

**CANAFEM 2011**

**- Green Steel, Green World -**

**Nippon Steel's Initiatives  
Toward Sustainable Development**

**October 13<sup>rd</sup>, 2011**

**Akira Usami, Dr. Eng.  
VP, Technology**

**Nippon Steel USA, New York**

# Nippon Steel Corporation: one of the largest steel companies in size

Financial (JFY2010)

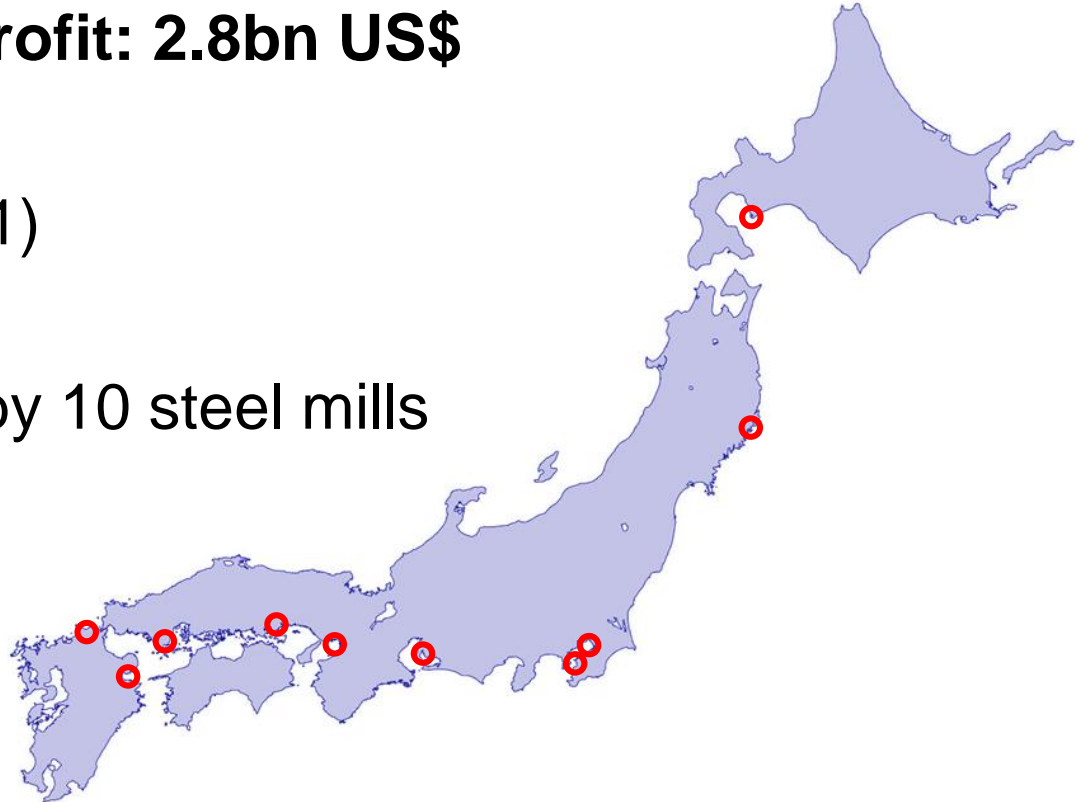
**Sales : 50.7bn US\$, Profit: 2.8bn US\$**

Number of Employees

**18,000** (as of 3/31/2011)

Crude Steel Production

**35 million tons/year** by 10 steel mills



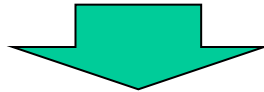
# Today's Topics

1. Initiatives toward realization of sustainable society
2. NSC's approaches by Three ECOs
  - ECO PROCESS
  - ECO PRODUCTS
  - ECO SOLUTIONS
3. Steel Can Recycling in Japan

# Initiatives toward realization of sustainable society

# Key environmental policies:

- **Contribute to the establishment of environmentally sound society.**
- **Reduce environmental burdens throughout the entire stages of business activities.**
- **Take measures for global-scale environmental preservation from an international perspective.**



