

EU ETS, an analysis and its implication to Japanese Environmental Policy

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Analysis based on NAPs etc. posted on websites

Structure

- What is EU ETS (Phase 1)
- Efficiency
- Equity
 - EU ETS and National Allocation Plan
 - EU ETS and Voluntary Agreements
- Implications to Japanese Environmental Policy

What is EU ETS? (Phase 1)

- **Magnificent Experiment**

Learning by doing (Phase 1)

- **Cost effectiveness**

Enabling to effectively utilize new member countries' least cost reduction potential, despite enormous transaction cost in initial allocation

- **EU Bubble → Each country must face their responsibility**

- **To lead the world**

- **Effective tool for integration? Strong political will**

Background of EU ETS

ECCP (European Climate Change Programme)

- Launched in June 2000
- Twin-Track Approach
(Domestic Measures and Emission Trading)
- 1st ECCP Report, June 2001
Necessary reductions: 336Mt-CO₂
Reduction Potential: 664-765 Mt-CO₂
(at less than 20 Euro/t-CO₂)

Key descriptions about EU ETS in the 1st and 2nd ECCP

- **On Efficiency** (2nd ECCP, 2003)

“An EU-wide emissions trading scheme will reduce the costs to the economy of cutting greenhouse gas emissions by about 35%” (p.48) (basis of calculation unknown)

- **On Initial Allocation** (1st ECCP, 2001)

“in practice no allocation approach will be perfect” (p.10)

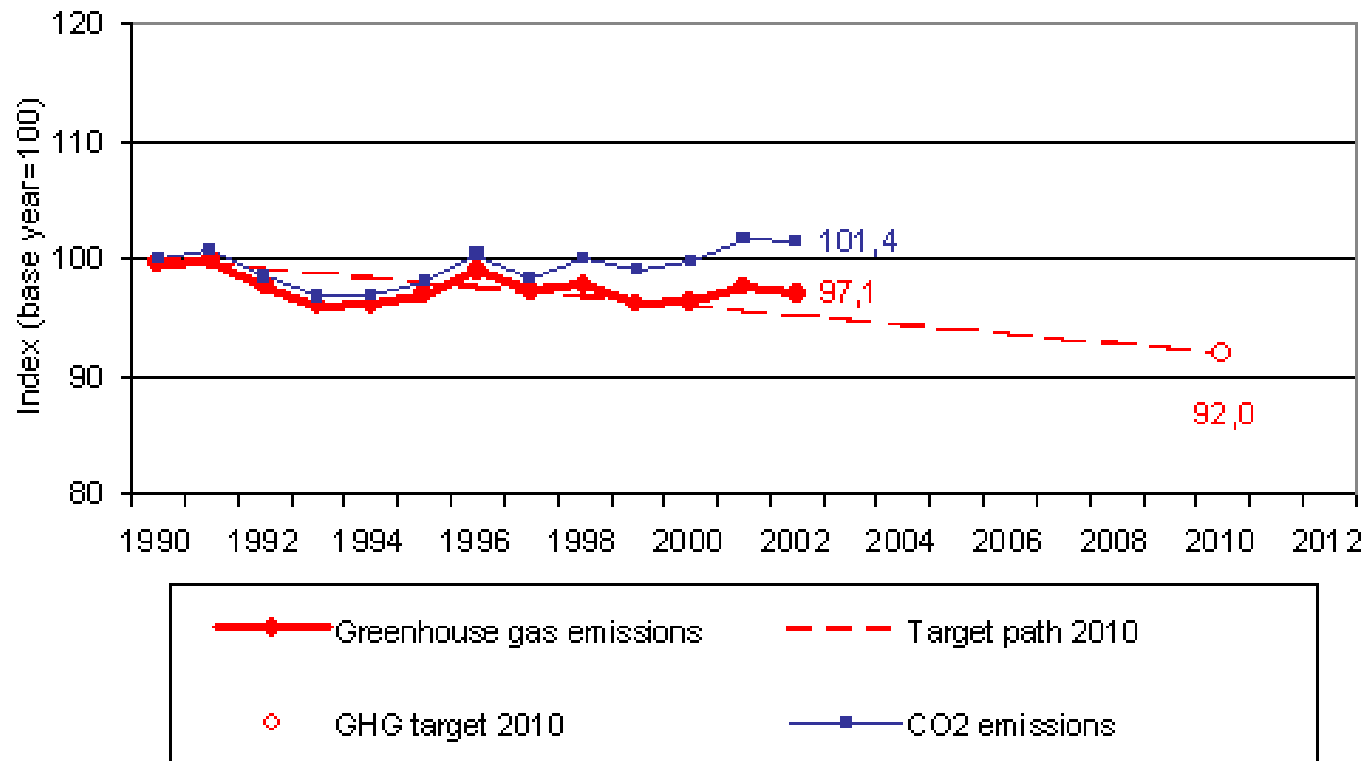
“There will be some distributional impacts” (p.10)

