



# 기업의 기후변화협약 대응노력

[ 철강부문 ]

2004. 7. 6

(주) 포스코 RCC벤처



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# 1. 철강업의 특성과 기후변화협약

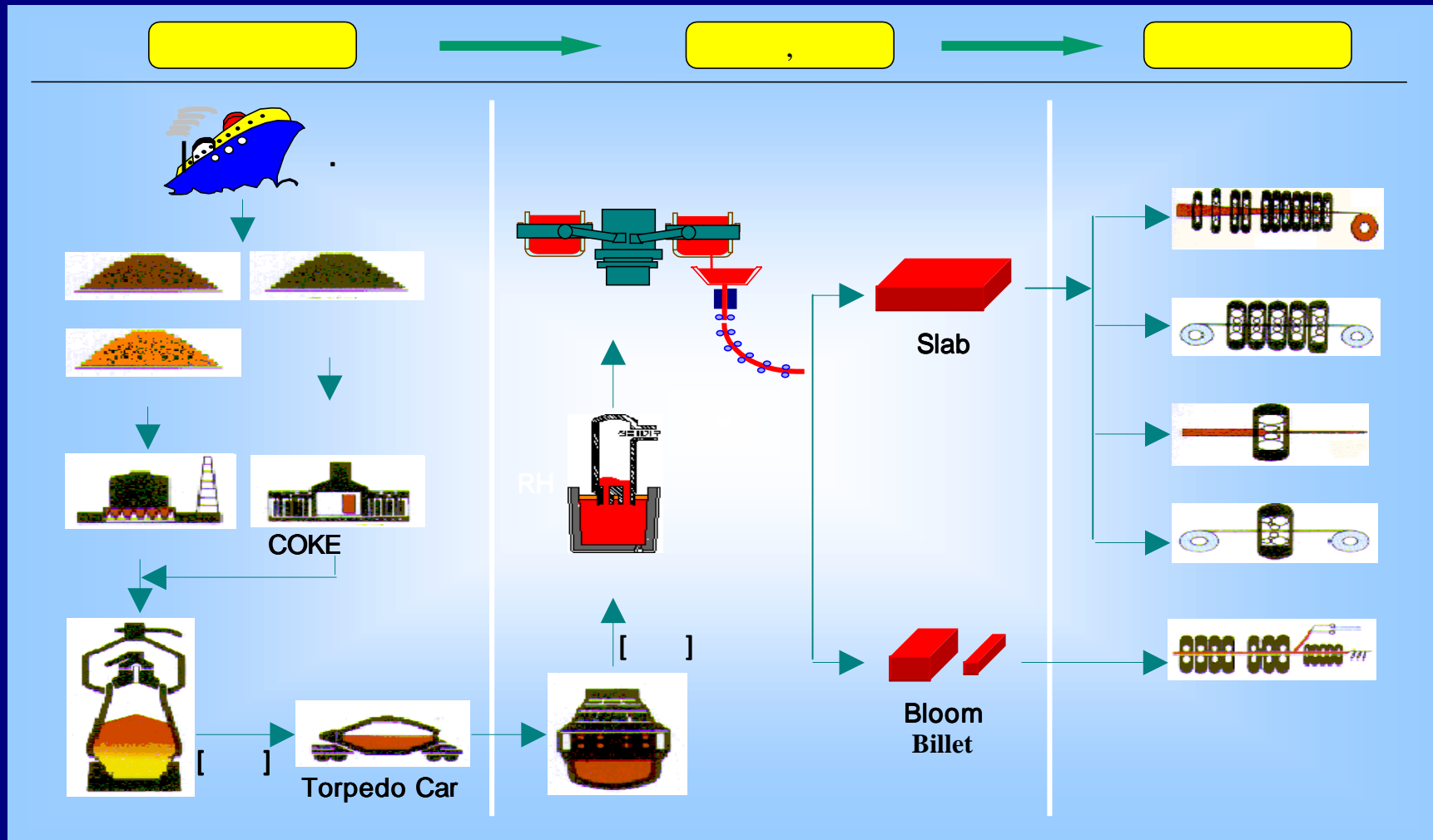


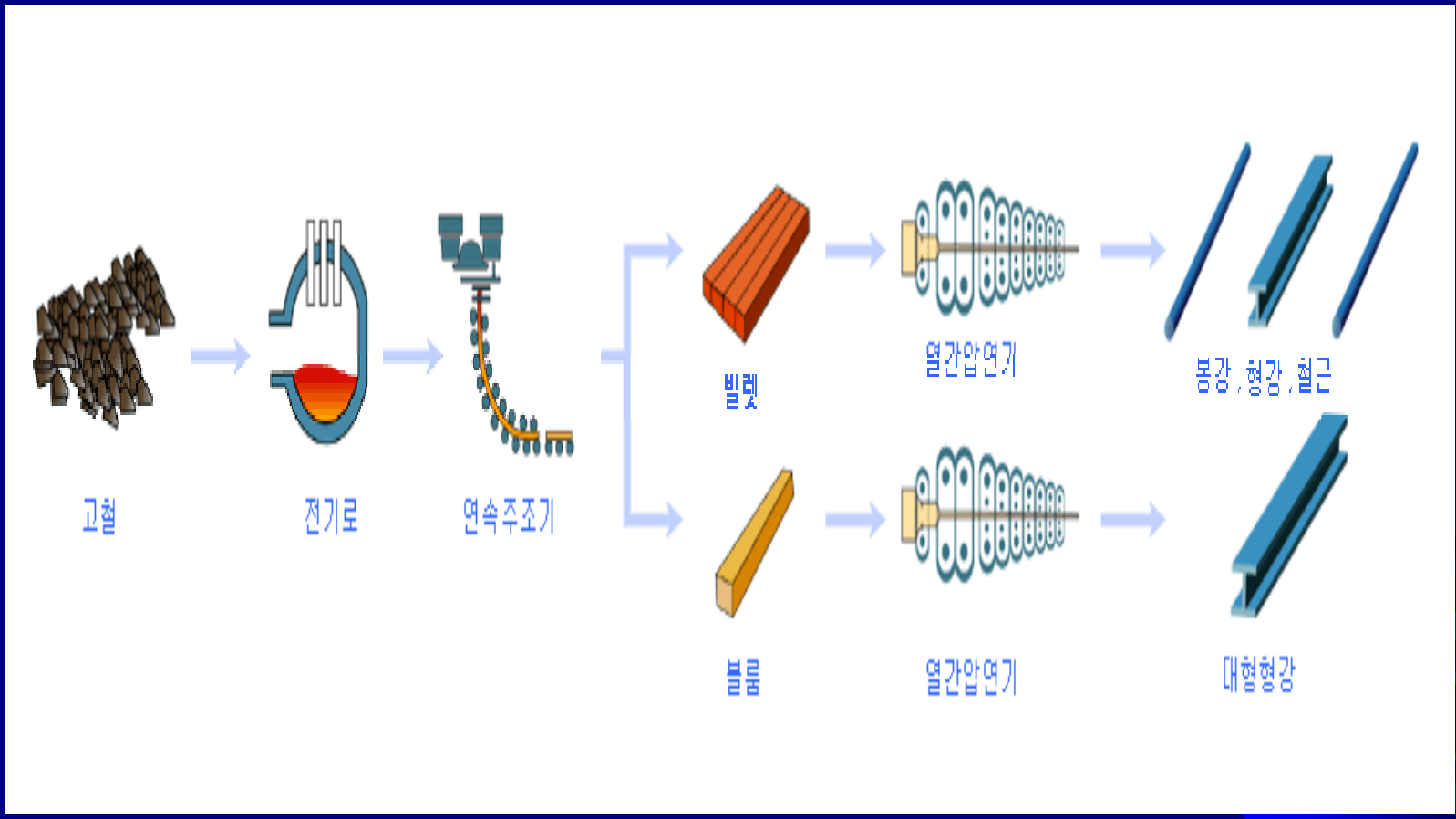


- : ~
- : ~
- 가 : , 1 가 →

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- , , 가 , 가
- 가 , 가
- 

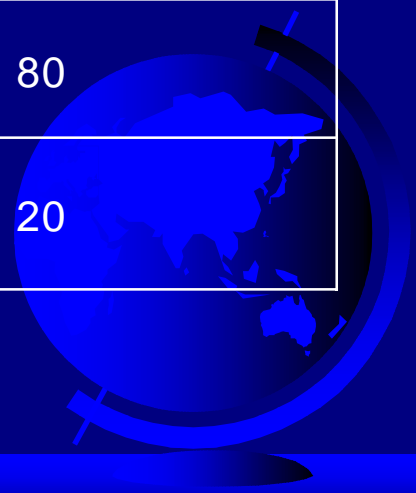


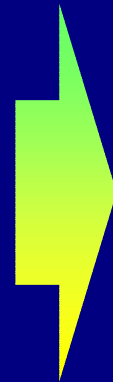
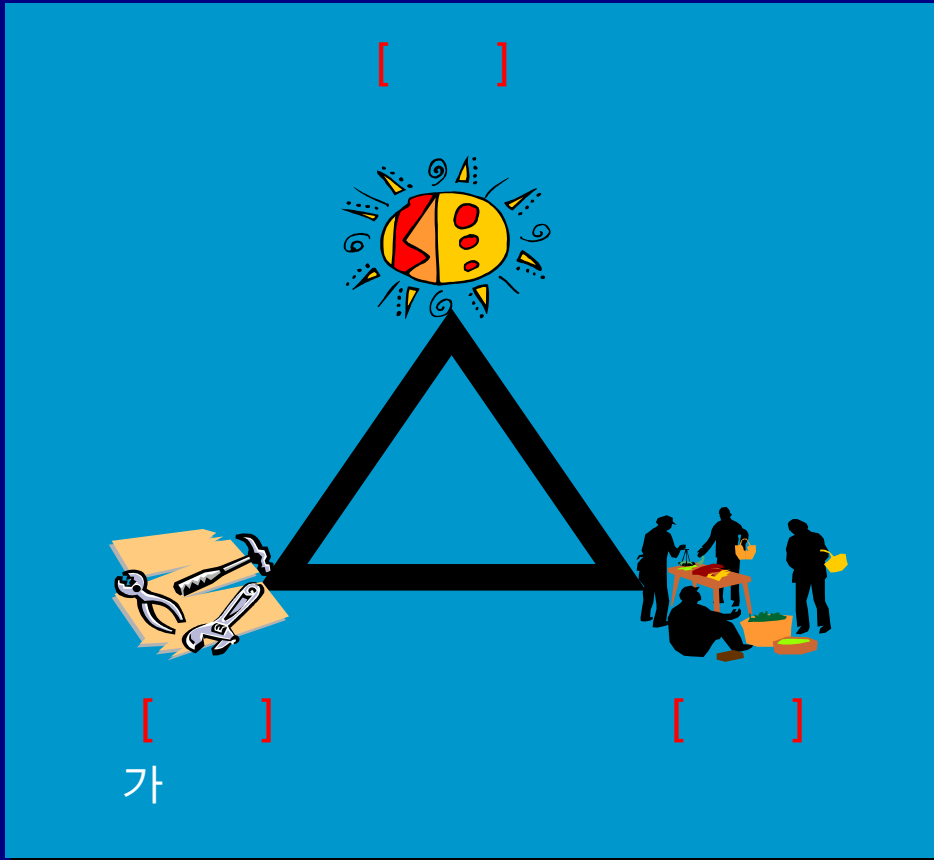






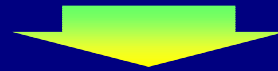
( Kcal/ )		5,100 ~ 5,300	1,500 ~ 1,600
(%)		91	-
		5	80
		4	20





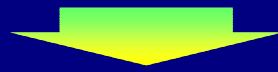
Risk

- 
- 
- 



[ ]

