

Sustainable development transition from the perspective of China and Baosteel

Zhang Yilong, Wei Wei

IEA, Sustainable Development Transition Experts' Diag. Mar. 29, 2019

CONTENTS

1.Introduction to China Baowu Group and Baosteel

2.Review of sustainable development transition

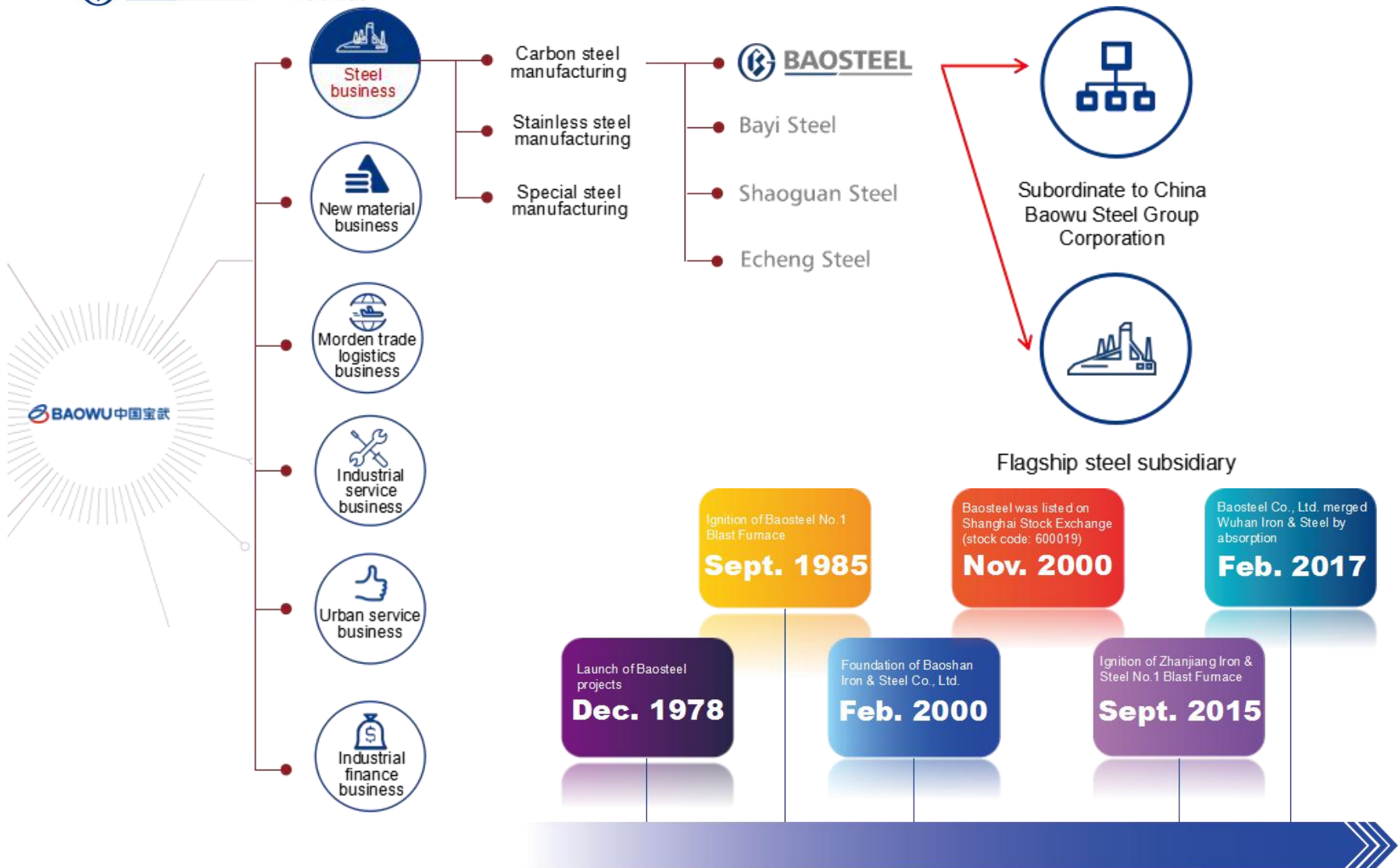
3.Baosteel's exploration and practice for sustainable transition