Criteria of EU ETS analysis

- Environmental Effect
- Efficiency
- Equity
(initial allocation)
- Administrative and political feasibility
(transaction cost)
- Technological innovation

From efficiency view point

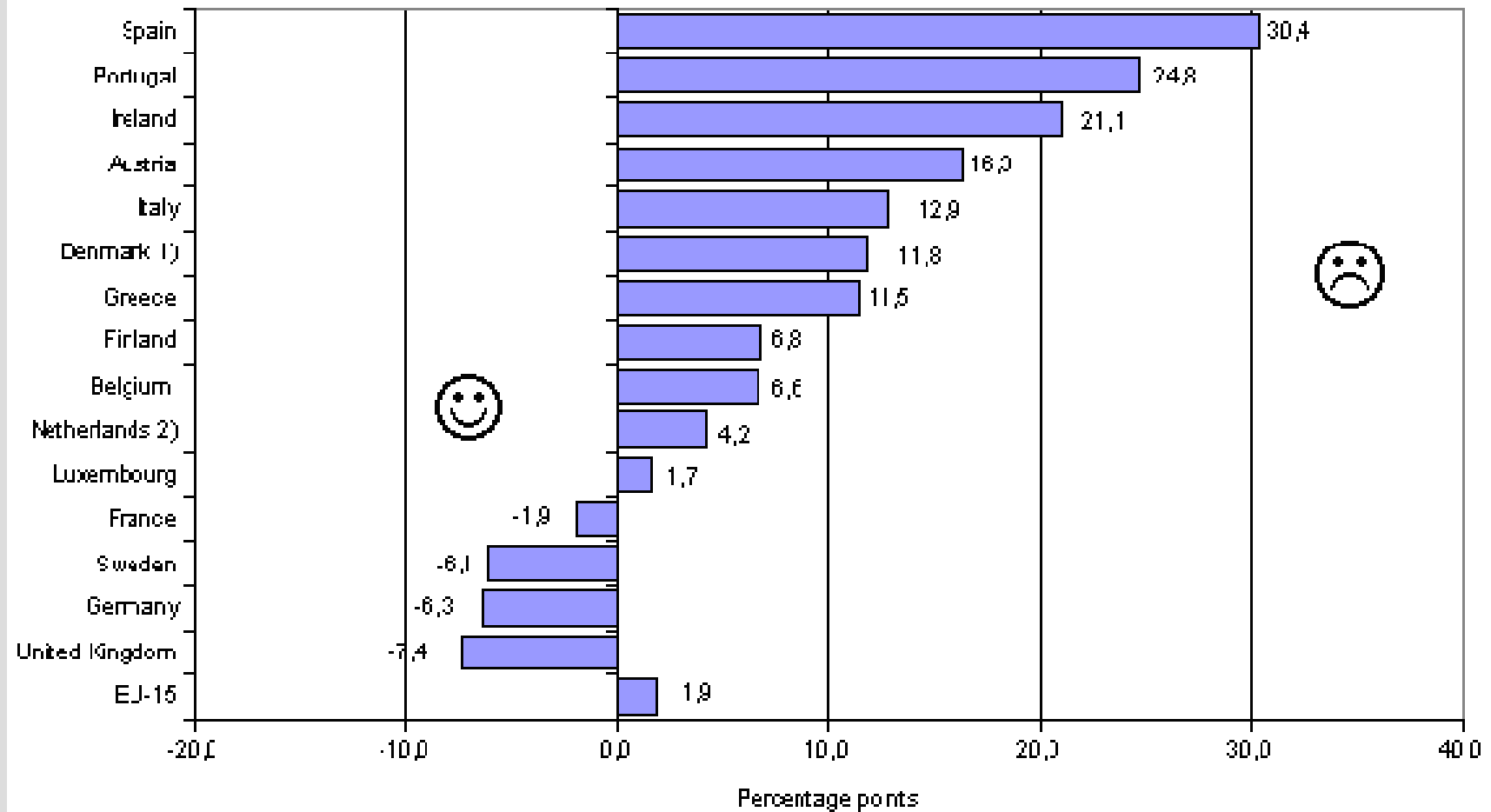
Current situation EU15



Cf. Japan +8.3% (GHG), +12.2% (CO2) as of 2003

Current situation, EU 15

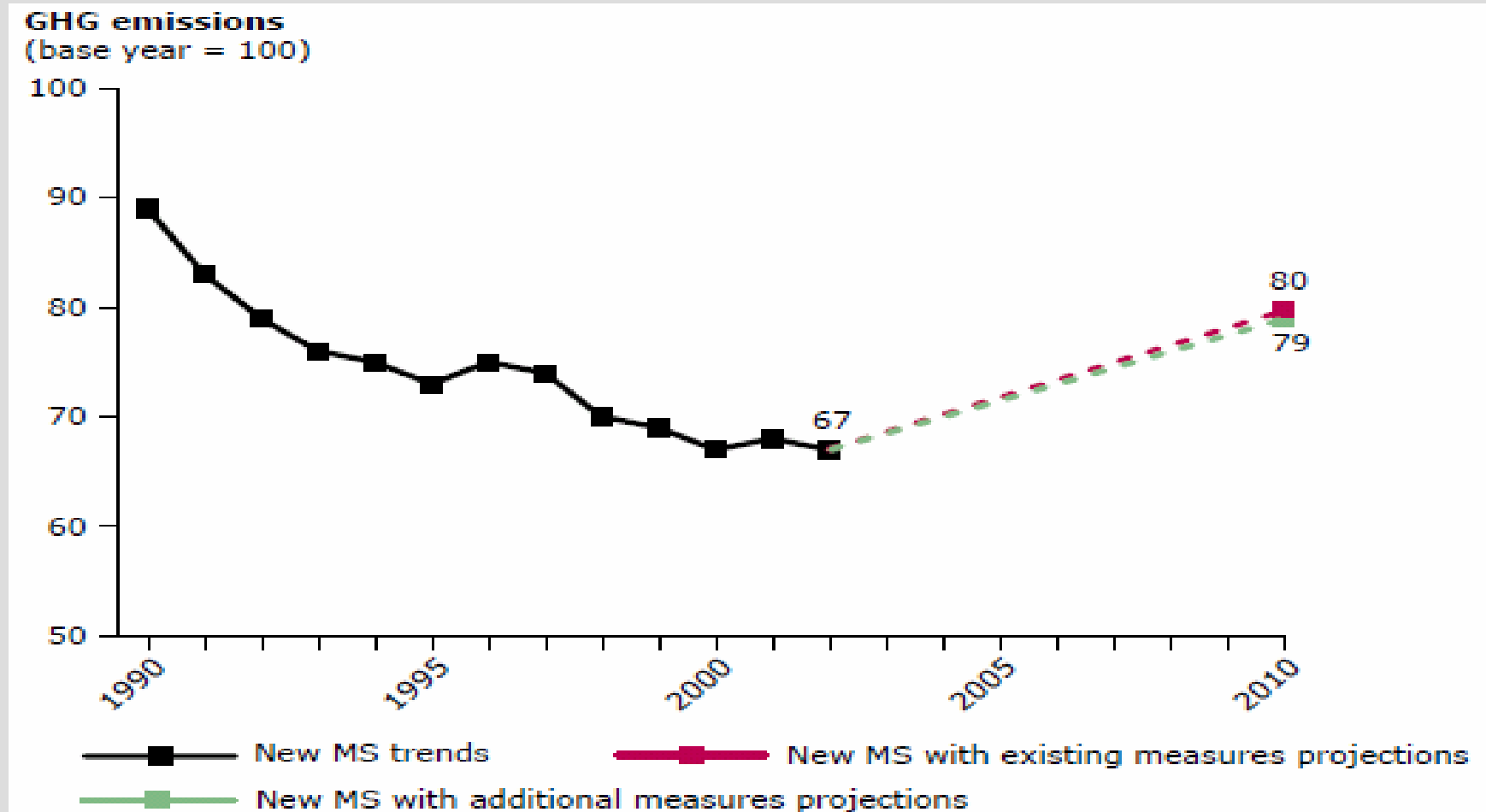
Distance to the target



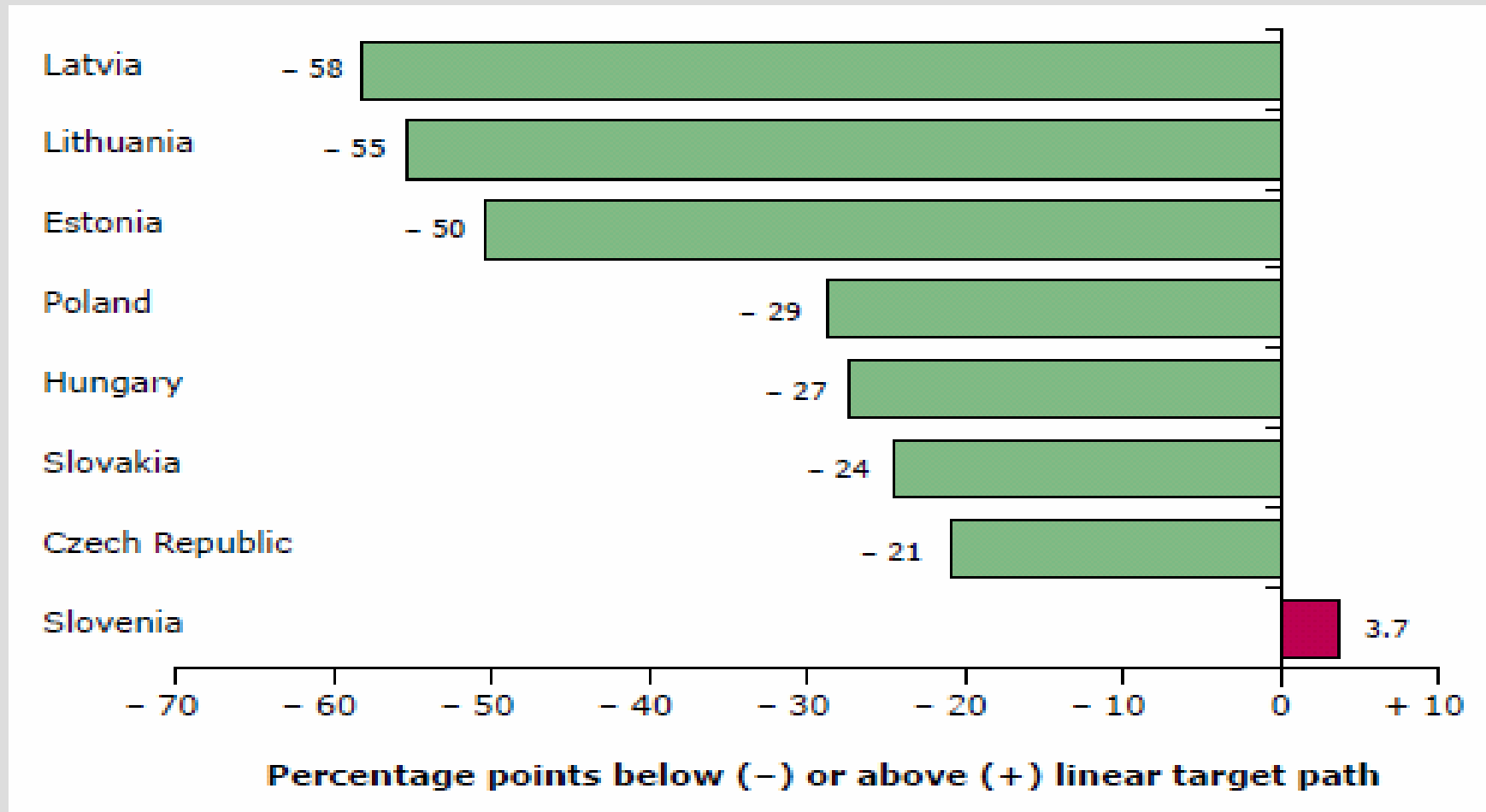
Source EEA

As of 2002

New Member States (1)



New Member States (2)



Distance to the target, EEA (2004)

Administrative cost may undermine efficiency to some extent

Brussels vs. Member States

(on initial allocation, ex-post vs. ex-ante)

Member States vs. each installation

(German Aluminum smelters brought the case to Constitutional Court claiming the EU ETS may lead to their bankruptcy)

Legal struggle of United Kingdom

	Projection	Total allowance	Reduction from projection	Allocation for electricity sector
Provisional (May,2004)	741.8	736.3	5.5	431
Amendment (November,2004)	792.4	756.1	36.3	(440) ※estimated
Amendment (February,2005)	798.3	756.1	42.2	434.1
Approved NAP (May,2005)	802.1	736.3	65.8	410.7

MtCO2 for 3 years

※legal proceedings still going on

may cause enormous **administrative costs**

From Equity view point

- National Allocation Plan
- Initial Allocation and VA

National Allocation Plan

11 Criteria

Examples

- Kyoto Commitment (incl. proportion between covered sources and other sectors)
- Assessment of emission development
- Potentials to reduce emissions
- Consistency with other legislations
- Non-discrimination between companies and sectors