- 가
- 
- 
- 
- 



가

기후변화협약은 기업에 커다란 위기 중 하나이나  
활용여부 및 대응능력에 의해 성장기회로 활용 가능

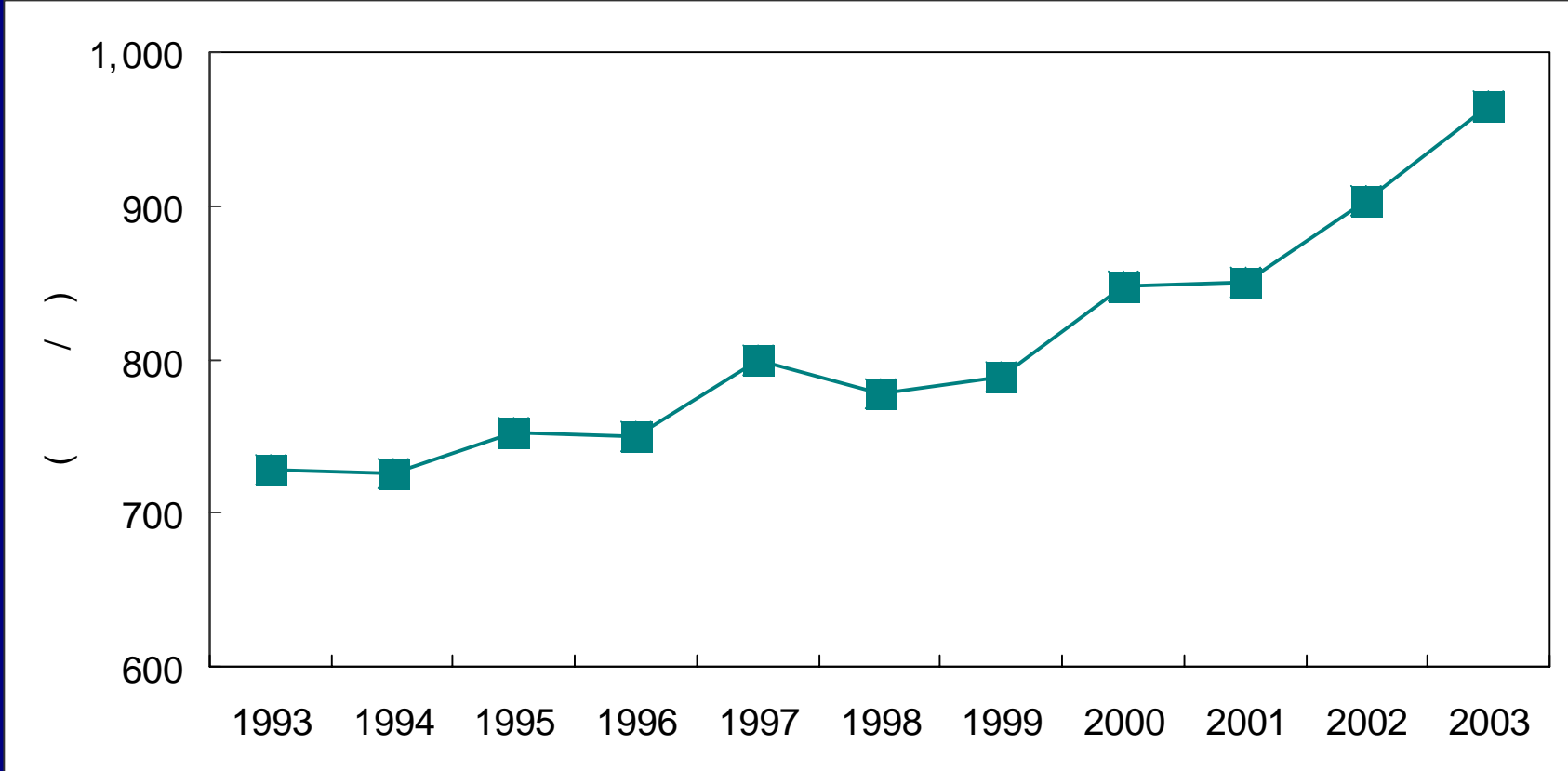


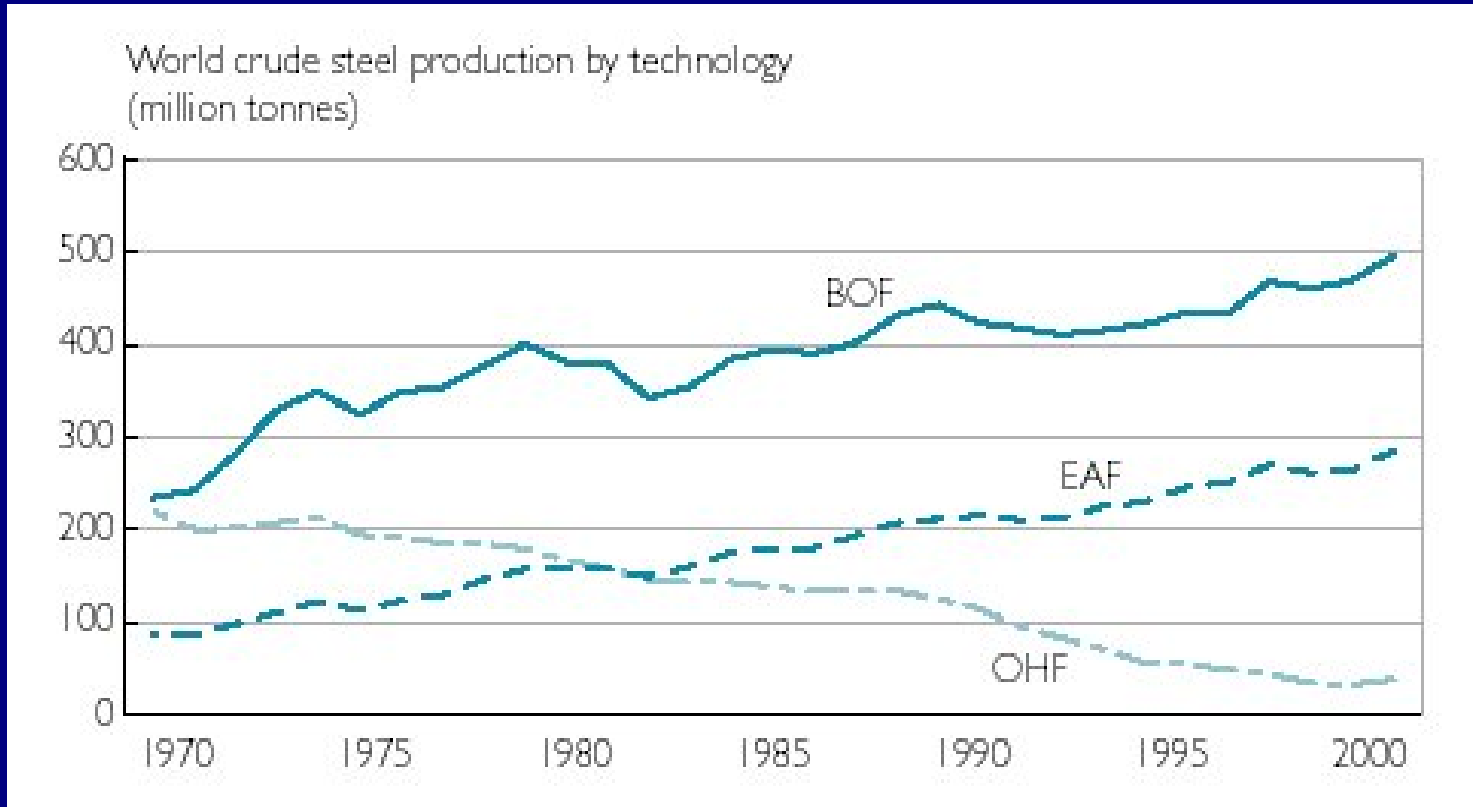