## Three approaches:

**ECO PROCESS: environmentally sound production processes**

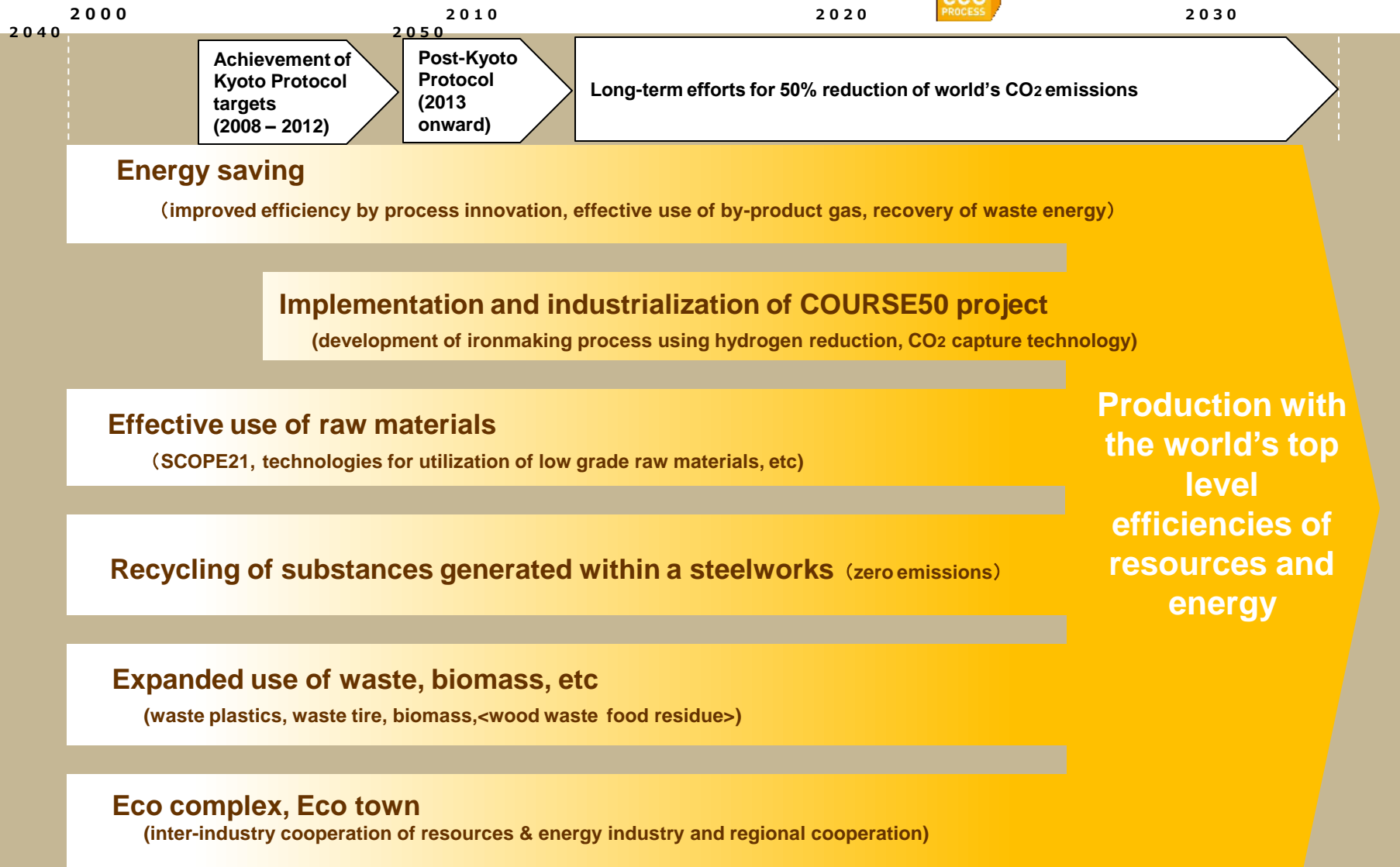
**ECO PRODUCTS® : environmentally-friendly steel products**

**ECO SOLUTIONS: solutions to environmental issues**

# ECO PROCESS



## Initiatives for environment & energy toward 2050

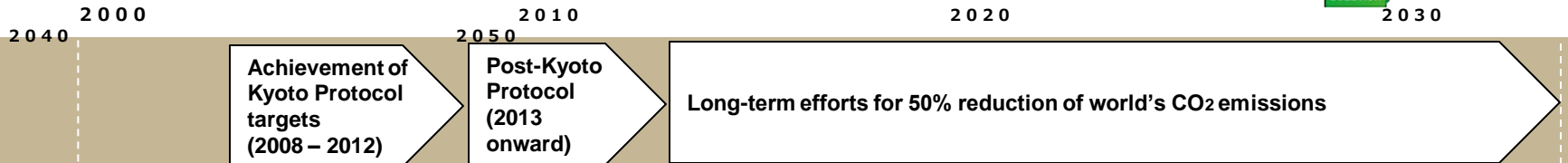




# ECO SOLUTIONS



## Initiatives for environment & energy toward 2050



### Provision of solutions contributing to energy/resource saving

(steel plant business, pipeline business, marine & energy business, IT solution business)

### Global Sectoral Approach

(Japan-China steel industry exchanges, Asia-Pacific Partnership, World Steel Association)

### Provision of solutions contributing to recycling-oriented society

(waste treatment, resources recycling system, soil and groundwater purification systems, etc)

### Environmentally friendly community development

(energy-saving architecture and community development)

