

Emission trading schemes in EU and U.S.

Attachment 1

	EU (the EU-ETS Phase III)	U.S.
Legal basis	EU Directive 2003/87/EC	Waxman-Markey Bill (Passed the House)
Implementation period	2013~2020 (Phase I:2005~2007, Phase II:2008~2012)	Launching partial implementation from 2012 (part of the participating industries will be covered) Full implementation by 2016 (all participating industries will be covered)
Scope	Facilities directly emits greenhouse gases: combustion facilities with heat output more than 20 MW (including thermal power generation), iron and steel industry, installation of petroleum refining, glass, cement, ceramic products and the other products (paper and pulp)	Launching partial implementation from 2012 (part of the energy sector and industries with large amount of greenhouse emission will be covered) Full implementation by 2016 (all participating industries will be covered)
Cover ratio of the scheme	About 50% of total CO ₂ emissions and about 40% of total greenhouse gas emissions in EU	84.5% of total emissions after 2016
Reduction target by participants	1.74% reduction from intermediate value between 2008 and 2012 in Phase III, 21% reduction from 2005 levels in 2020	3% reduction in 2012, 17% reduction in 2020, 42% reduction in 2030, 83% reduction in 2050(all the reductions are from 2005 level)
How to allocate emission allowances	Basically, by auctioning Free allocation of emission allowances to industry sectors which are likely exposed to carbon leakage, based on the benchmark (up to 100%)	Basically, by auctioning Free allocation of emission allowances to trade-intensive industry sectors which are likely exposed to carbon leakage, based on the benchmark Free allocation of emission allowances to retail electric suppliers, energy technology policy, agricultural policy, etc (emission allowances are sold to participating industries in order to cover policy implementation costs. The amount of allocation is progressively reduced)
Process of administering the scheme	Each of the facilities is obliged to submit emission allowances equivalent to the amount of actual emissions after the end of each year. Each of them can purchase and use emission allowances to meet the requirement (participants compute and report the data on annual emissions, which is verified by third-party verifiers)	Each of the facilities is obliged to submit emission allowances equivalent to the amount of emission after the end of each year. Each of them can purchase and use emission allowances to meet the requirement (government agency collects the data on annual emissions by an official automatic measurement device)
How to use revenues generated from the auctioning of allowances	Adjustment to climate change, technological development to realize low-carbon economy, technology transfers to developing countries	Compensation of emission allowances for strategic reserve auctions, deficit reduction, consumer refund, etc