## 2. 세계 철강업계 대응 노력



- :

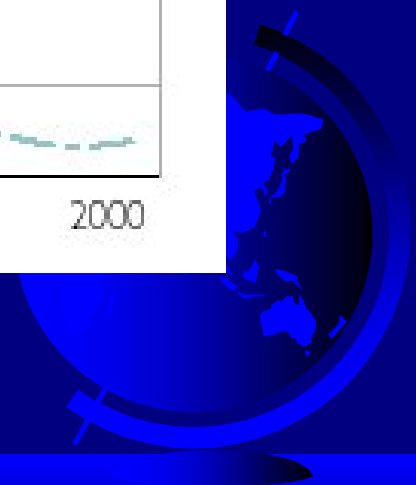


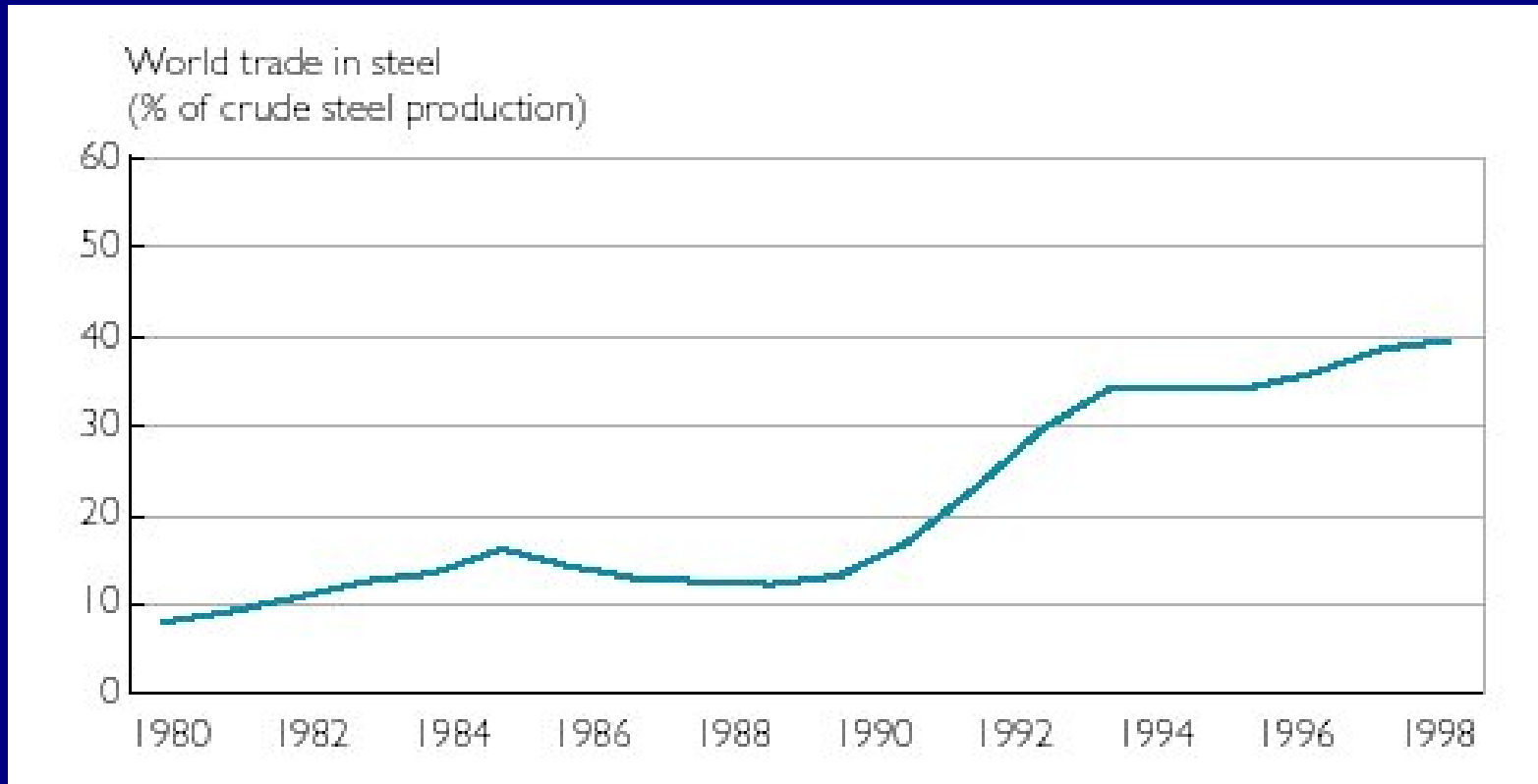




OHF

\* BOF: , EAF: , OHF :