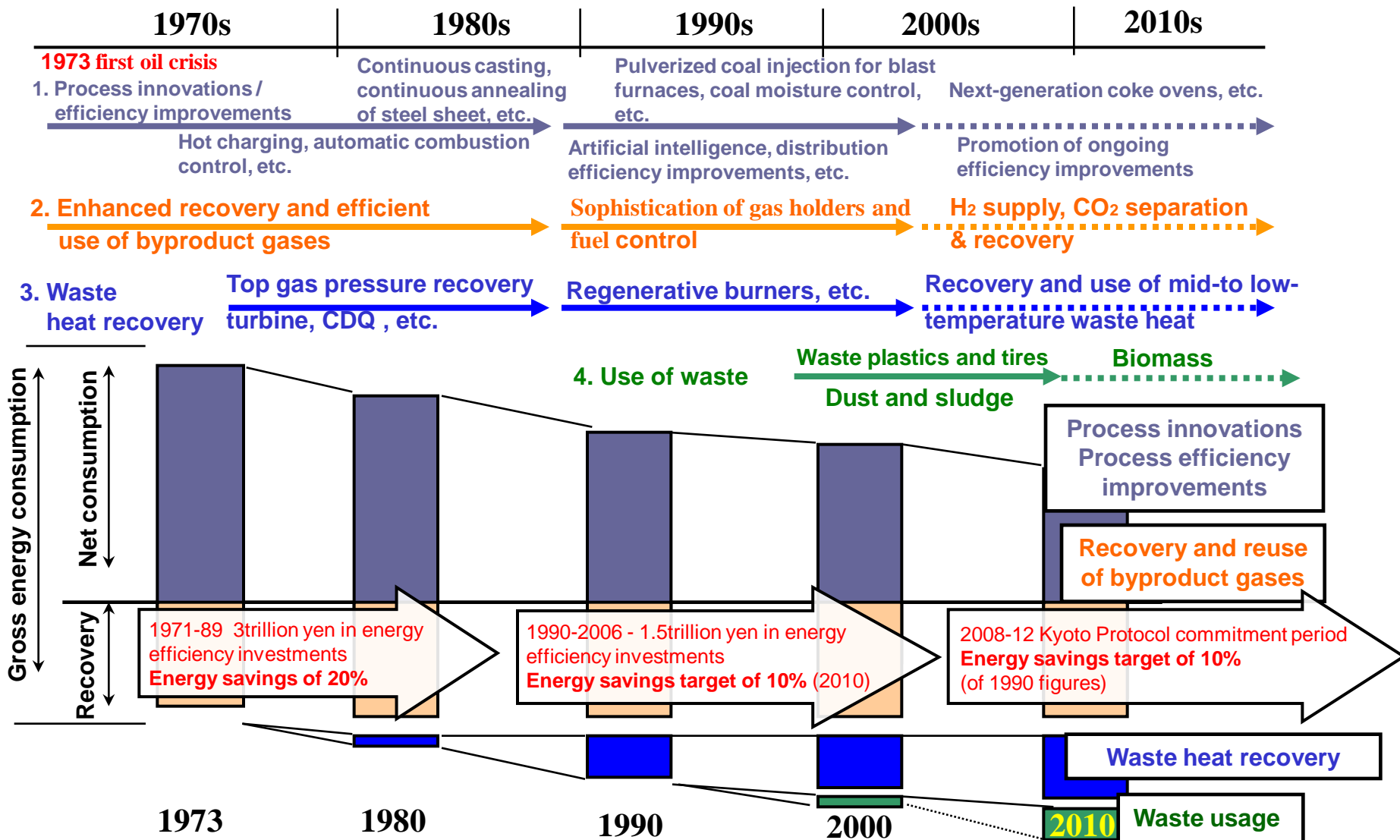
### Local forestation

### Marine forestation

Proposal of solutions for energy-saving and environmental problems from the global perspective