Consistency with the Kyoto Target

Each State must comply with its target

CRITERIA FOR NATIONAL ALLOCATION PLANS

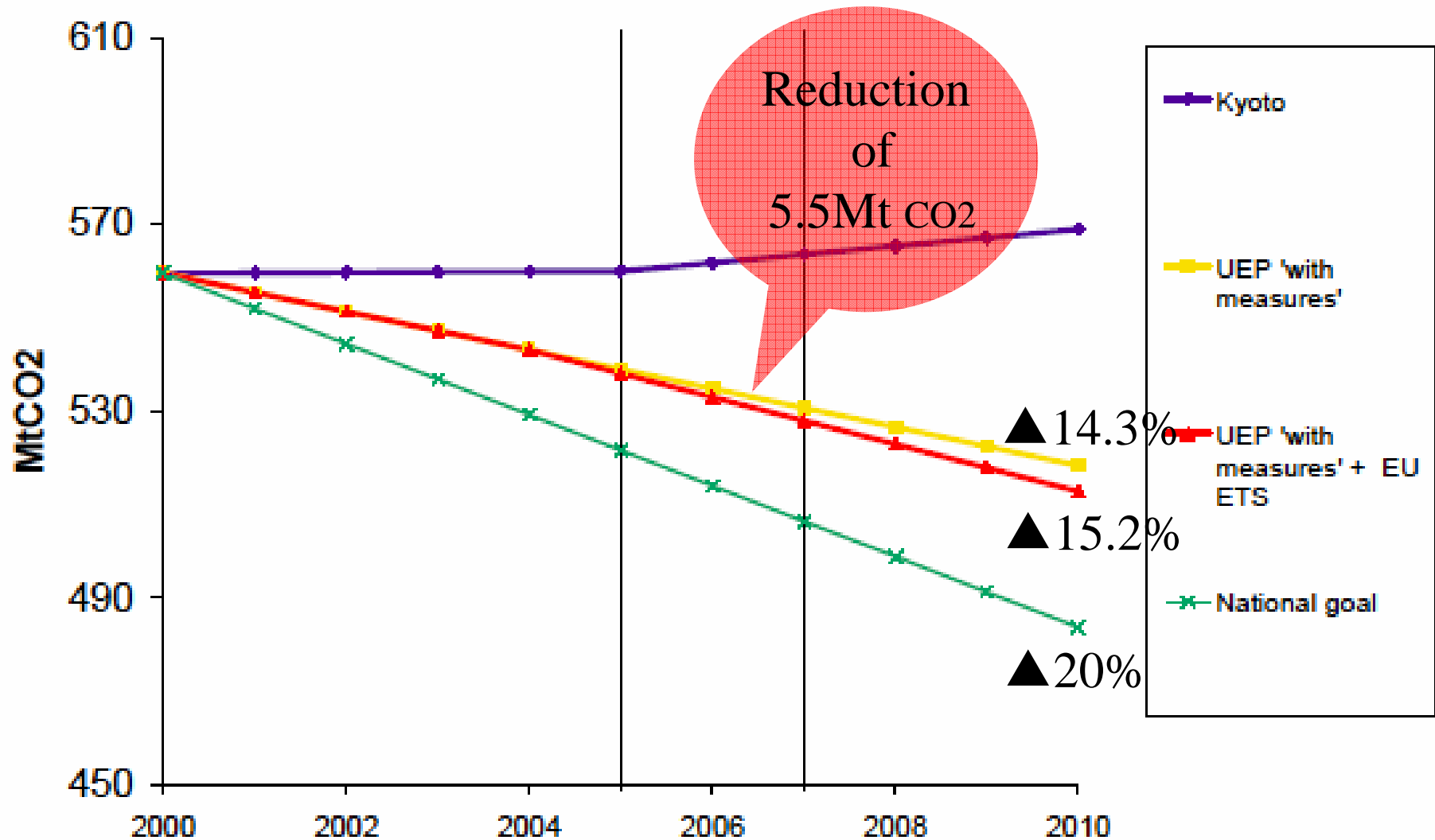
1. The **total quantity of allowances** to be allocated for the relevant period **shall be consistent with** the Member State's obligation to limit its emissions pursuant to Decision 2002/358/EC and **the Kyoto Protocol, taking into account**, on the one hand, **the proportion of overall emissions that these allowances represent in comparison with emissions from sources not covered by this Directive** and, on the other hand, national energy policies, and should be consistent with the national climate change programme. The total quantity of allowances to be allocated shall not be more than is likely to be needed for the strict application of the criteria of this Annex. Prior to 2008, the quantity shall be consistent with a path towards achieving or over-achieving each Member State's target under Decision 2002/358/EC and the Kyoto Protocol.

COUNCIL DECISION of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder (2002/358/CE)

NAP and VA

- How to allocate to covered sources
(Are allocations to covered sources appropriate in comparison to remaining sectors?)
- How to allocate to each installations
(Are initial allocations fare enough?)
- What happened to VA in UK, Germany and the Netherlands

United Kingdom (1) Role of EU ETS



Source: UK NAP

United Kingdom (2)

- CO2 emissions reduction of 14% combined with other GHG emissions reduction will lead to 20% GHG reduction
- EUETS will be used to fill a gap in UKCCP i.e. 5.5Mt-CO2 in 2010, which corresponds to 5.5Mt-CO2 in 2005-2007 (This implies to continuously relying on CCA)
- Based on the above, 736Mt-CO2 (2005-2007) will be allocated to covered sectors
- Proportion of covered installations in 2002 is 46%
- In 2010, the above proportion will remain unchanged based on projected emissions

Allowances to activity (sector) levels

CCAs basically remain unchanged

$$\begin{array}{c} \text{Total allowance} = \text{CCA (industry)} + \text{UEP (electricity)} - 5.5\text{MtCO}_2 \\ \parallel \qquad \qquad \qquad \parallel \qquad \qquad \qquad \parallel \\ 736.3\text{MtCO}_2 \qquad \qquad \text{Allowance for the industry sector} \qquad \text{Allowance for the power sector} \end{array}$$

CCA targets \Rightarrow absolute allowance

(actual direct emission in 2002 \times growth rates \times intensity improvement (CCA)) \leftarrow (relative target sectors)