- 40%가 ( )

## □ 가

( : )

	가	1999	2000	2001	2002	2003
1		124.0	127.2	148.9	181.7	220.1
2		94.2 (3 )	106.4	102.9	107.7	110.5
3		97.4 (2 )	101.8	90.1	91.6	90.4
4		51.5	59.1	57.5	59.8	62.7
5		41.0 (6 )	43.1 (6 )	43.9 (6 )	45.4	46.3
6		42.1 (5 )	46.4 (5 )	44.8 (5 )	45.0	44.8
7		27.5	31.4	33.1	34.1	36.9
8		24.3 (10 )	26.9 (9 )	27.3	28.8 (9 )	31.8
9		25.0 (8 )	27.9 (8 )	26.7	29.6 (8 )	31.1
10		24.7 (9 )	26.8	26.7	26.1	26.7

-

가

-

# (IISI)



, 가



, 가가

-

CO<sub>2</sub>

가

가

가

-

JI, CDM,



CO<sub>2</sub>

가

가

,

가

,

가



,



## □ IISI CO<sub>2</sub> Breakthrough Programme



- CO<sub>2</sub> emissions reduction target: 50~70% CO<sub>2</sub>
- Post-Kyoto period (2013 ~)



- Technology: ULCOS (Ultra Low CO<sub>2</sub> Steelmaking)
- Project: SCOPE-21, 가 ( )  
Marine Block
- Process: TRCG (Top Gas Recycling Combined with Coal/Wastes Gasification)



- Phase 1 : 가 5 (2003.7 ~, 2 )
- Phase 2 : Pilot Project , (2~5 )
- Phase 3 : Demo Project (3~4 )



## □ IISI Kyoto Protocol and the Steel Industry Project

- ☑ , , ,  
( '02.9 ~ '03.7)

## □ IISI Forum / WG4 - Climate Change Emission

- ☑ CO<sub>2</sub>
- ☑ CO<sub>2</sub> ( `01.9)
- ☑ 가 ( `03.11)

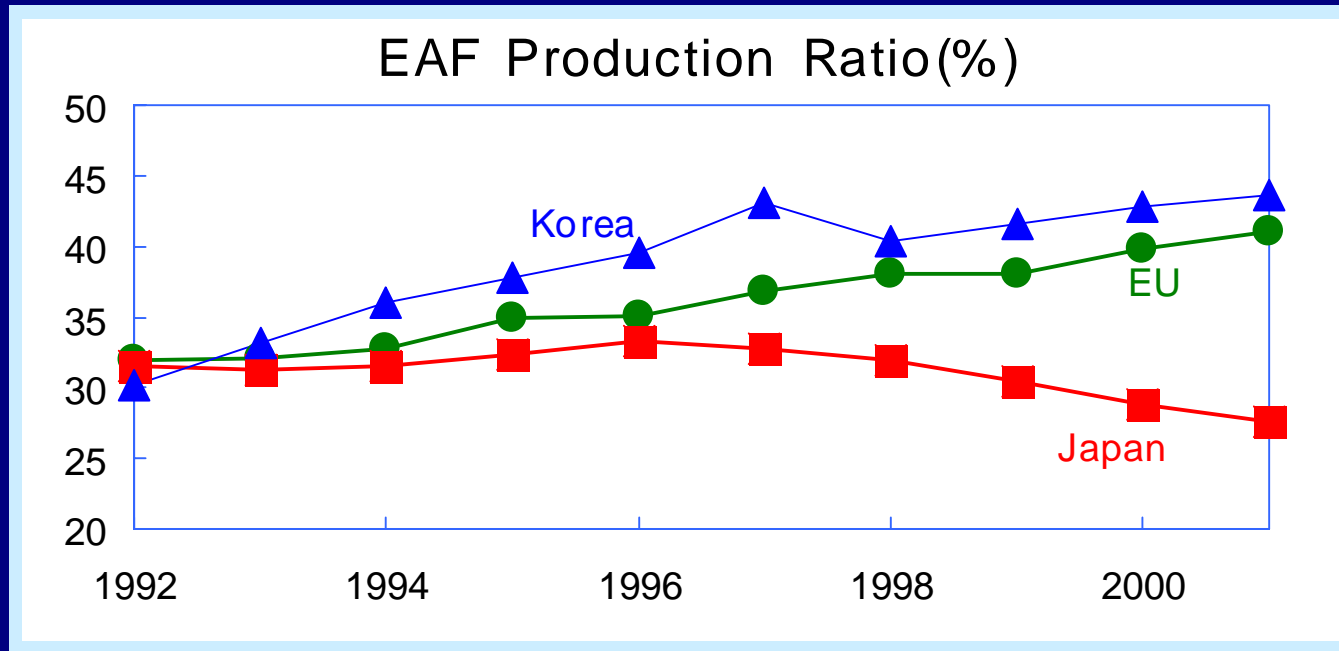




:



: 32% ('92) → 41% ('01)



/

: CO<sub>2</sub> 5 ~ 10% ↓



BOF

: CO<sub>2</sub> 10% ↓



CO<sub>2</sub>

(

): CO<sub>2</sub> 50 ~ 70% ↓



**□ ULCOS(Ultra Low CO<sub>2</sub> Steelmaking) : EU**

ULCOS 1 : CO<sub>2</sub>

- 1 : , B/M 가, , (18 )
- 2 : (36 )
- 3 : (6 )

ULCOS 2 :

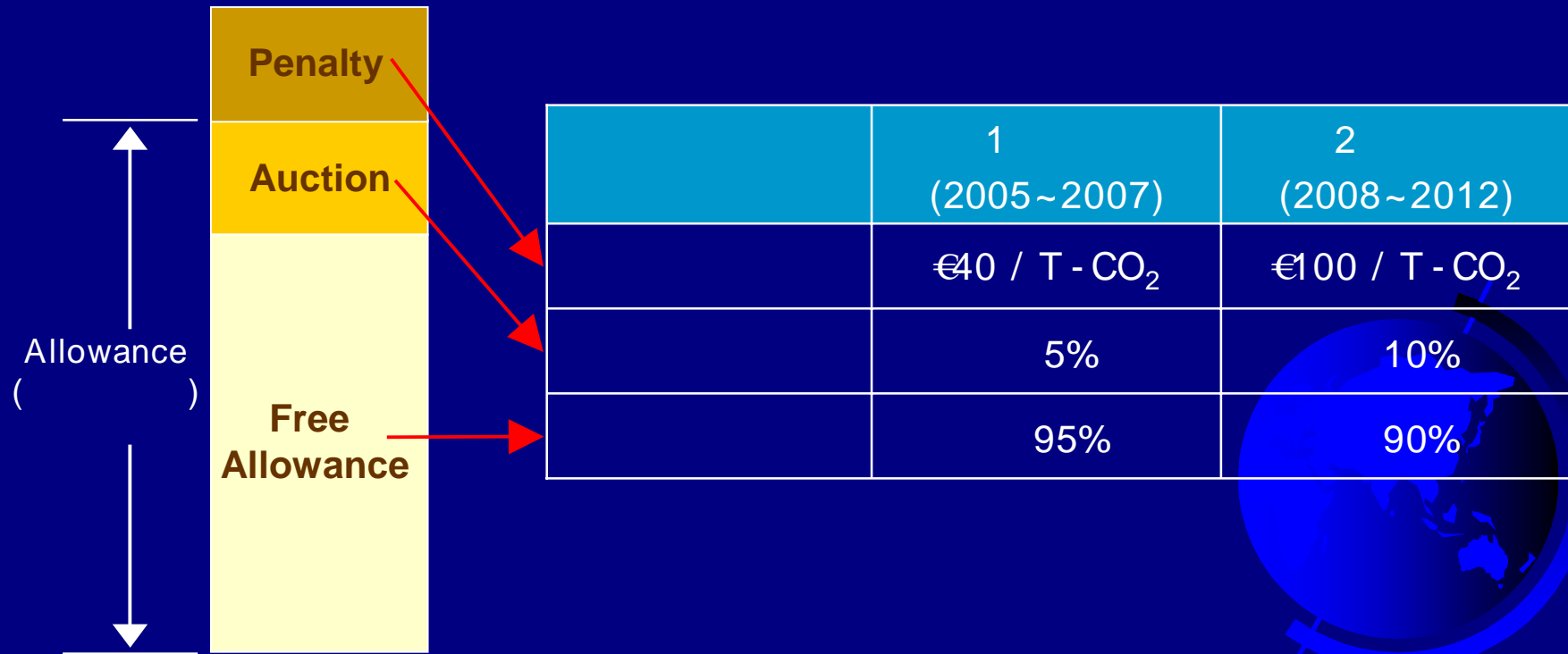
- Top Gas (ULCOS 1 )
- (ULCOS 2 )
- (ULCOS 4, 5 )
- CO<sub>2</sub> (ULCOS 6 )
- (Biomass) (ULCOS 7 )