4. Personal view



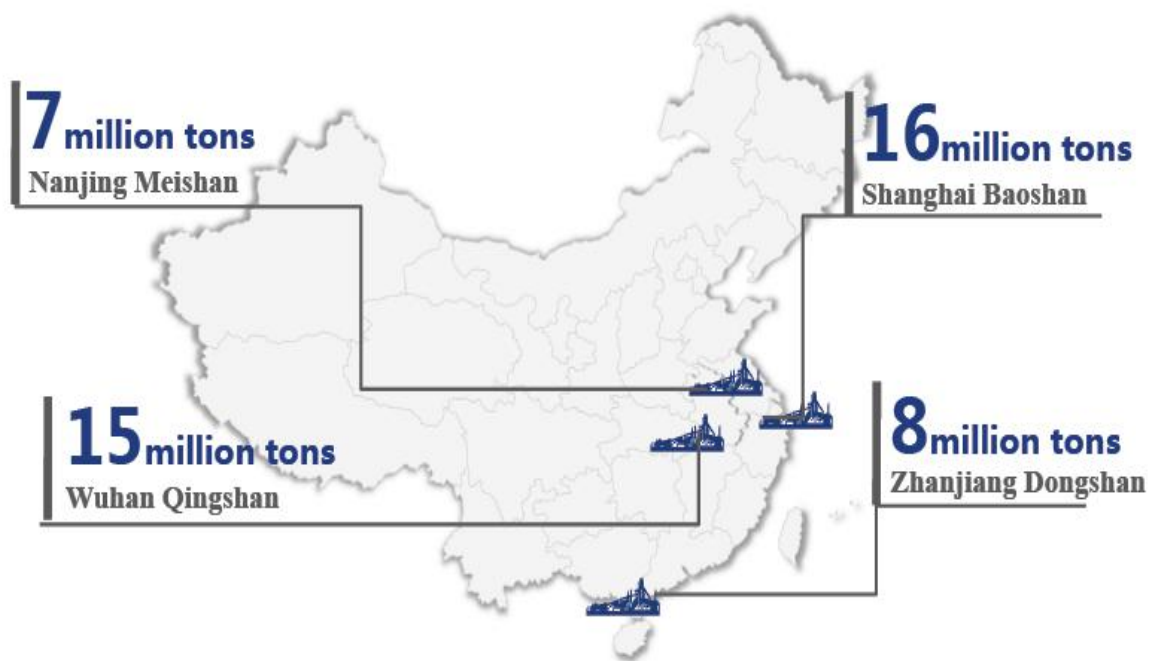
I. Introduction to China Baowu Group and Baosteel

 **BAOSTEEL** 宝钢股份



China Baowu Group is the most competitive steel companies in China, and Baosteel is the core subsidiary of China Baowu Group.

Baosteel's 4 manufacturing bases



Total production in 2017: 47 million tons
 Sales in 2017: \$ 43.3 billion dollars*

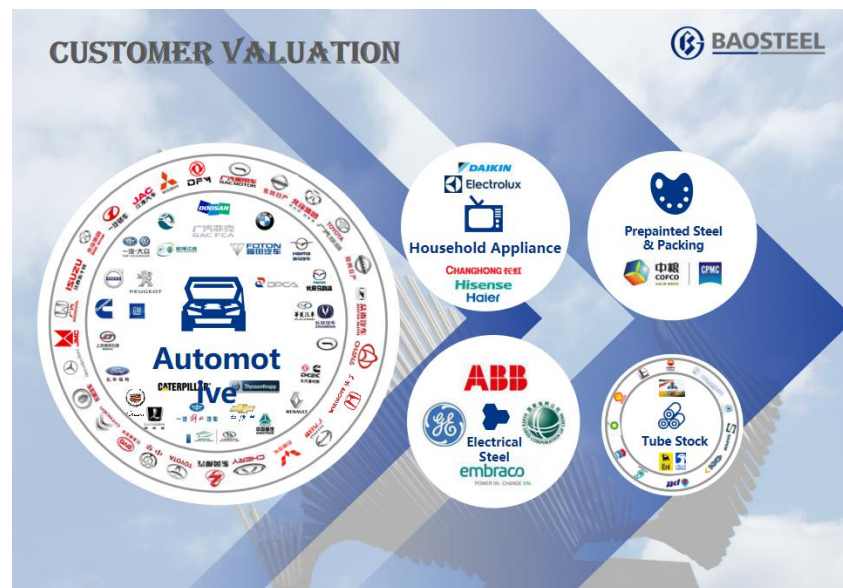
Notes: exchange ratio by the end of Dec. 31, 2017

