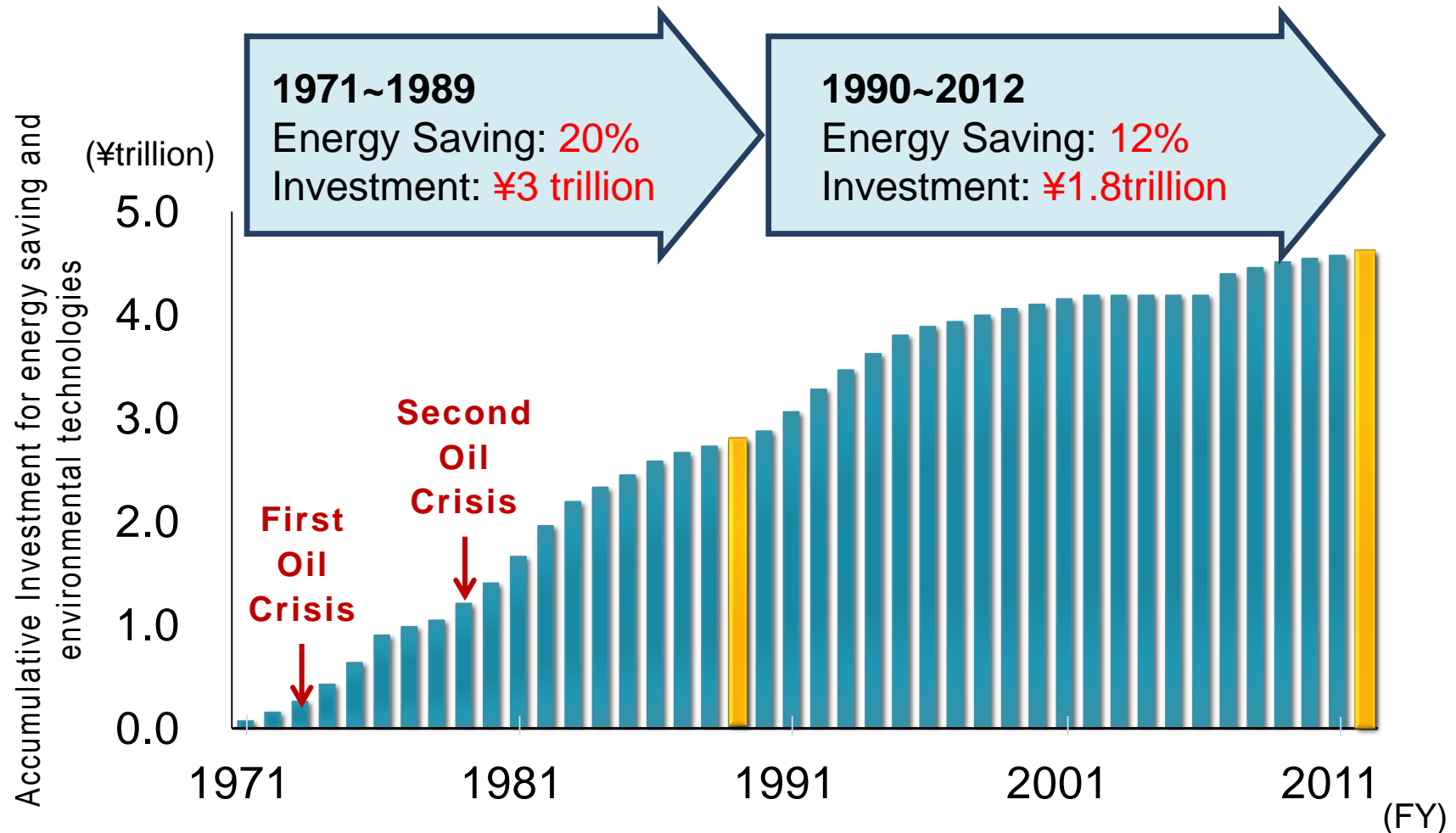
Chairman

Energy Technology Committee

The Japan Iron and Steel Federation

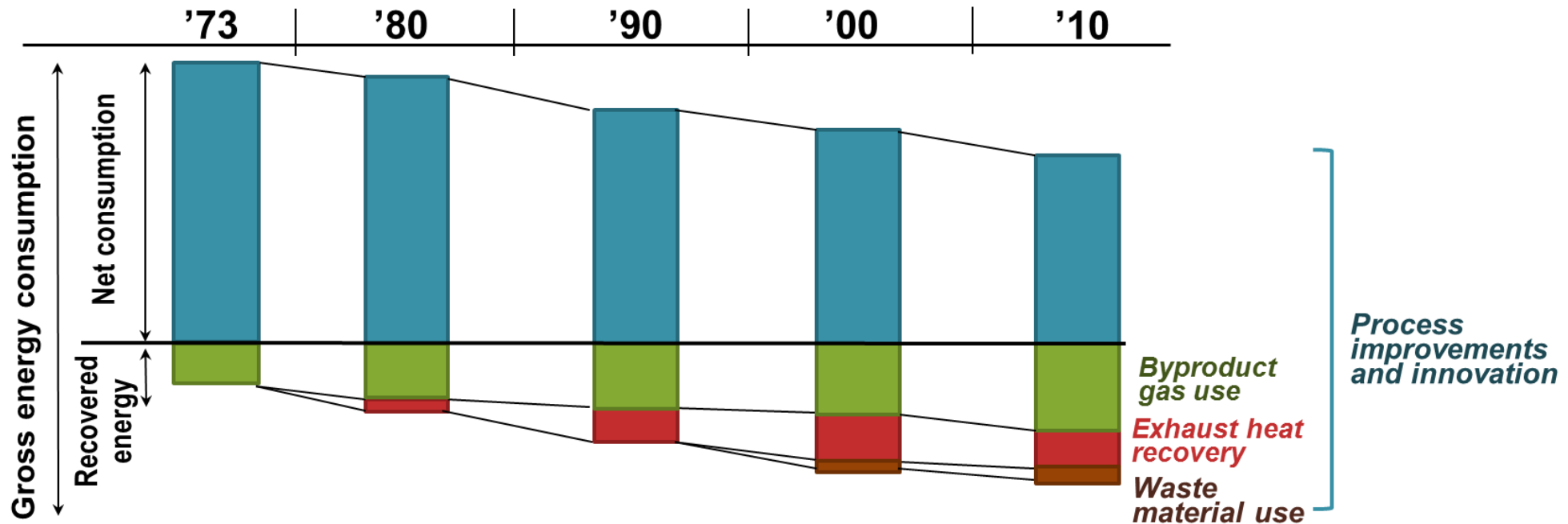
# Energy saving in Japanese steel industry since 1970s

After the two oil crises in the 1970's, Japanese steel industry *improved the energy efficiency* by promoting investment for R&D and implementation of energy saving technologies



# Utilization of energy saving technologies in the Japanese steel industry

- Japanese steel industry reduced gross consumption by process improvements
- **Energy recovery** is contributing to reduce net consumption in recent years



## Process improvements and innovation

continuous casting, PCI, coal moisture control, optimization of logistics, SCOPE21

## Byproduct gas use

gas holder, high-efficiency gas turbine combined cycle generation, hydrogen amplification, CO<sub>2</sub> recovery