□ 가

☑ EU 가 '05 1 ( '04.3)

- : ( 2.5 T/hr / / ),  
 ( , , ), (20MW , , )



□ CO<sub>2</sub> ('05 ~ '07)

	( / )	CO <sub>2</sub> ( / )	CO <sub>2</sub> ( / , '02 %)
英 CORUS	10.7 (`02,estimated) 12.1 (`01,estimated)	18.6 (`02) 21.1 (`01,estimated)	16.8 (90.3%)
CORUS Ijmuiden	6.1 (`02)	11.0	10.7 (97.3%)
獨 TKS	16.4 (`02)	-	(99.6%, estimated)
Arcelor	44.6 (`02)	1.51 T - CO <sub>2</sub> /T - S (`02)	-
Voestalpine	5.8 (`02)	11.9 (`02, estimated)	11.07 (93%)

< : EUROPA Climate Change Homepage, <http://europa.eu.int> >

□ CO<sub>2</sub>

EU

☑ 가

- 3
- 95%(`05~`07) 90%(`08~`12) 가
- 

☑

	1 (`05~`07 )	2 (`08~`12 )
가 (Carbon cost)	€7/T - CO <sub>2</sub>	€10/T - CO <sub>2</sub>
	€0.7/T - S	€2/T - S
	250 /	720 /





:



- 1996 ,
- 2010 1990 10%, 1.5% 가
- CO<sub>2</sub> ( , )

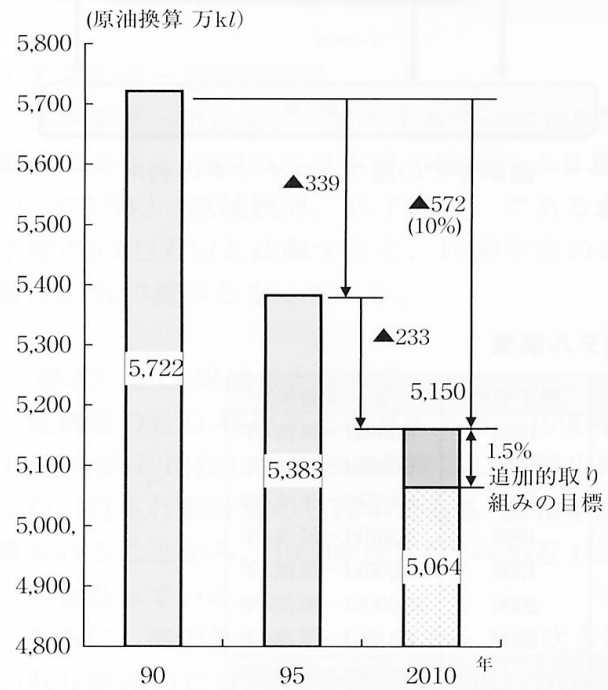


- : 32%('92) → 28%('01)

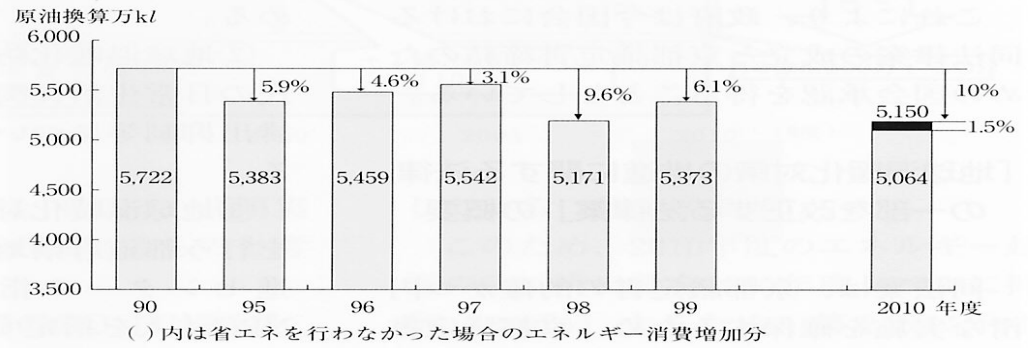




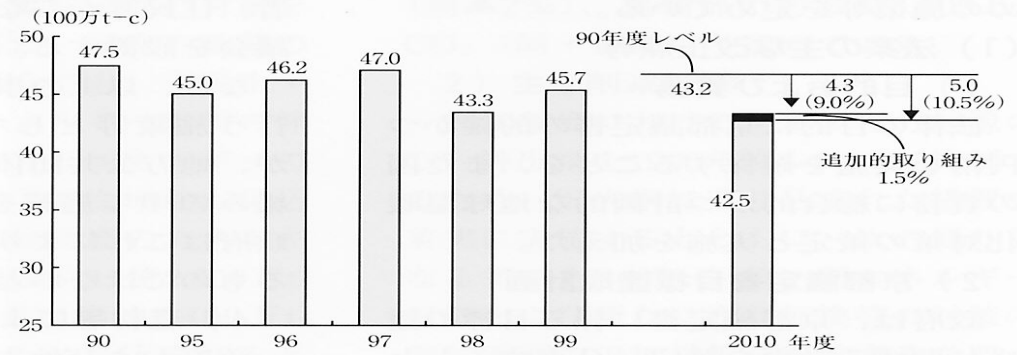
第14図 鉄鋼業のエネルギー消費量削減数値目標



第18図 エネルギー消費の現状および進展見通し



第19図 CO<sub>2</sub>排出量



□ CO<sub>2</sub>

☑ Marine Block :

-	370	Marine Block	150	CO <sub>2</sub>
- Block		110		CO <sub>2</sub>

☑ SCOPE 21

\* Super Coke Oven for Productivity and Environment Enhancement toward the 21st century

- 1/3

☑ 가 가

☑ CO<sub>2</sub>

- CO<sub>2</sub> 13%





- 2005 ,  
- 日 ( `05) 100



- 日  
▪ ¥3,000/T - C 가 ¥2,000/T - S  
▪ 3 (1,457 ¥)  
- 日 同





☑ CDM

- TISCO(Tata Iron and Steel Co. Ltd.)