Baosteel's 6 strategic products

Electrical Steel 、 Automotive Steel 、 High grade heavy plate 、 Tin-plate 、 High grade steel sheets、 Steel for energy and pipeline



I. Introduction to Baosteel



2017 OPERATION OVERVIEW

	Unit	2015	2016	2017	2017年较2016年同比
Sales Volume	million tons	22.49	24.63	46.53	↑ 88.9%
Total Operating Revenue	RMB billion	164.1	185.7	289.5	↑ 55.9%
Total Profit	RMB billion	1.76	11.52	24.04	↑ 108.7%
Net Profit	RMB billion	0.65	9.21	20.40	↑ 121.5%
Assets-liability Ratio	%	47.9	51.0	50.2	—

Note: the performance of Wuhan Qingshan manufacturing base is not included since Baosteel Co., Ltd. merged with Wuhan Iron & Steel Co., Ltd. in Feb. 2017.

2017 OPERATION OVERVIEW

Baosteel versus other steel companies
(with an annual output of 20+ million tons)



CONTENTS

1.Introduction to China Baowu Group and Baosteel

2.Review of sustainable development transition

3.Baosteel's exploration and practice for sustainable transition

4. Personal view

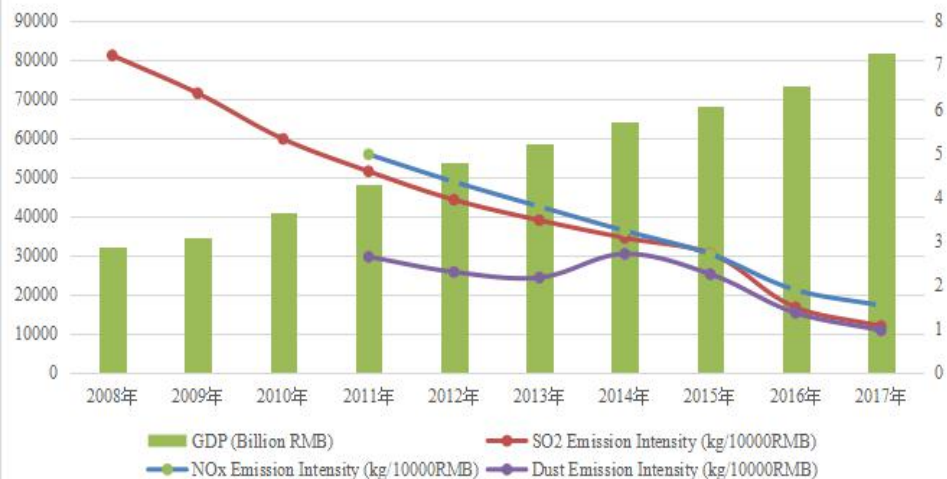




- Countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals- Sept. 2015
- Issuing of the 13th 5-year Plan for Economic and Social Development of the PRC-March 2016
Chapter 53: "We will actively implement 2030 Agenda for Sustainable Development"
- Overall Plan for Reforming of Ecological Civilization System-Sept. 2016
- Process Report on Implementing the 2030 Agenda for Sustainable Development-Aug. 2017
Published by Ministry of Foreign Affairs of the PRC
First report in the world summarising the measures and experience of China's implementation on SDG.

China is playing an active role in promoting global sustainable development.

China's GDP and Key Pollutants Emission Intensity



China's specific energy consumption and Coal Share



Data from state statistical Bureau

- The economy has doubled in the past 10 years, while key pollutants emission and energy consumption intensity have decreased substantially;
- The energy structure has changed significantly with the share of coal consumption decreased from 1.0 to around 0.6

China has made big efforts for pollution prevention and carbon reduction.