## Exhaust heat recovery

TRT, CDQ, regenerative burners, mid-low temp. heat recovery

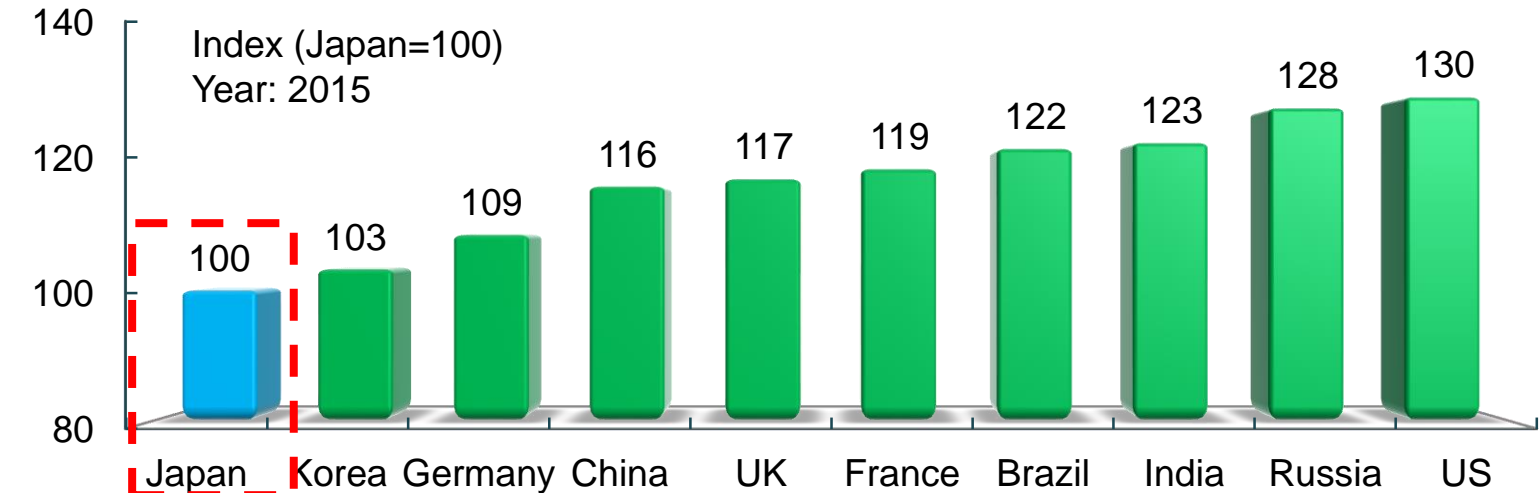
## Waste material use

waste plastics and tires

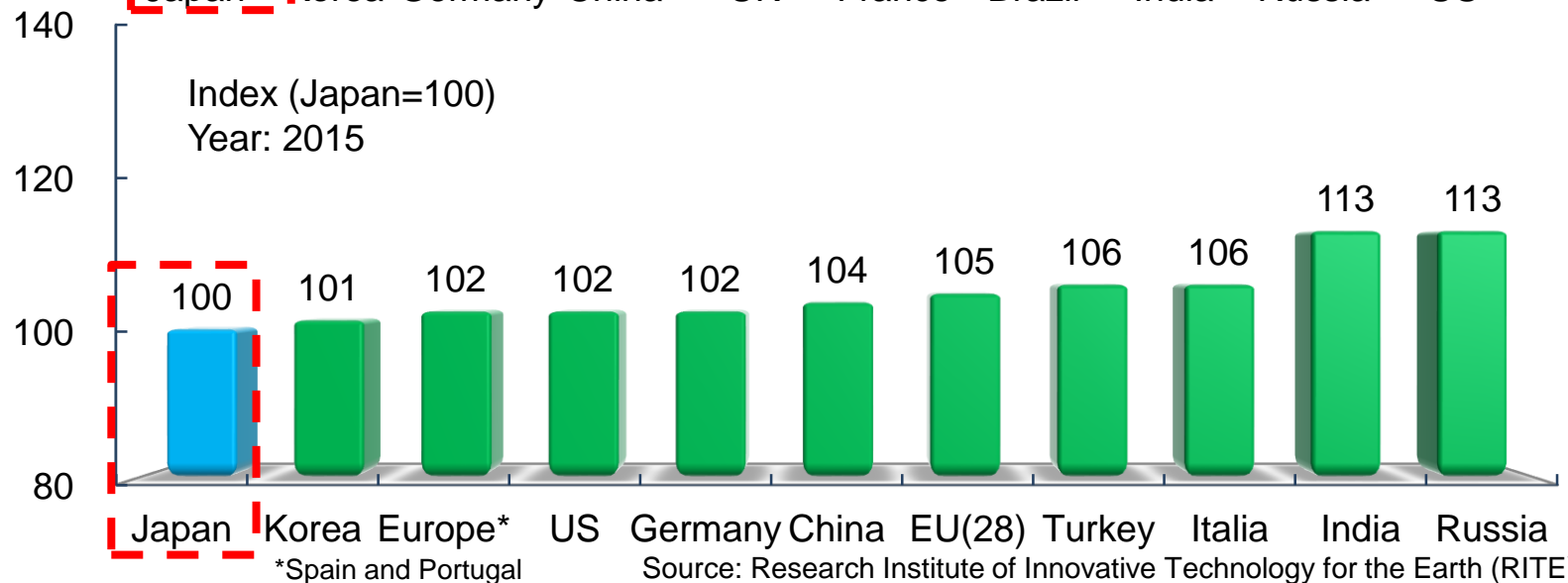
# Energy intensity of major steel producing countries

Japanese steel industry achieves the **lowest energy intensity** (unit energy consumption per ton of crude steel) among the world's major steel producing countries.