▪ NEDO : CDM ( 90 ¥ 60 ¥ )

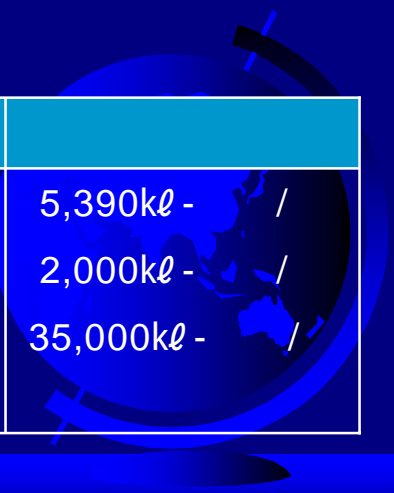
▪ NSC :

▪ Tata : CDM ( 90 ¥ 30 ¥ )

▪ 2006 CDQ 14 CO<sub>2</sub> Credit  
가

☑ AIJ

- Cooler			1997	5,390kℓ - /
- 가			1999	2,000kℓ - /
- CDQ		NSC	2000	35,000kℓ - /
-		NKK	2001	





✓ , 가

✓  
- : , :

✓ 가 Early action

-

-

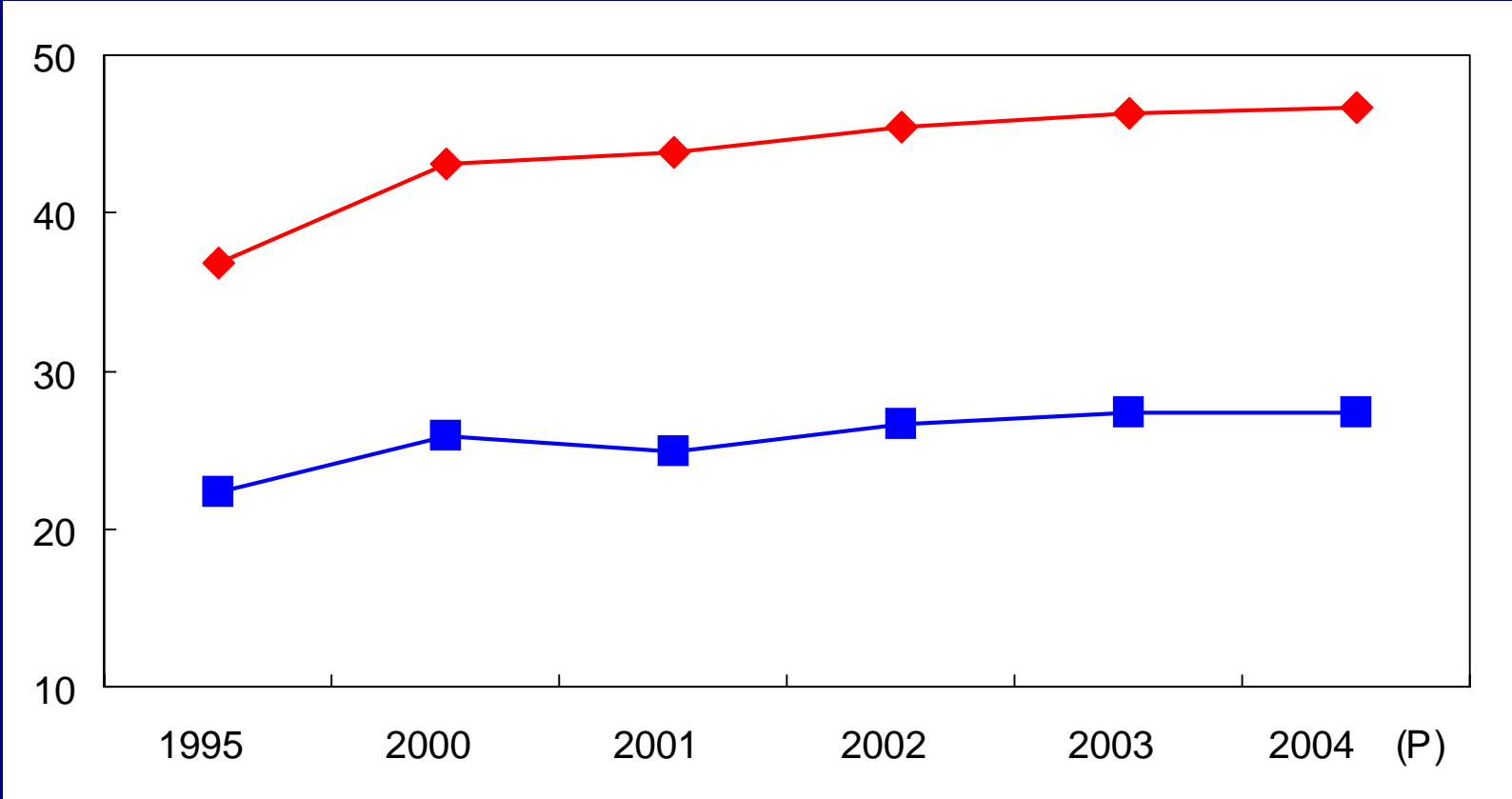
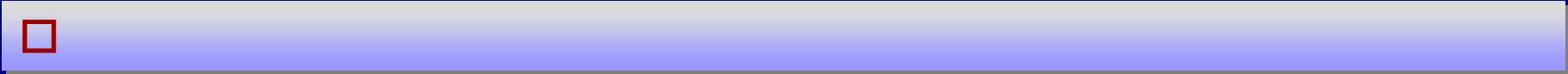
✓ ( )