● Emission standards of Iron&Steel Industry

- ❑ 全流程、全工序覆盖 (Covering full flow and all processes)
- ❑ 细化污染物种类和排放限值 (Fully specification of pollutants and ELVs)
- ❑ 大幅收紧限值标准，世界行业范围内领先 (Industry-leading ELV standard)



● All new Pollutant Discharge Permit-Jan.2018

- ❑ **Strict** pollutant amount **ceiling** for discharging side adjusted to regional environmental volume

● Pollutant Discharge Tax-Jan.2018

- ❑ Tax mechanism for promoting the company for pollution reduction

● Ultra-low Emission Limit Value

- ❑ Action of Combat for Blue Sky- June 2018
- ❑ Impose stricter ELVs for pollutant emission
- ❑ Come into action by region and by stage

➤ Sinter stack

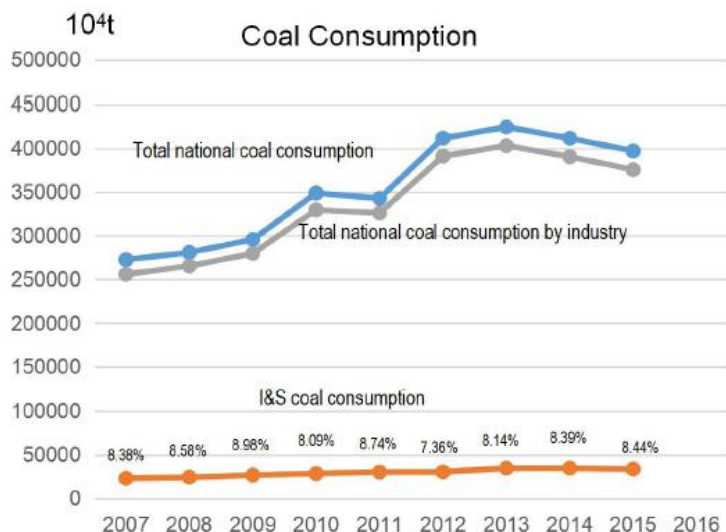
Pollutant (mg/m ³)	Current Standards	Special Limit	Ultra-low Emission	POSCO
PM	50	40	10	30
SO ₂	200	180	35	~500
NO _x (as NO ₂)	300	300	50	400

➤ Blast Furnace

Pollutant (mg/m ³)	Current Standards	Special Limit	Ultra-low Emission
PM	20	15	10
SO ₂	100	100	40
NO _x (as NO ₂)	300	300	150

Severe environmental protection pressure promotes the steel industrial green upgrading.

● Quota on Coal Consumption



Data from state statistical Bureau

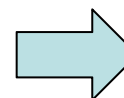
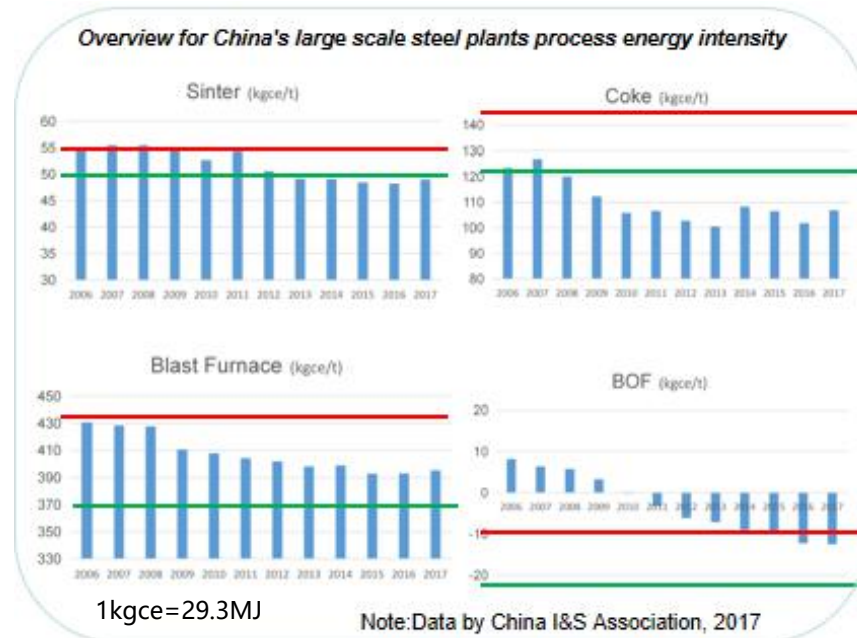
Action for controlling coal consumption amount:

- The action plan for prevention and treatment of air pollution
- Interim Measures for replacement of coal consumption in key areas
- Shanghai Coal Reduction and Substitution Work Program(2015-2017)/(2018-2020)
- Coal consumption amount control, by region and phase, target for promoting steel industry's energy structure transformation
- Energy intensity limit sets higher industry admission for new built plant and impose pressure on advanced steel plant