# “ECO PROCESS”

# History of Energy Efficiency in the Japanese Steel Industry

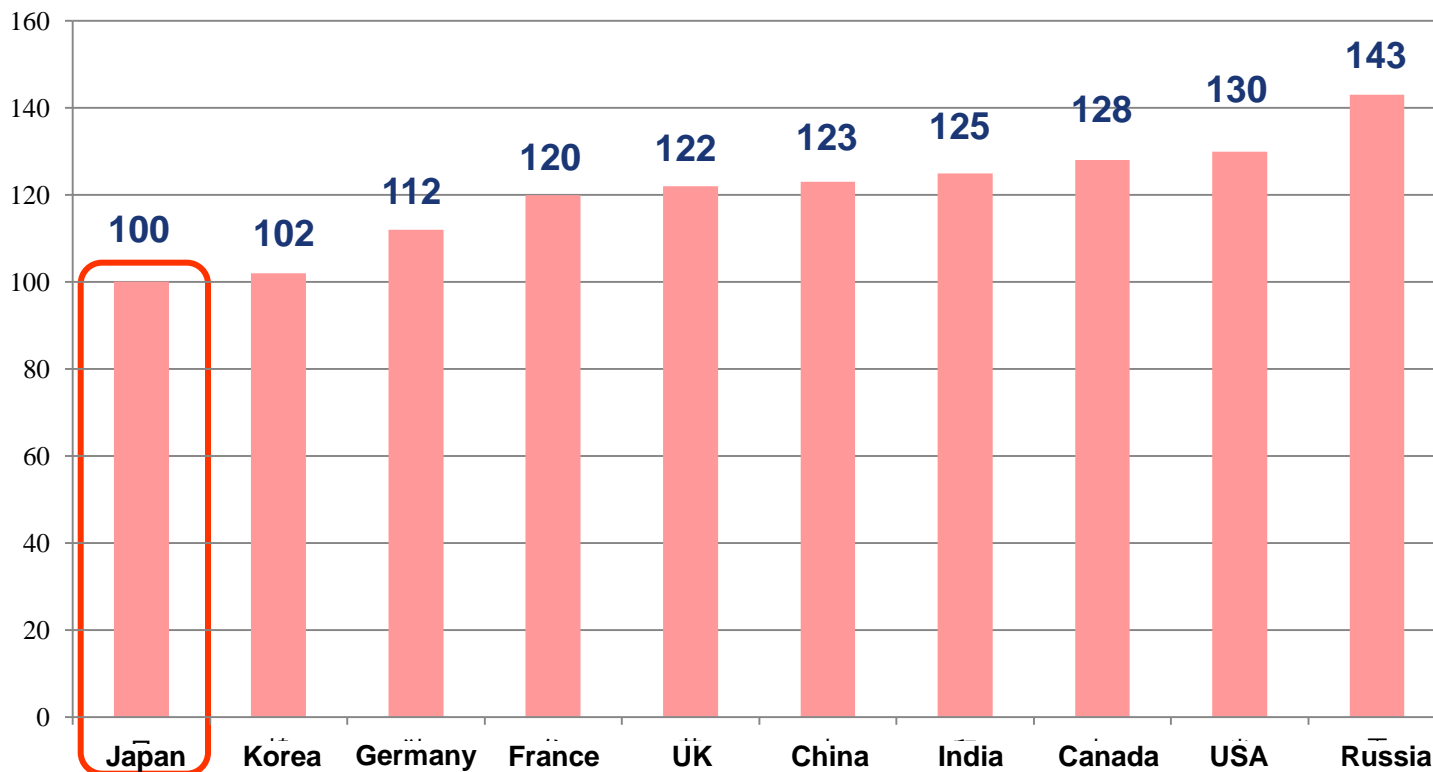


# International Comparison of Energy Efficiency in the Steel Industry

Specific energy consumption per ton of crude steel (in BF / BOF\* route) in the Japanese steel industry is the lowest compared with those in major steel producing countries.

\* BF: blast furnace, BOF: basic oxygen furnace

International comparison of specific energy consumptions (in BF / BOF route) in the steel industry (2005)

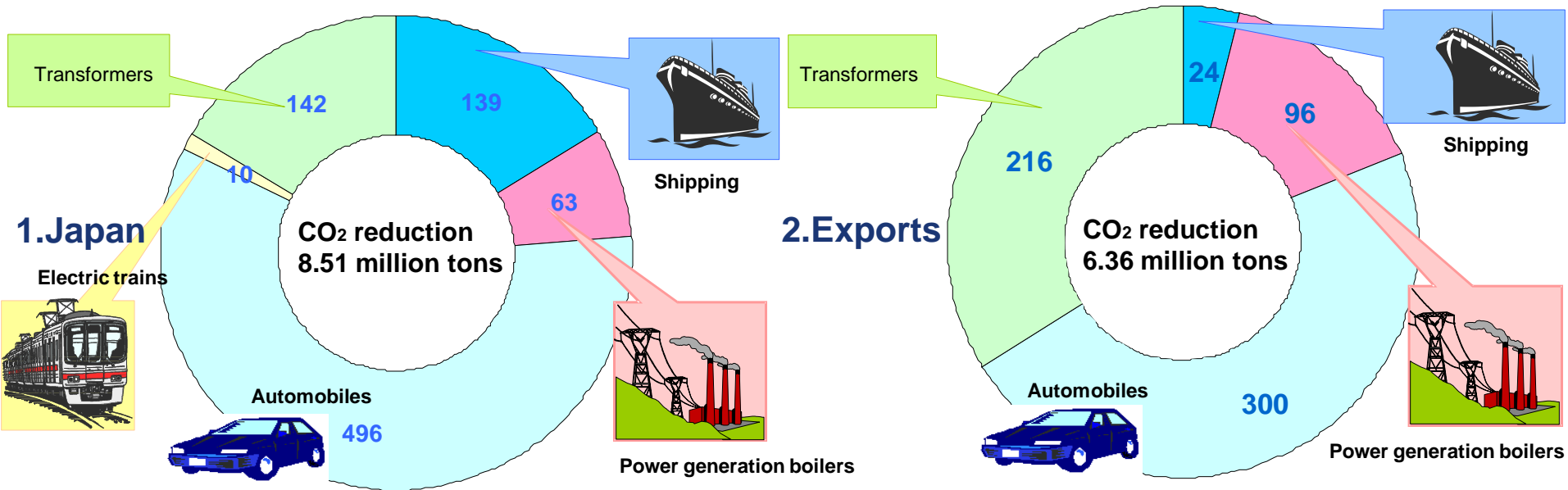


Source: "Estimated Energy Efficiency in the Steel Industry (2005)," RITE, 2009. (Indexed by Nippon Steel Corporation.)

“ECO PRODUCTS®”

# Emissions Reductions Achieved by ECO PRODUCTS at Usage Stage

Reductions in CO<sub>2</sub> emissions from the use of high performance steel supplied to final products at the usage stage was **approximately 15 million tons** (in fiscal 2008)