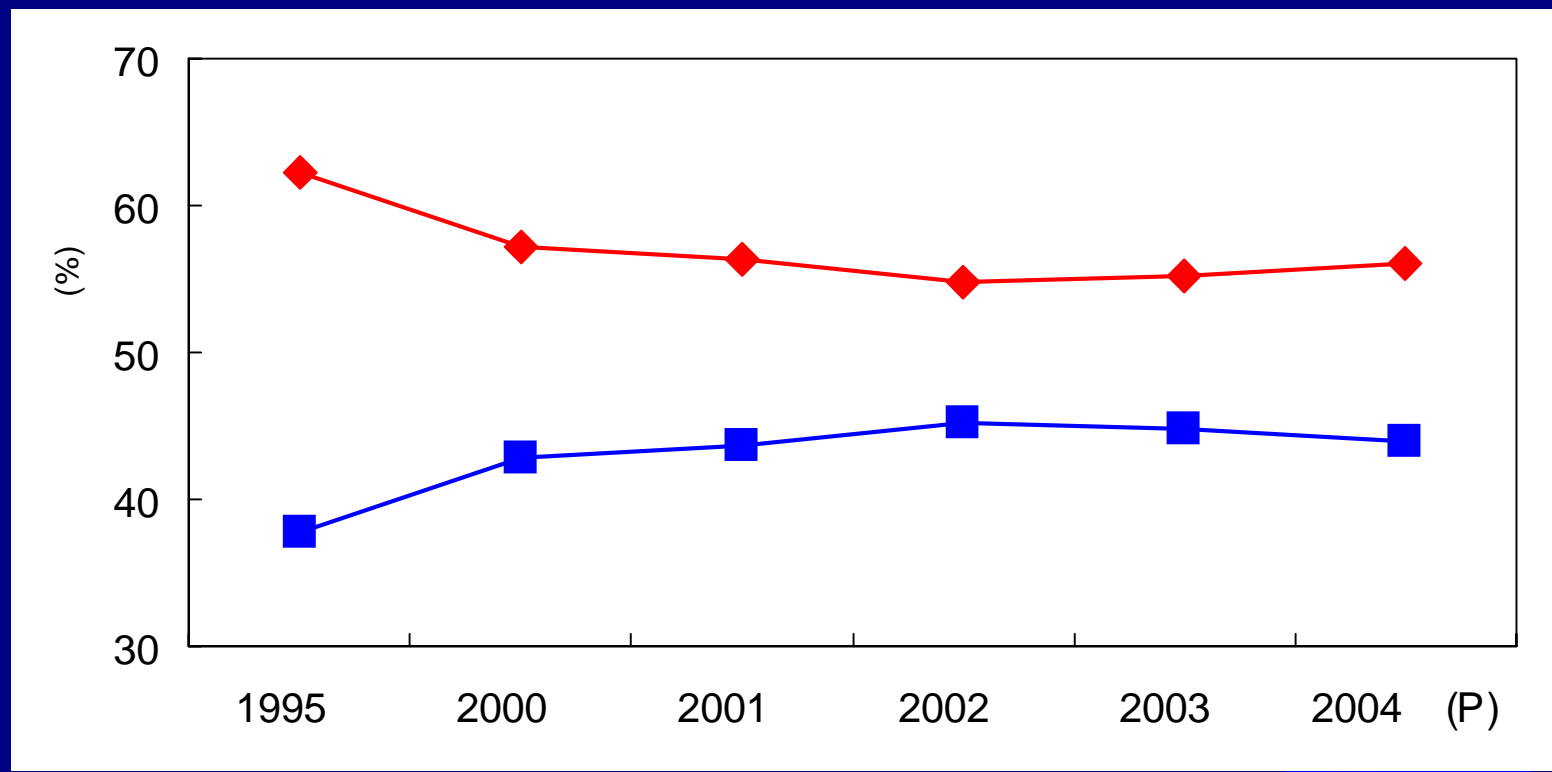
### 3. 국내 철강업계 대응 노력





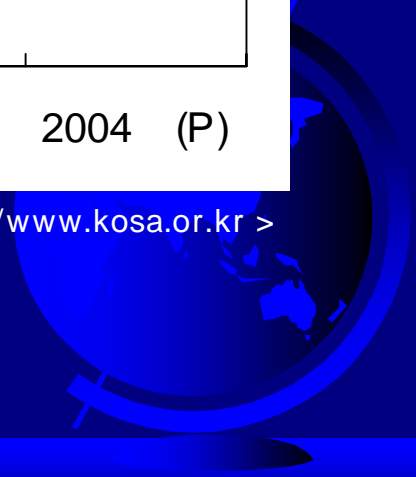
< : Homepage, <http://www.kosa.or.kr> >

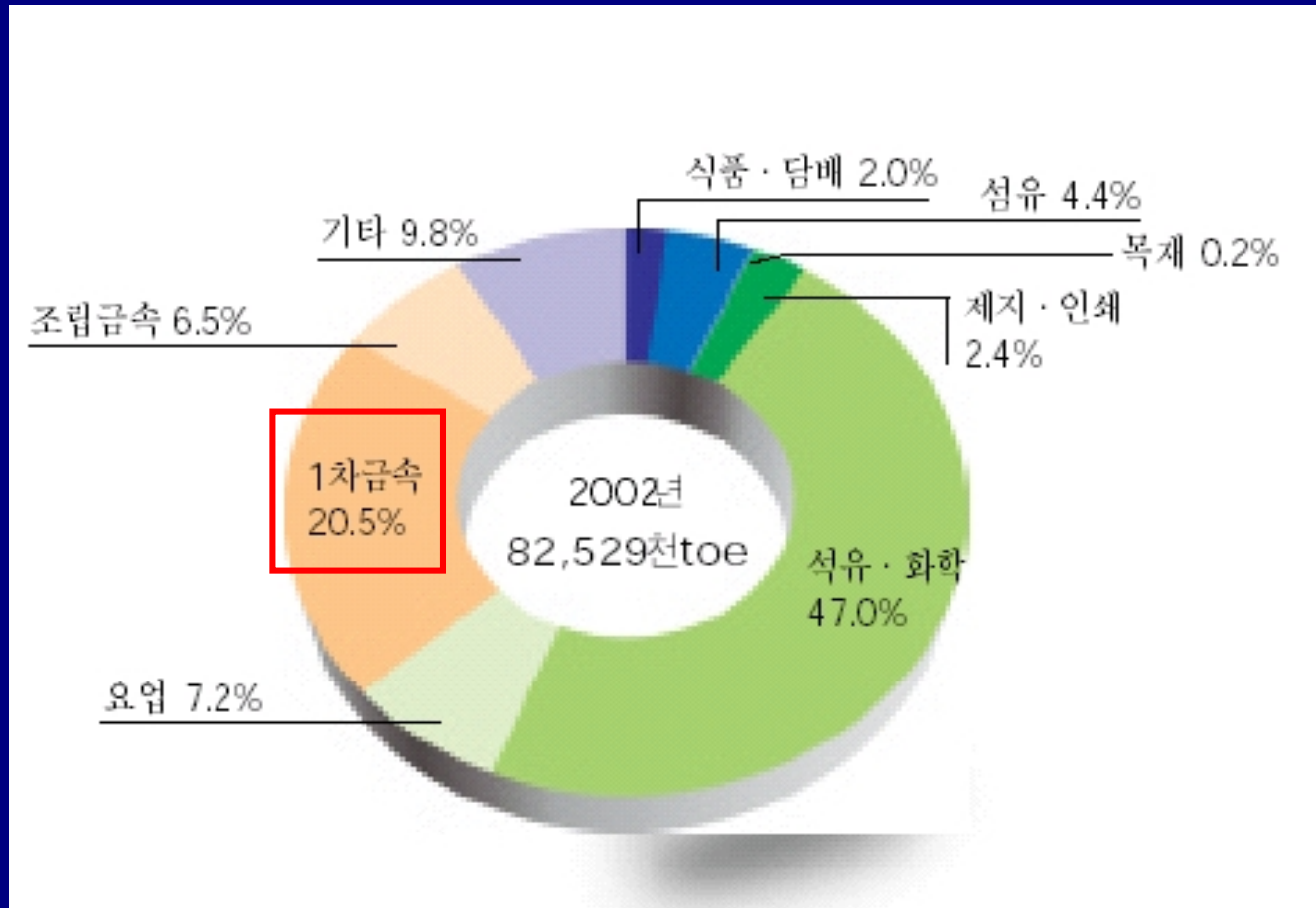
□ ( / )



< : Homepage, <http://www.kosa.or.kr> >

- EU,  
\* : 45%, EU 41%, 28%





< 자료 : 에관공 『에너지소비통계』 >



( : TOE )

		2001	2002	2003	2004 (P)
		13,730	14,186	14,536	14,553
		637	632	648	758
		868	787	760	861
		<b>15,235</b>	<b>15,605</b>	<b>15,944</b>	<b>16,172</b>
		653	671	654	661
		2,529	2,630	2,564	2,578
		<b>3,183</b>	<b>3,301</b>	<b>3,218</b>	<b>3,239</b>
		294	236	293	295
		612	468	623	661
		<b>906</b>	<b>704</b>	<b>916</b>	<b>956</b>
		19,324	19,610	20,078	20,367