Integrated steel mills



EAF



# Technology Transfer of Energy Saving Technologies

*CDQ, TRT and other major types of equipment alone are already lowering annual aggregate CO<sub>2</sub> emissions in China, Korea, India, Russia, Ukraine, Brazil and other countries by approximately 60 million tons in 2017.*

Energy Saving Rechnology	No. of units	CO2 Reduction (Mt/year)
Coke dry quenching (CDQ)	96	19.69
Top-pressure recovery turbines (TRT)	62	11.02
Byproduct gas combustion (GTCC)	52	21.90
Basic oxygen furnace OG gas recovery	21	8.21
Basic oxygen furnace sensible heat recovery	7	0.90
Sintering exhaust heat recovery	6	0.88
<b>Total emission reduction</b>		<b>62.59Mt</b>

***5 major energy saving equipments, commercialized and sold by Japanese companies by 2017***



GTCC : Gas Turbine Combined Cycle system

Source: The Japan Iron and Steel Federation

## India-Japan Public and Private Collaborative Meeting on iron and steel industry (1/2)

### Purpose

To encourage **technology transfer** from Japanese to Indian steel industry and thereby contribute to the **energy saving** in India and in the world.

### Members – Public and Private sectors of India and Japan

Public and  
Private  
Partnership

#### India

##### Public members and observers

Ministry of Steel  
Bureau of Energy Efficiency etc.

##### Private members and observers

Indian steel companies  
(SAIL, RINL, TSL, JSW, JSPL,  
BSPL, BSL, Essar, MECON etc.)

#### Japan

##### Public members and observers

Ministry of Economy, Trade and  
Industry/ NEDO / JBIC / JETRO

##### Private members and observers

The Japan Iron and Steel Federation  
(Nippon Steel & Sumitomo Metal, JFE  
steel, Kobe steel, Nisshin Steel etc.)

# India-Japan Public and Private Collaborative Meeting on iron and steel industry (2/2)

Meetings – since 2011

Cooperative Approach



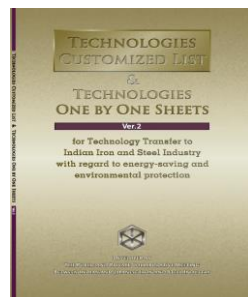
Three pillars of the energy management in the steel plant

ISO14404



Steel Plant Diagnosis  
using **ISO14404**  
(2013-2018)

Technologies Customized List



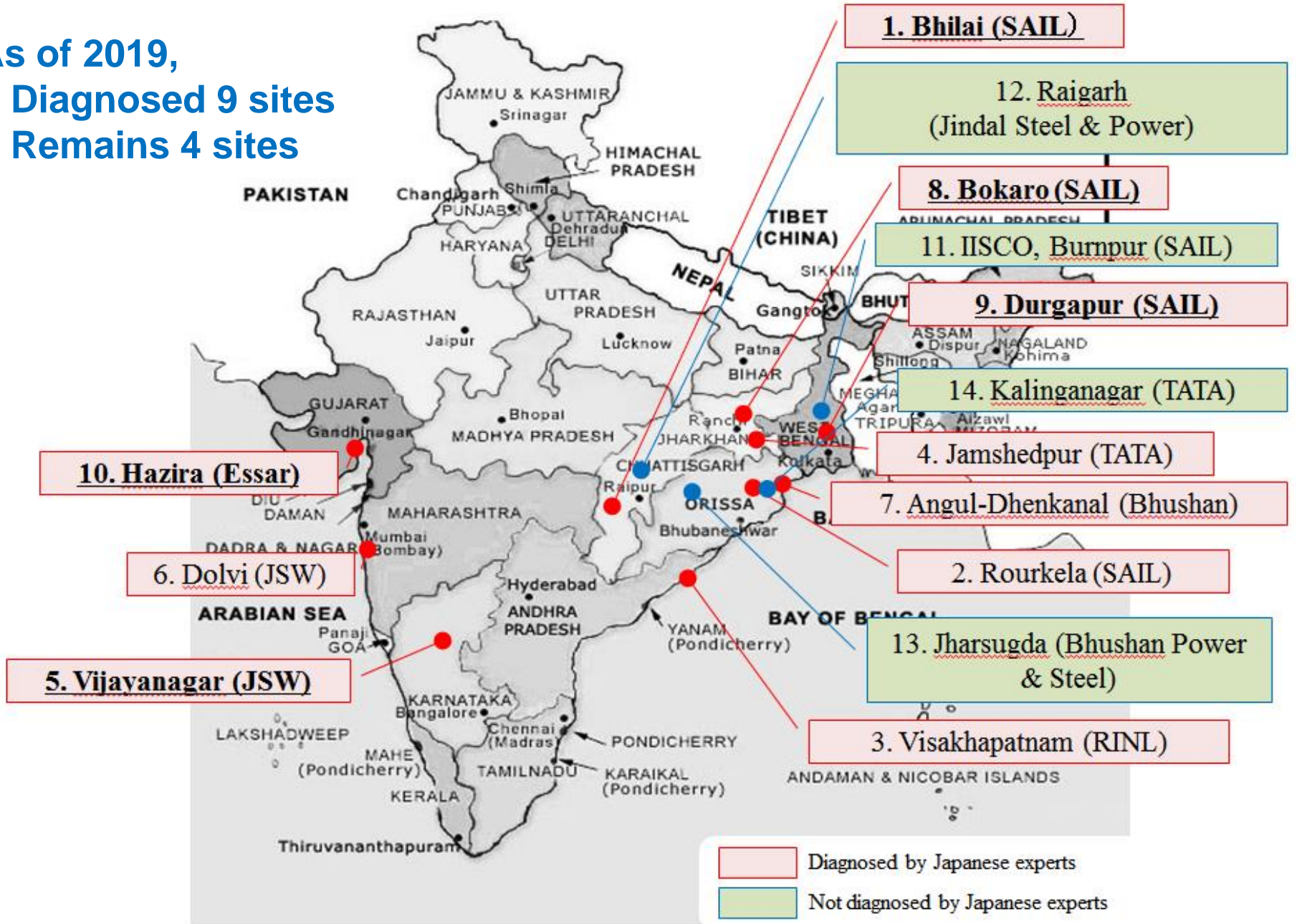
Technology reference of energy  
saving technologies suitable  
for each country/region