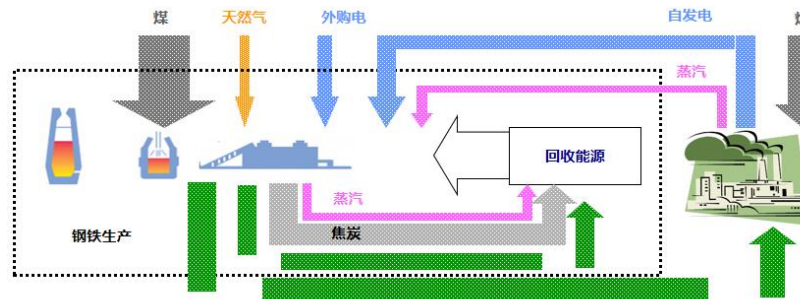
● Energy Intensity Limit

Process	Limit value (kgce/t)		Admission value (kgce/t)		Advanced value (kgce/t)	
Coking (top mounted)	≤155	≤150	≤125	≤122	≤115	≤115
Sintering	≤56	≤55	≤51	≤50	≤47	≤45
Blast Furnace	≤446	≤435	≤417	≤370	≤390	≤361
BOF	≤0	≤-10	≤-8	≤-25	≤-20	≤-30

Renovation of Norm of specific energy consumption for crude steel(GB21256-2013)



**Low carbon
development of
steel industry**



➤ **Renovation of envirmt. protection equipment:**

- Sinter/Coking/BF/BOF/EAF flue gas de-SO_x, de-NO_x, de-Dust, de-dioxin...
- Enclosure of stockyard/silo...

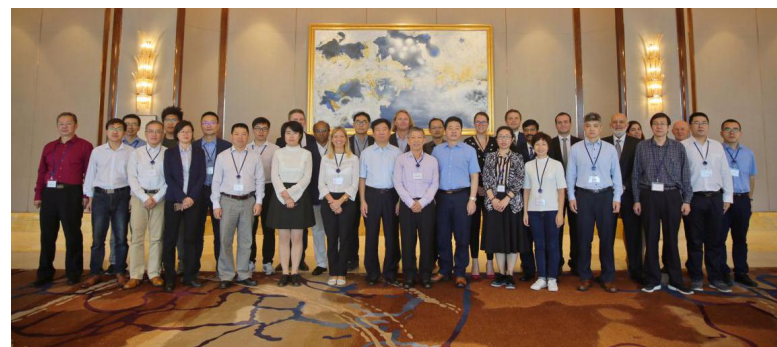
➤ **Energy efficiency improvemnt:**

- Sensible heat recover
- Reduction of gas loss
- **Utilization of clean energy**
- **Research for low-carbon Process**
- **CCUS.....**



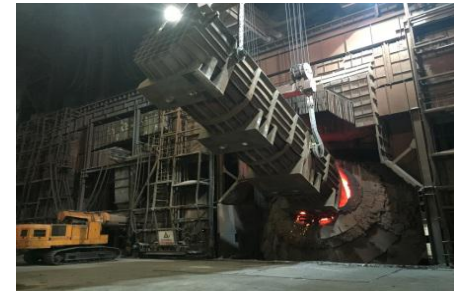
Advanced steel plants acts positively in reponse to external circumstance change, achieving green upgrading and improving competitiveness in steel market, while backward steel plants get “de-capacity”.

- Large-scale steel plants with multi-manufacturing base explore for effective mechanism for making full advantage of inter-base performance comparison, eg. China Baowu Group, HBIS, Shandong Steel....
- Steel plants enhance exchange in the field of envirmt protection and energy
- Industrial NGO, Worldsteel/CISA/MPI..., bridges the exchange



Intra-section exchange has been enhanced, and industrial NGOs, such as Worldsteel/ CISA/MPI is playing an important role.

Steel plants look out the section, seeking for cross-section cooperation and providing necessary services to the city communities.



- **TISCO:** Reuse of municipale sewage for steel manufacturing after membrane treatment;
- **Baosteel:** disposal of waste paint bucket by metallurgical furnace, utilization of steel-making slag for construction material fabrication;
- Steel plant in Northern China(**Ansteel, Shandong steel...**): waste heat recovery for heat supply for community

CONTENTS

1.Introduction to China Baowu Group and Baosteel

2.Review of sustainable development transition

3.Baosteel's exploration and practice for sustainable transition

4. Personal view



All of our manufacturing bases are located in rapid development area of the city.