< : Homepage, <http://www.kosa.or.kr> >

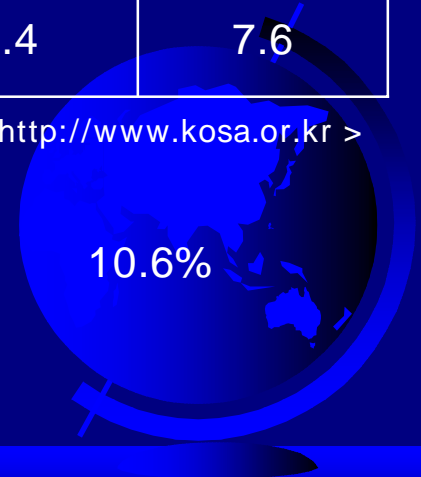
- (2003 ) : 79.4%, 12.8%, 7.8%

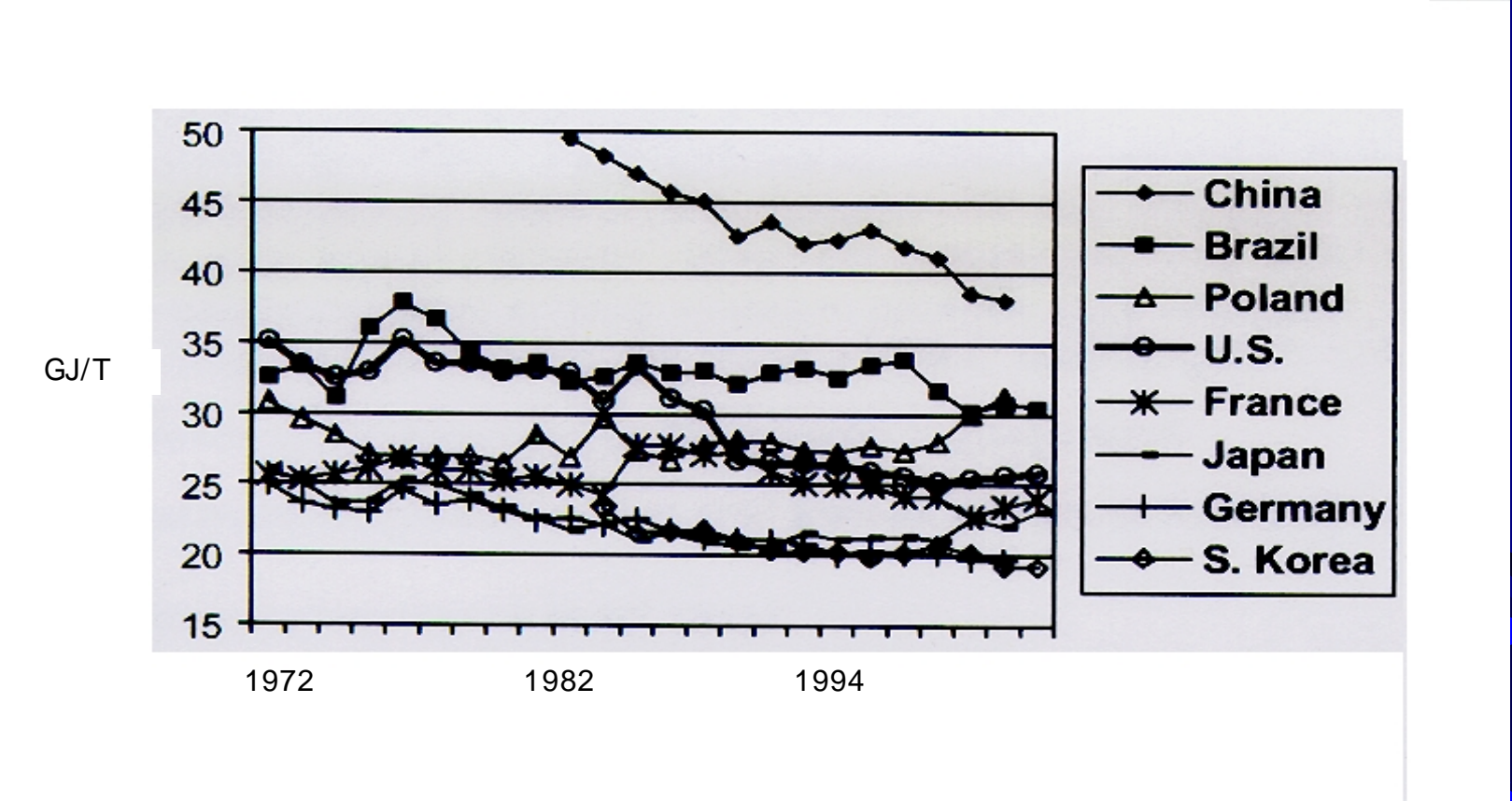


	1999	2000	2001	2002	2003	2004 (P)
( )	240,129	246,401	246,069	245,835	308,130	347,412
( )	21,310	22,056	24,959	25,212	25,987	26,419
(%)	8.7	8.8	10.0	10.3	8.4	7.6

< : Homepage, <http://www.kosa.or.kr> >

- (2003 ) : 11.0%, 8.8%,
- 5.0% (2002 )





< : US DOE, 1997.7 >



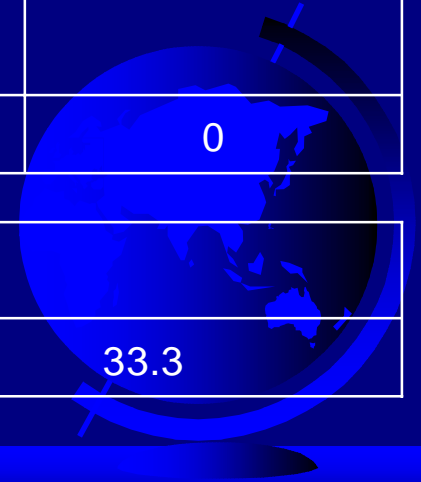
(%)

	35.3	47.1	5.9	11.8	0

	0	82.4	17.6	0	0

			가,	
	0	82.4	17.6	0

	27.8	38.9		33.3





(Strength)	(Weakness)
<ul style="list-style-type: none"> <li>▪ FINEX</li> <li>▪ ( , )</li> </ul>	<ul style="list-style-type: none"> <li>▪ 가</li> <li>▪ 가,</li> <li>▪ 가</li> <li>▪ 가</li> </ul>
(Opportunity)	(Threat)
<ul style="list-style-type: none"> <li>▪ , CDM</li> </ul>	<ul style="list-style-type: none"> <li>▪ 가</li> </ul> 

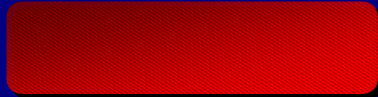


	( toe/ )					( )
		( toe/ )	(%)	( tC/ )	( / )	
2000	14,447	329	2.2	337	650	416
2001	17,296	291	1.7	430	674	725
2002	17,985	304	1.7	291	823	1,962

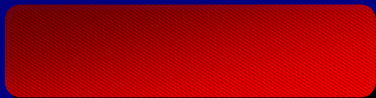
< 자료 : 에관공 『자발적협약 이행실적 분석보고서』 >

-

: 195



- 4-2 CDQ(Coke Dry Quenching), 2CDQ
- 
- 2 OG



- 
- 2 Descale line
- Ladle Preheater



[ ]



-

-



-

( → )



-

, /

철강업의 사회공헌에 의한 간접저감효과 매우 큼



□ CO<sub>2</sub> [ ]

☑ CO<sub>2</sub>

- PSA(Pressure Swing Adsorption) CO<sub>2</sub> Pilot plant
- CO<sub>2</sub> ( )
- CO<sub>2</sub>

☑ CO<sub>2</sub>

- Top gas recovery

☑ IISI CO<sub>2</sub> Breakthrough Programme

패러다임 변화 : 기업자체 기술개발 → 국제협력에 의한 공동개발



[ ]

- 가
  - Registry, Inventory
  -

- 가
  - ( , , )
  - 가

- CDM 가





# 현시점 : 위기와 기회의 갈림길



- 가  
- ,  
- CO<sub>2</sub>  
→ Top



- 가  
- 가  
→



:



CO<sub>2</sub>

- (VA)

- CO<sub>2</sub> CO<sub>2</sub>

▪ CO<sub>2</sub> ( )



가

- Inventory System, Registry System





:



가

- Early action
- Process emission



- CDM,
- ,



# 4. 맺음말

☑ 가 가 가 가  
가 가 가 가

☑ 가 CO<sub>2</sub> ,

☑ Action 가  
- 現 Top 가  
- 가





[ POSCO RCC ]

- 가 / CDM

- 1 7

(054) 220 - 0982, 220 - 0974

E - mail : sjmoon@posco.co.kr

- 4 892 12

(02) 3457 - 0859, 3457 - 1437

E - mail : prettyjm@posco.co.kr gs4000@posco.co.kr