Source: Institute of Energy Economics, Japan

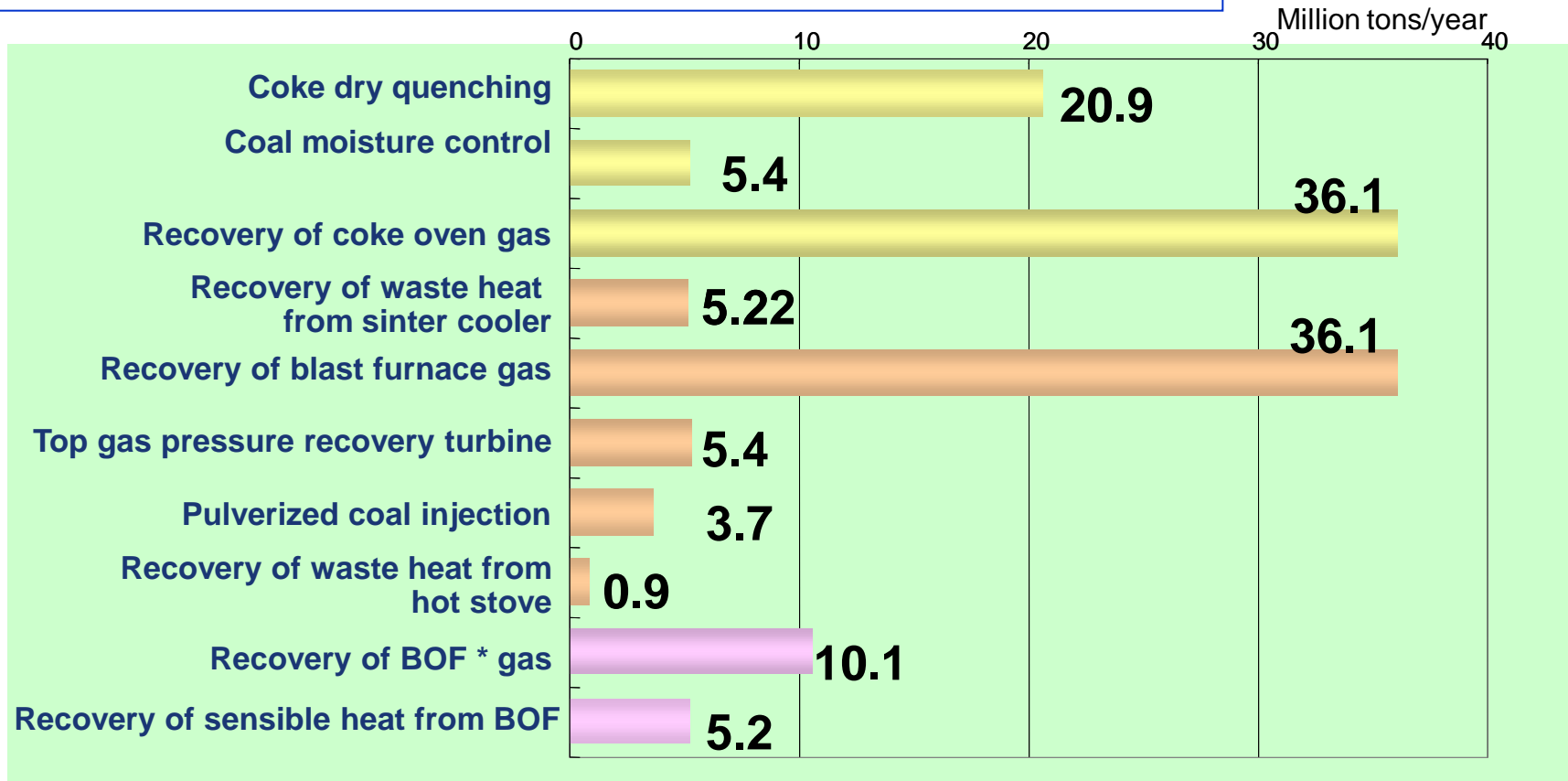
# “ECO SOLUTIONS”

# ECO SOLUTIONS

Reduction potential of **APP members** if major energy efficient technologies were transferred or disseminated

- CO<sub>2</sub> reductions to date: Approx. 30 million tons/year (2008 cross section)
- Future CO<sub>2</sub> reduction potential: Approx. 130 million tons/year

**Global CO<sub>2</sub> reduction potential  
340 million tons/year**



\* BOF: basic oxygen furnace

# Industrial Forestation

- Nippon Steel's forestation project at Oita Works launched in 1971: a pioneer in greening projects carried out by other steelworks at Nippon Steel as well as various corporations throughout Japan.
- The method is being employed for regenerating tropical rain forests in Southeast Asia, the Amazon, and Africa.