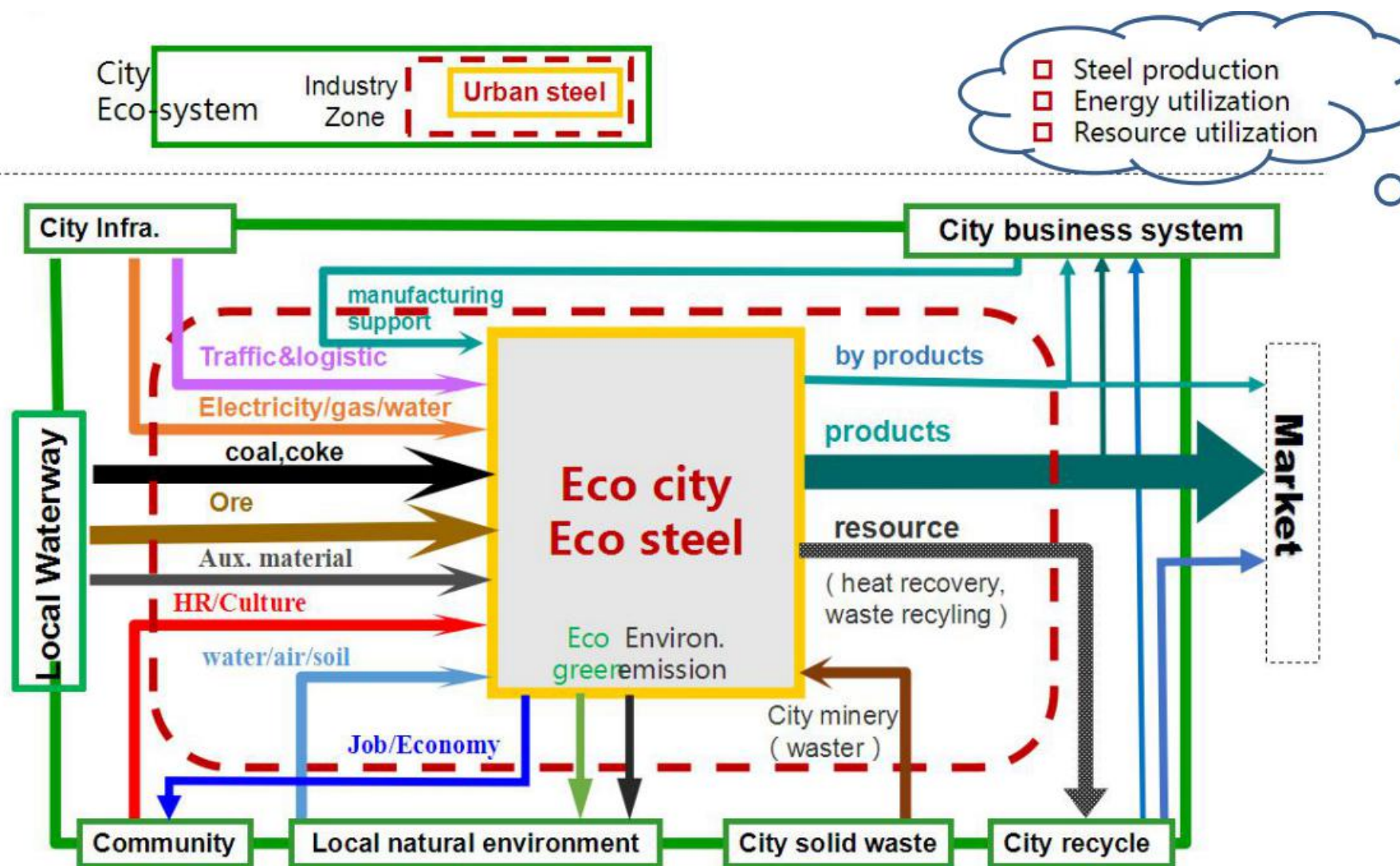


Big efforts have been made to be in compliance with the local governments' requirement in past years.

How to meet with new requirement for envirmt protection?

How to deal with bottleneck with regional energy consumption limit and envirmtal volume?