Source: UK NAP

sector totals

Before Revision

		1. Average annual emissions (1998-2002)	2. Annual emissions (2002)	3. Annual allocation before subtracting NER	4. % of sector total allocated to New Entrant Reserve (NER)	5. Annual allocation to existing installations (i.e. after NER)
		MtCO ₂	MtCO ₂	MtCO ₂	%	MtCO ₂
Power stations	non-CCA	152.4	158.2	143.7	8.0%	132.2
Refineries	non-CCA	17.4	17.7	19.0	0.8%	18.9
Refineries	CCA	0.1	0.1	0.1	0.0%	0.1
Onshore gas distribution	non-CCA	1.3	1.7	1.8	14.5%	1.5
Offshore	non-CCA	17.5	18.7	19.1	4.5%	18.3
Cement	CCA	9.0	9.6	10.1	8.9%	9.2
Lime	CCA	2.5	2.2	2.4	3.4%	2.3
Ceramics	non-CCA	0.0	0.0	0.0	0.0%	0.0
Ceramics	CCA	1.6	1.7	1.7	3.0%	1.7
Glass	CCA	1.7	1.9	2.0	3.5%	1.9
Pulp & Paper	non-CCA	0.0	0.0	0.0	0.0%	0.0
Pulp & Paper	CCA	3.9	4.3	4.3	3.3%	4.1
Food & Drink	non-CCA	1.2	1.2	1.2	0.1%	1.2
Food & Drink	CCA	2.5	2.7	2.7	2.4%	2.7
Chemicals	non-CCA	3.0	3.5	3.7	2.5%	3.6
Chemicals	CCA	7.2	7.1	7.4	4.8%	7.1
Non-Ferrous	CCA	2.6	2.7	2.6	0.0%	2.6
Iron & Steel	CCA	19.6	16.9	21.2	20.8%	16.8
Engineering & Vehicles	non-CCA	0.3	0.4	0.4	0.0%	0.4
Engineering & Vehicles	CCA	0.7	0.6	0.6	4.0%	0.6
Others Total	non-CCA	1.5	1.7	1.5	0.0%	1.5
Others Total	CCA	0.0	0.0	0.0	0.0%	0.0
TOTAL	TOTAL	245.9	252.8	245.4	7.7%	226.5

Total allowance for UK

Allowances to Installation Level

Two-stage Approach

$$\frac{\text{Installation's relevant emissions}}{\text{Sum of relevant emissions of all installations in the sector}} * \text{Total sector allowance allocation} = \text{Total Phase 1 installation level allocation}$$