The disaster prevention and environmental preservation forest at Oita Works



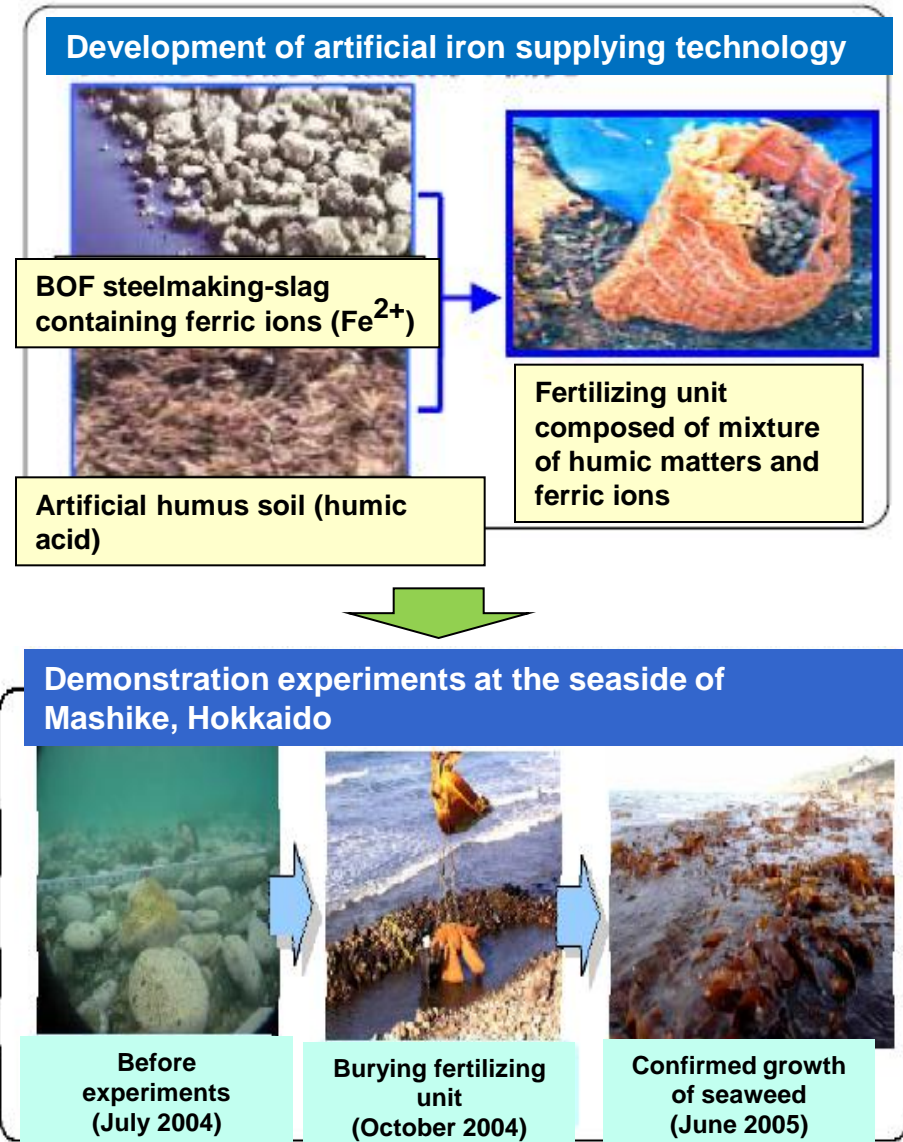
In 1973



Present

# Sea forestation by supplying iron

- Supplying ferric iron from steel-making slag has proven to be effective to cure the desertification of the sea, or so-called rocky-shore denudation.
- Nippon Steel has since 2004 been implementing demonstration experiments, “Sea forestation by supplying ferric irons” at the seashores of in excess of 20 locations in Japan.