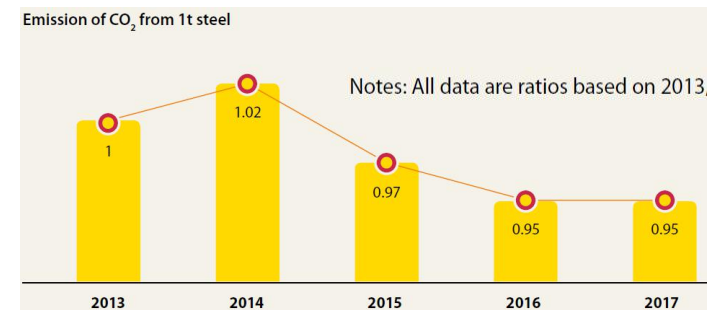
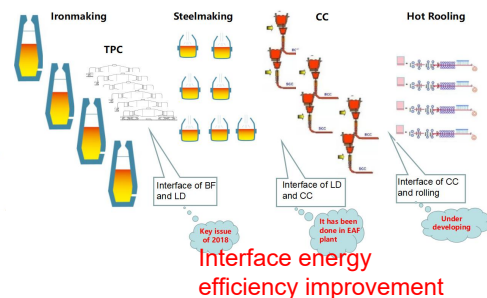
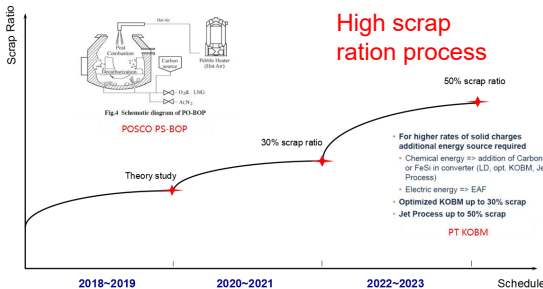
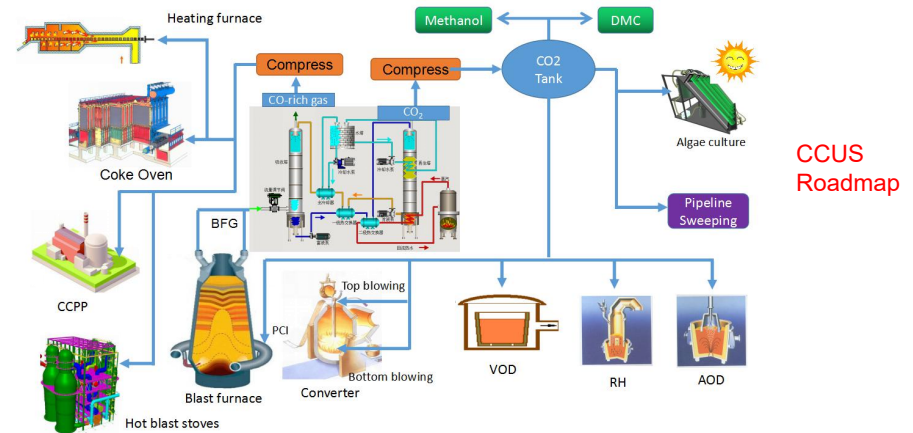
How to get along with local communities and get welcomed again by city?



Practices for sustainable development transition

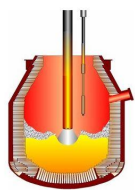
Practice in Carbon Management

- ❑ China's Carbon trading pilot started from 2011
- ❑ 3 manufacturing base of Baosteel involved
- ❑ Baosteel's participation in carbon management:
 - carbon trade implementation from 2013
 - participation in local carbon trade policy making
 - compilation of inner carbon management policy
 - Energy structure optimisation and low carbon process development.....

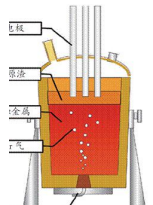


Application of Metallurgical furnace for solids treatment

- a) **Surge of demand** for compliance disposal of industrial solid waste and hazardous waste, while **limited capacity** in city is a bottleneck.
- b) Compliance disposal of solid waste and hazardous waste by qualified industrial plant is **encouraged by government**
 - National Development and Reform Commission: “Opinions on Promoting the Cooperative Resource-based Treatment of Urban and Industrial Wastes in Production Process” (2014)
 - Shanghai Environmental Protection Agency: Notice on the implementation of pilot disposal of waste paint and coating barrels(2015)
 - ...
- c) Possess of various metallurgical furnace makes it possible for steel plant to contribute to deal with the city's bottleneck.
 - High temperature (Up to 1600°C)
 - Well equipped gas cleaning facilities
 - Zero secondary waste