Based on past five year average emissions

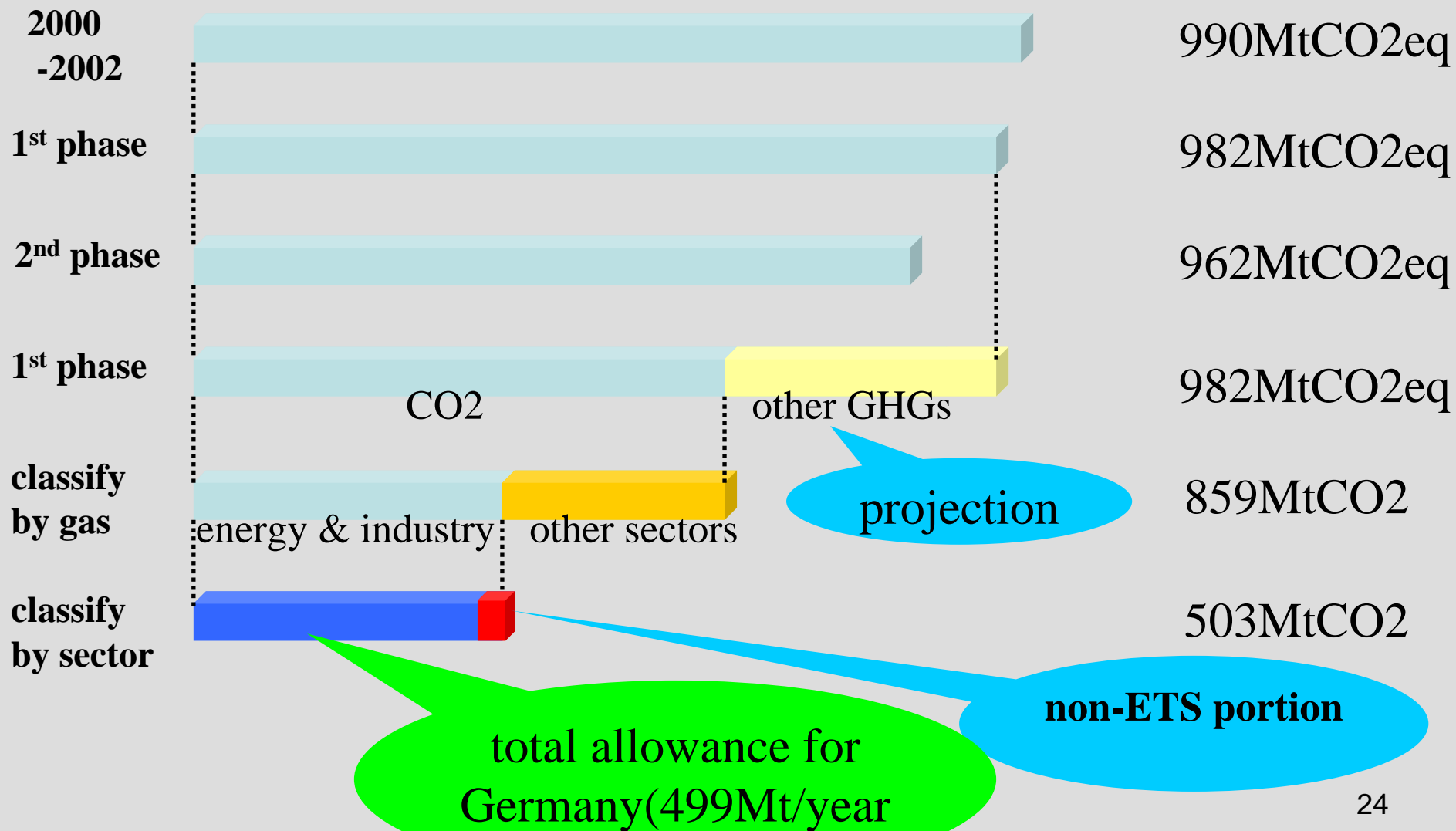
Early Action not to be taken account

Germany (1)

- EU Burden Sharing Target
 - 21%
- Recent trend (2002)
 - 18.9% (GHG)
 - 15.0% (CO₂)

Germany (2)

Achieving the Kyoto target



Germany (3)

Allocation to energy and industry

“The CO₂ emissions budgets for the energy and industry sectors during the periods 2005–2007 and 2008–2012 have been determined by defining the budgets for total greenhouse gas emissions and for CO₂ emissions, **also bearing in mind the voluntary commitments undertaken by the German business community to reduce CO₂ emissions** ----“. (German NAP p. 17)

Basic formula for the Allocation Plan



emissions budget for energy & industry

Compliance factor

$$\sum ET_B \cdot \frac{E\&I_T}{E\&I_B} = \sum ET_B - \sum PB_B - \sum EA + CF + \sum (\text{Special CHP}) + \sum PB_B + \sum EA + \text{reserve}$$

Survey

Statistics

Survey

Special allocations

Forecast

Legend:

CF: Compliance factor

E&I: Energy and industry

ET: Emission trading segment

B: Baseline period

T: Allocation period

CHP: Combined heat & power generation

PB: Process related emissions

EA: Early Action

Industry allocation and VA (Germany)

- **VA** between the Government and the German Business (November 9, 2000) **was well taken into account in allocating allowances to covered sector as a whole.**
- Allocation to existing installations is, in principle, based on historical emissions in reference period (2000-2002).

Dutch NAP and Covenant (1)

- Characteristics of Covenant: Benchmarking
- Total allocation to energy and industries
 - 120 Mt/CO₂: BAU under Covenant
 - 109 Mt/CO₂: Projection by a think tank
 - 112 Mt/CO₂: Final allocation
- Differences between 120 Mt/CO₂ and 112 Mt/CO₂ can be adjusted by the correction factor
- Relative portion of allowances remain unchanged

Covenant was fully taken into account

Dutch NAP and Covenant (2)

Allocation to an individual installation based on the benchmark energy efficiency

$A = HE \times G \times EE \times C$, where:

A = the allocation to an individual installation

HE = the historic emissions (2001-2002)

G = the sector growth (2003-2006)

EE = the relative energy efficiency Early action can be considered here

C = the correction factor to remain below the overall emission ceiling

Distance from benchmark: +10% ~ -15%

VAs were taken into account

- Background

There were agreements between Governments and Industries that new policies and measures will not be introduced as long as the industries follow VAs.

“The ministers will aim to **prevent the imposition of any additional specific national measures** aimed at further energy conservation or reduction of CO₂ emissions on the participating facilities --- For the purpose of this Covenant, this in any event means no specific energy tax ---, **no compulsory ceiling on CO₂ emissions** --- “