# “Steel Can Recycling in Japan”

# Characteristic of steel can recycling in Japan

**1 High Recycling rate**

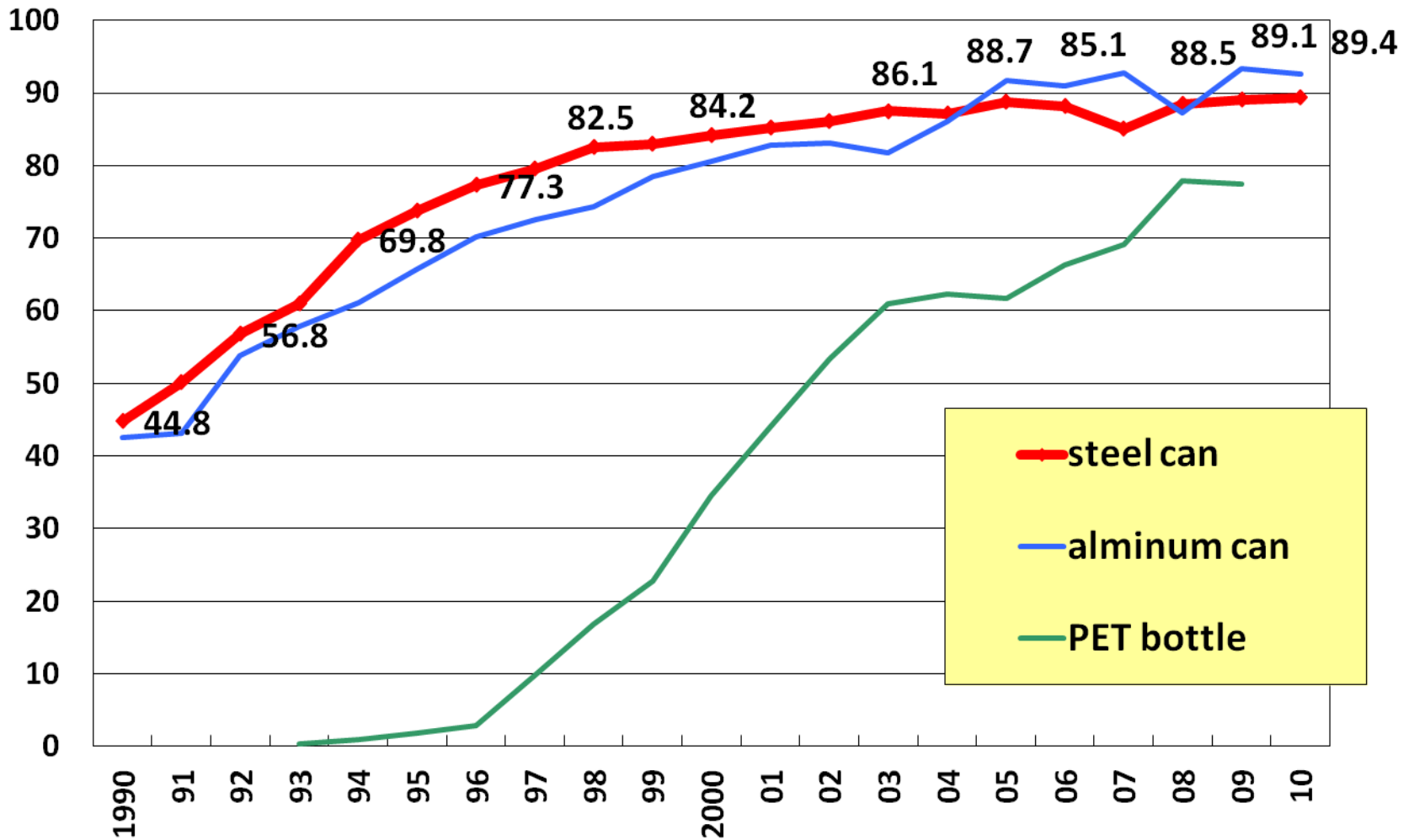
2 Shared responsibilities under the Law

3 Eco-friendliness of steel can

4 Activities of the Japan Steel Can Recycling Association

# 1-1 Recycling rate

%

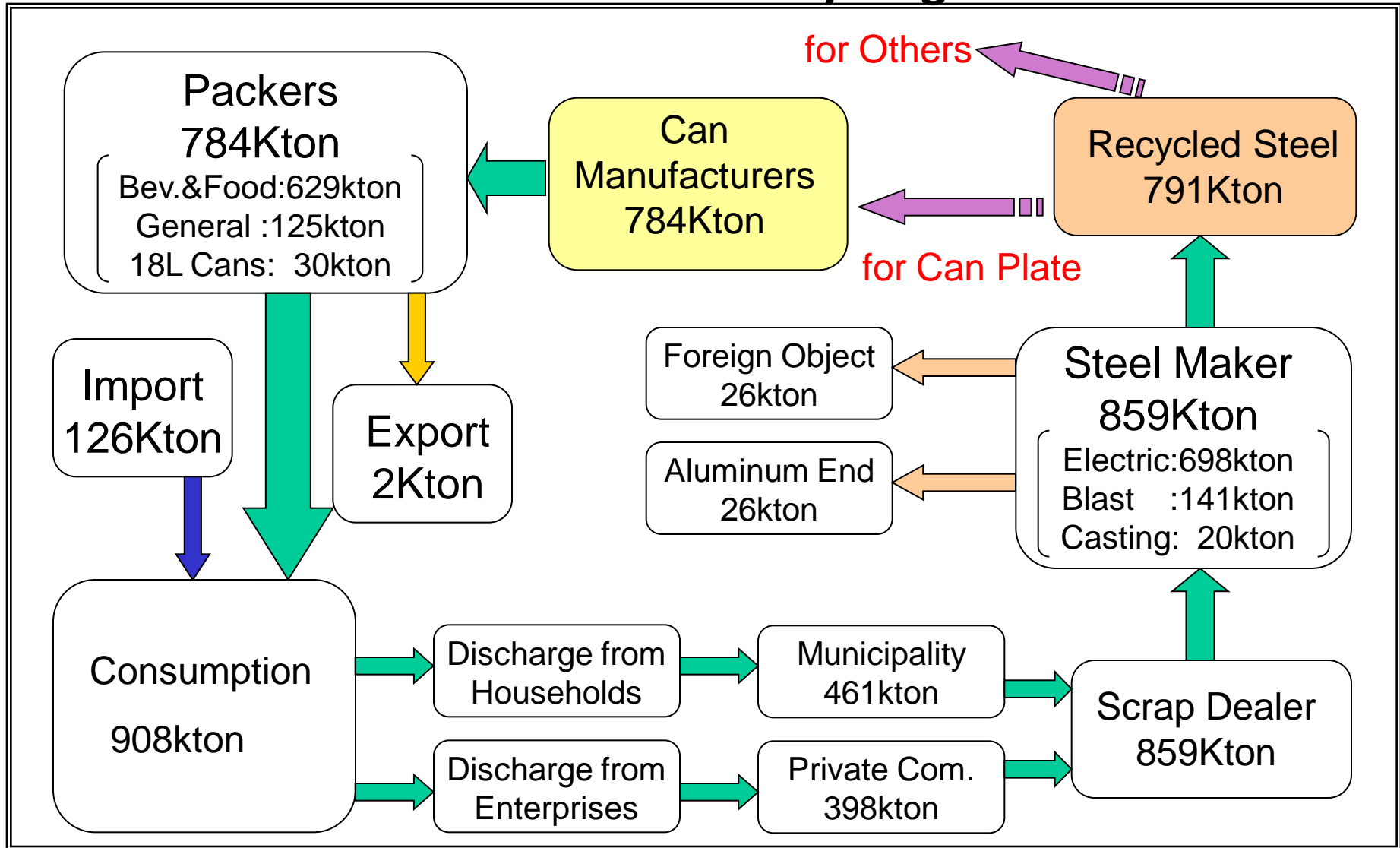


# 1-2 Recycling rate in 2010

<b>Steel can</b>	<b>89.4% *</b>
Aluminum can	92.6%
PET bottle	77.5% (2009)
other plastics	58.1% (2007)
Glass jar	74.2% (2009)
Paper pack	43.5% (2009)