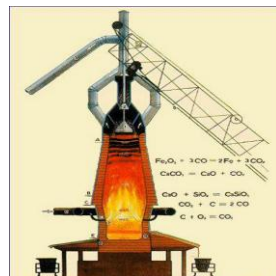
Basic Oven
Furnace



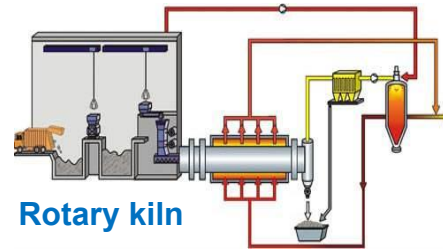
Electrical
Arc Furnace



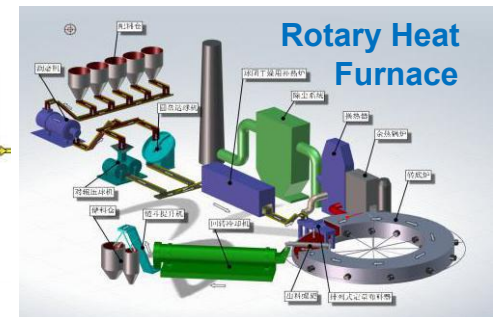
Coke Oven



Blast
Furnace



Rotary kiln



**Relatively low cost, Non-hazardous disposal,
Elimination of environmental risk.**

CONTENTS

1.Introduction to China Baowu Group and Baosteel

2.Review of sustainable development transition

3.Baosteel's exploration and practice for sustainable transition

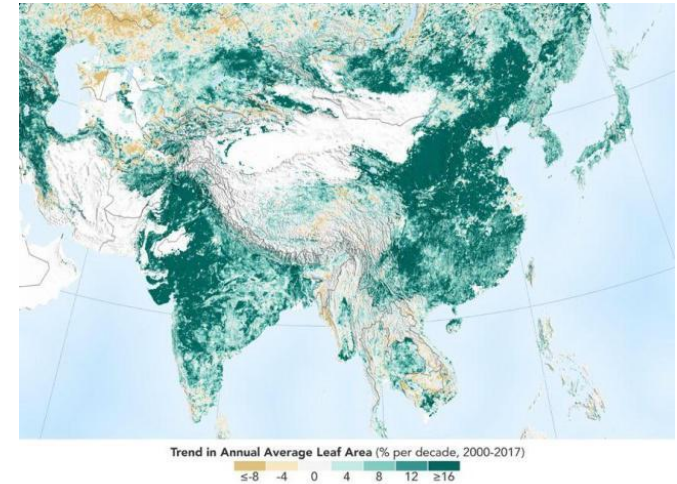
4. Personal view



- 1. Responsible countries are taking active roles in promoting sustainable development transition, laying the ground for SDG realised.*
- 2. Severe pressure from environmental protection and energy saving, promoting by phase and adjusting to regional environment capacity, force the steel plants for the green transformation.*
- 3. Advanced steel plants take the lead for application of new technology, establishing model for peer steel plants, bringing the whole industry towards sustainable development transition.*
- 4. The industrial NGOs are playing an important role in bridging the intra-section exchange.*
- 5. Steel plants could look out of the section, seeking for cross-section cooperation and providing necessary services to the city communities.*

*Enormous small steps made by individuals,
great leap for the society's sustainable
development.*

- China and India leads in making a greener earth by land-use management
- China's steel plant, especially Baosteel, contributes to land-greening.



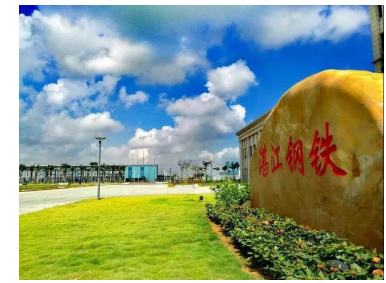
Baoshan Base, Shanghai
Greening rate: >35%



Qingshan Base, Wuhan
Greening rate: >20%



Meishan Base, Nanjing
Greening rate: >40%



Dongshan Base, Zhanjiang
Greening rate: >35%

Note: Data of greening rate by the end of 2018



Thanks for your attention.



BAOSTEEL

Creation Beyond Vision