Energy Management System



Help steel plants to establish a  
framework to plan, do, check and act  
for the energy saving activities

As of 2019,  
- Diagnosed 9 sites  
- Remains 4 sites

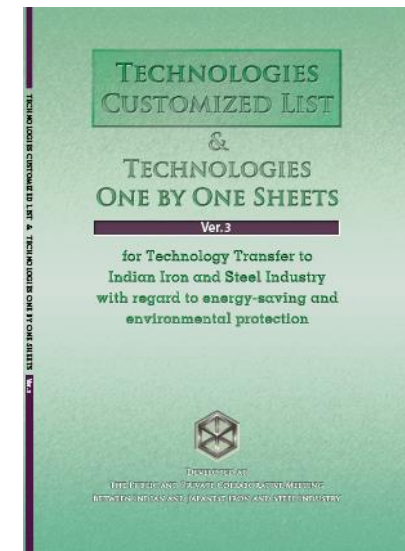




1. The benefit of technology implementation is clearly demonstrated
  - *Indicate CO<sub>2</sub> reduction effect and payback time* for the collaborative country or region, based on country-based energy prices, plant installation cost and CO<sub>2</sub> emission factor
2. Technologies listed on TCL are **reliable**
  - *Effects of the technologies are **proven** through Japanese steelmakers' operating experiences*
3. **Easy to reach out** to further information when necessary
  - *Include in contact detail of supplier companies which have the best available technologies*



The 9th India-Japan Public and Private Collaborative Meeting on Iron and Steel Industry  
Mumbai, India 23 January, 2019.



*“India side’s thanked the updating of TCL and they mentioned that they would like to diffuse it to stakeholders in India and also expect to continually have a Public and Private Collaborative Meeting.”(Minutes of the meeting)*

1. **“Visualizing”** energy saving **benefits and contribution** to emission reductions are the base to develop a favorable investment environment and to encourage international cooperation
  - *“Common Methodologies” to calculate Emissions / Energy Intensity*
  - *Steel Sector has developed and uses ISO14404*
2. **Sector Base PPP** on BAT List (Technology Customized List) and Plant Diagnosis, and Peer Review process are effective to reduce risks
3. **“Upfront” Financial Support / Incentives** with coordinated domestic policy supports are the Key in developing countries
  - *No clear Cash Flow from Energy Savings*
  - *Longer Recovery Periods (than process expansion)*
  - *High Discount Rate*
  - + *Energy Saving Policies (Reporting, Benchmarking, Intensity Targets etc.)*

Thank you

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- Technological innovation is the key to reconcile economic growth and emission reduction.