\* The recycling rate is over 90% (almost 100% ) if we could statistically investigate the amount of the steel can scrap in “mixed scraps” (e.g. shredder scrap)

# 1-3 Material Flow of Steel Cans Recycling



# 1-4 Reason for high recycling rate

## Efficient sorted collection system

- 96% of municipalities collect steel can as resource under the Packing Recycling Law
- Easy to select using magnetic devices

## Enough acceptance of steel can scrap

- 82 steel making plants purchase steel can scrap
- Uniform standard of can scrap

## Recycled into anything , any times

- Recycled into all kind of steel products including tin mill products for steelcan
- High quality of steel can scrap with few contamination

## Cooperation with municipalities including financial aid (e.g. magnetic selection equipment)

# 1-5 High quality of steel can scrap with few contamination

## Chemical Composition of Steel by Usage

Usage	Chemical Composition (%)
Can : T-4CA MR-grade	C:0.02~0.06, Mn:0.03, Al:0.005
Automobile : SPCE	C:0.005~0.1, Ti:0.001
Building: SPCC	C:0.1, Mn: ~0.5
Wire: SWRM	C: 0.1~0.4, Mn: 0.3~1.5
H Shape: SG415H	C:0.1~0.4, Mn:0.4~1.7, Cr: 0.85~1.25

1 High Recycling rate

2 Shared responsibilities under the Law

3 Eco-friendliness of steel can

4 Activities of the Japan Steel  
Can Recycling Association

## 2-1 Shared responsibilities under the Law



# 2-2 Sorted Discharge and Sorted Collection

## Discharge



Polyethylene Bags



Flexible Containers



Rigid Containers

# 2-3 Sorted Discharge and Sorted Collection

## Collection



**Packer Car**



**Flat Body Car**

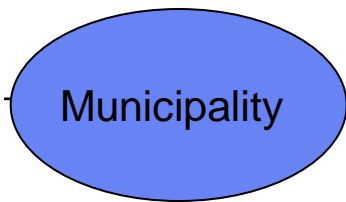
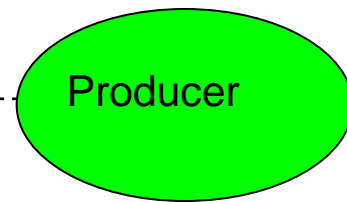
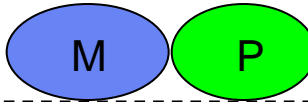
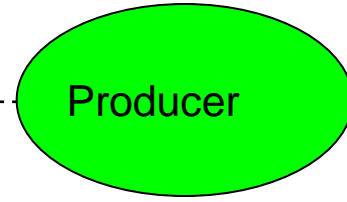

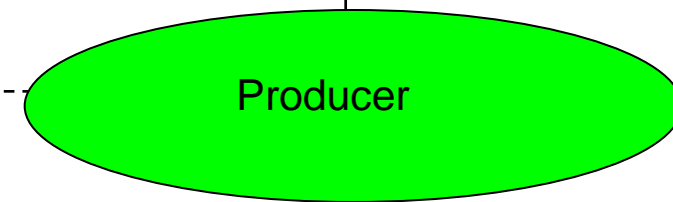


**Wing Body Car**

# 2-4 the Packaging Recycling Law

Municipality is burdened with the collection cost

Producer is responsible for recycling

	Responsibility	Collection	Recycle
Japan	Financial		
	Practical		
France	Financial		
	Practical		
Germany	Financial		
	Practical		

1 High Recycling rate

2 Shared responsibilities under the Law

3 Eco-friendliness of steel can

4 Activities of the Japan Steel Can  
Recycling Association

# 3-1 Energy and Resource Saving

## Energy Saving

Energy used for Steel Making Using Iron Ore=19,670MJ/ton

Using Scrap = 5,425MJ/ton

---

Energy Saving =14,245MJ/ton (72.4% saving)

## CO2 emission Saving

CO2 emission for Steel Making Using Iron Ore=1,093Kg/ton

Using Scrap = 199Kg/ton

---

CO2 emission Saving =894Kg/ton (81.8% saving)

## Resource Saving

Total Collection and Recycling of Can Scrap= ~800kton

Saving of Iron Ore= ~1300kton

Saving of Coal = ~ 410kton

1 High Recycling rate

2 Shared responsibilities under the Law

3 Eco-friendliness of steel can

**4 Activities of the Japan Steel Can Recycling Association**

# 4-1 Japan Steel Can Recycling Association

## Establishment

Non Profitable Organization established in 1973.

## Chairman

Mr. Uchida Representative director and executive vice president ,  
**Nippon Steel Corporation**

## Aim

Promotion of recycling of steel can

## Activities

- (1) Maintenance of Recycling Infrastructure
- (2) Prevention of littering of Cans
- (3) PR of Recycling Activities

## Members

3 Steel Makers, 3 Steel Can Manufactures,  
6 Distributors

# Conclusion

- ✓ For Green Steel & Green World, Nippon Steel conduct three ecological approaches:
  - ECO-PRODUCTS
  - ECO-PROCESS
  - ECO-SOLUTION
- ✓ Nippon Steel positively promotes various measures toward improving the recycle ratio of used steel cans.

Muchas gracias !

<http://www.nsc.co.jp/en/eco/report/index.html>