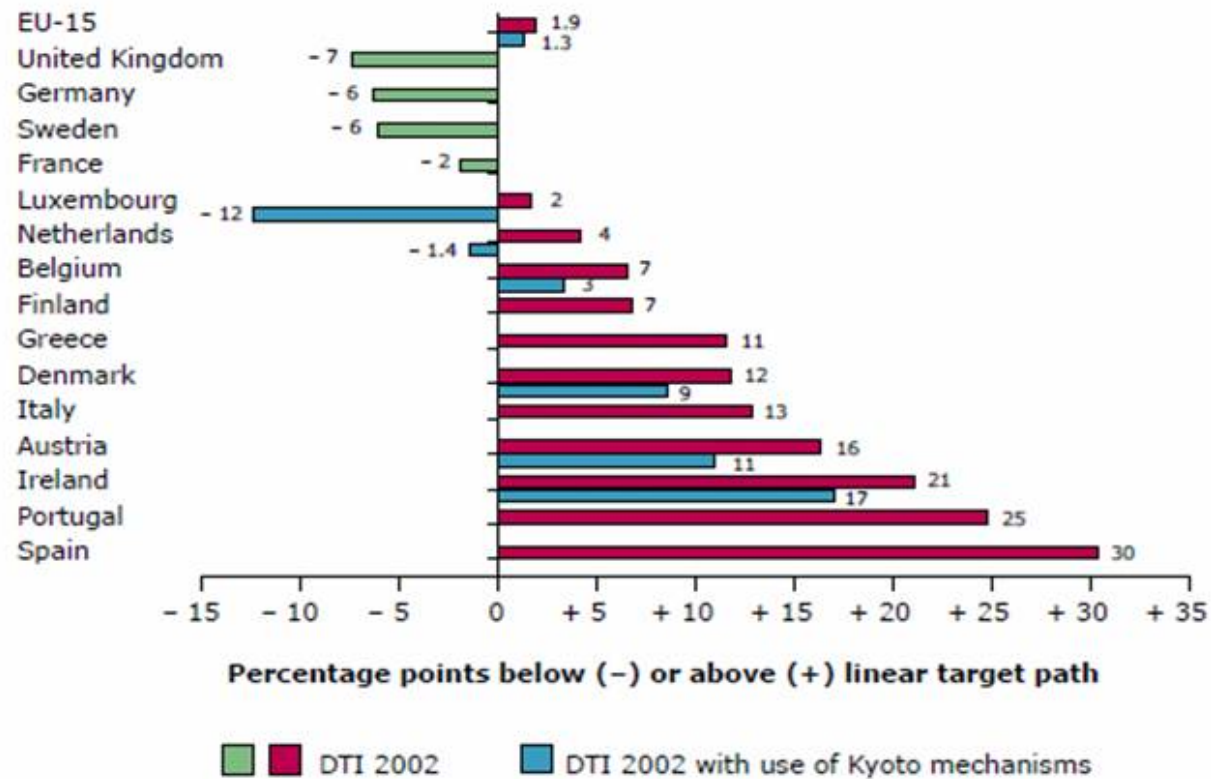
(Article 10.1 of Dutch Covenant)

Several points on EU ETS

- Are allocation to energy and industries lenient?
- What will be the extent of stringency between phase 1 & 2?
- Why direct emissions?
- What will be carbon price level?
- What are the situations of VAs under EU ETS?

Lenient Allocations? Distance to the Target

Figure 4.2 Distance-to-target (burden-sharing targets) for EU-15 Member States in 2002



Comparison between base-year emissions and total allowance (Phase 1)

MtCO₂

Member States	actual emission of ETS installations	total allowance approved by the Commission
Austria	31.74(2001)	33
Denmark	30.9(2002)	33.5
Finland	41.09(2002)	45.5
France	not available	156.5
Germany	501(average 2000–2002)	499
Ireland	20.61(average 2002–2003)	22.32
Italy	224.0(2000)	232.5
Netherlands	86.50(estimate 2000)	95.3
Portugal	36.56(2002)	38.17
Spain	174.52(2002)	174.43
Sweden	20.2(average 1998–2001)	22.9
United Kingdom	271.55(2003)	245.43

Countries shown in yellow are the ones not on track to their targets

Utilizing Kyoto Mechanisms

- **Twelve Member States** — Austria, Belgium, Denmark, Finland, Ireland, Italy, the Netherlands, Portugal, Slovenia, Spain, Sweden and the United Kingdom — **have provided information on their intended use of the flexible mechanisms of the Kyoto Protocol** (Kyoto mechanisms: Joint Implementation (JI) and Clean Development Mechanism (CDM)) to achieve their targets for the commitment period 2008–12.
- This would represent almost one percentage point of the 8 % Kyoto target

Implications to Japanese Environmental Policies (1)

International Aspects

- Competition in search for CERs and ERUs
- May lead to loss of JI opportunity in new member countries if JI procedures will not be simple enough (They may prefer EU ETS to JI)

JI opportunities in Central and Eastern European countries may not become cost effective measures if administrative procedures will be so complicated

Implications to Japanese Environmental Policies (2)

Domestic Aspects

- Non industry sector emissions matter.
Distance to the target:
Household 22.8%, Commercial 21.7%
Industry 6.9%, Transport 5.3%
- As long as industry voluntary initiative works well, let them continue and to avoid enormous transaction cost.

Implications to Japanese Environmental Policies (3)

Domestic aspects – continued

- Need to watch carefully how EU ETS works, especially in Germany, where existing VAs did not have numerical targets for each individual company.
- On the other hand, **need to review efficiency of current Japanese VAs for the next stage**; Are they efficient in terms of equalization of marginal abatement cost?
- Also to **review its impact on technological innovation**

Implications to Japanese Environmental Policies (4)

Domestic aspects --- continued

- Need to study carefully Dutch way of **initial allocation based on benchmark efficiency**; No one knows what will happen on Japanese Voluntary Initiative once it will become difficult to comply with industry commitment to stabilize CO2 emission at the level of 1990. Who will assume responsibility and how much among each sector?