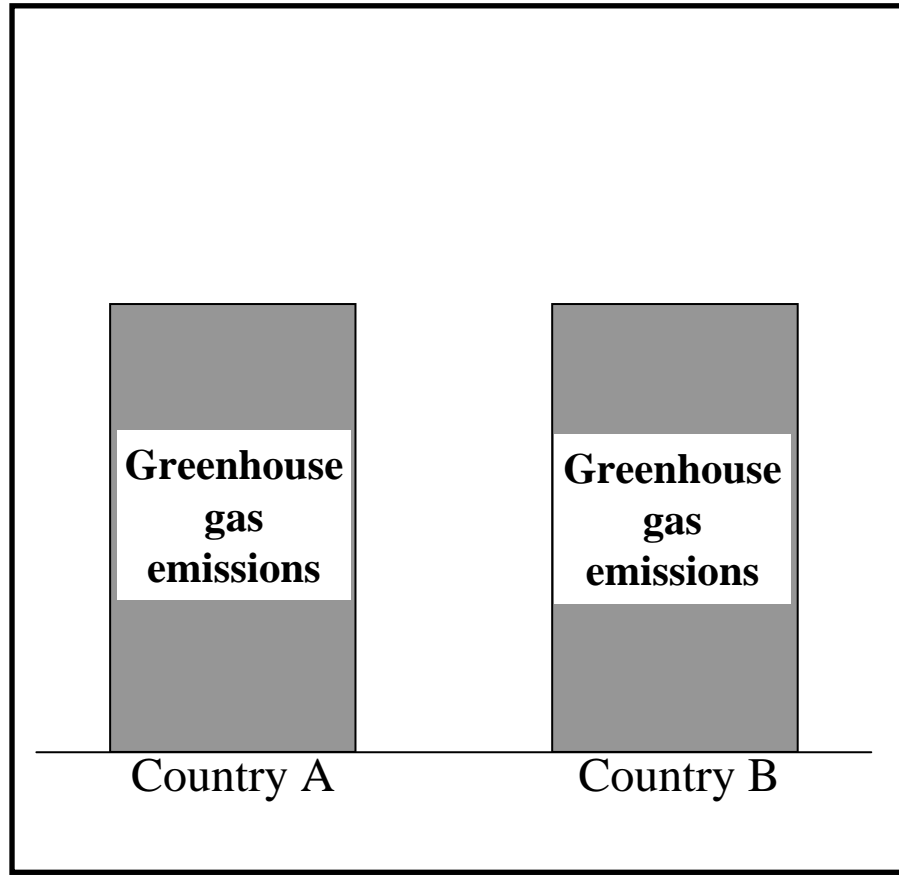
Possibility of carbon leakage

(the mechanism of causing carbon leakage)

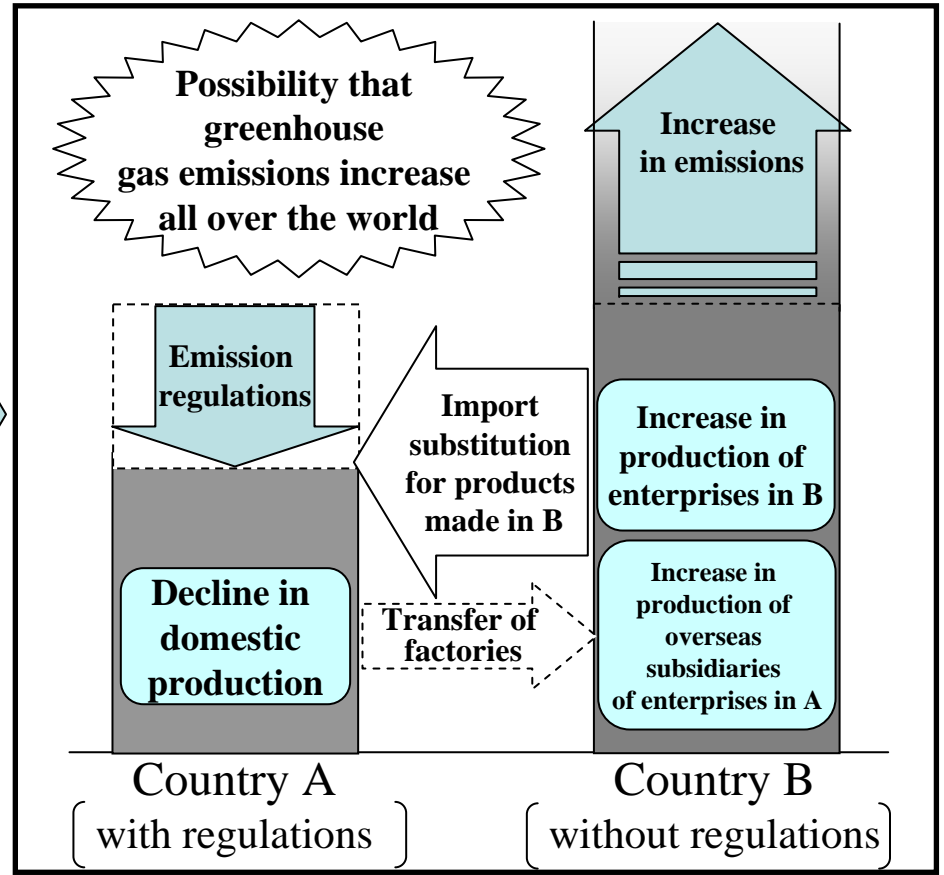
2 paths of carbon leakage

- ① **A demand shift** in a stringent regulation country from domestic products to imported products produced in less stringent regulation countries (**import substitution**)
- ② **A shift in production base** from a stringent regulation country to less stringent regulation countries (**overseas transfer**)

○ Before implementing emission regulations



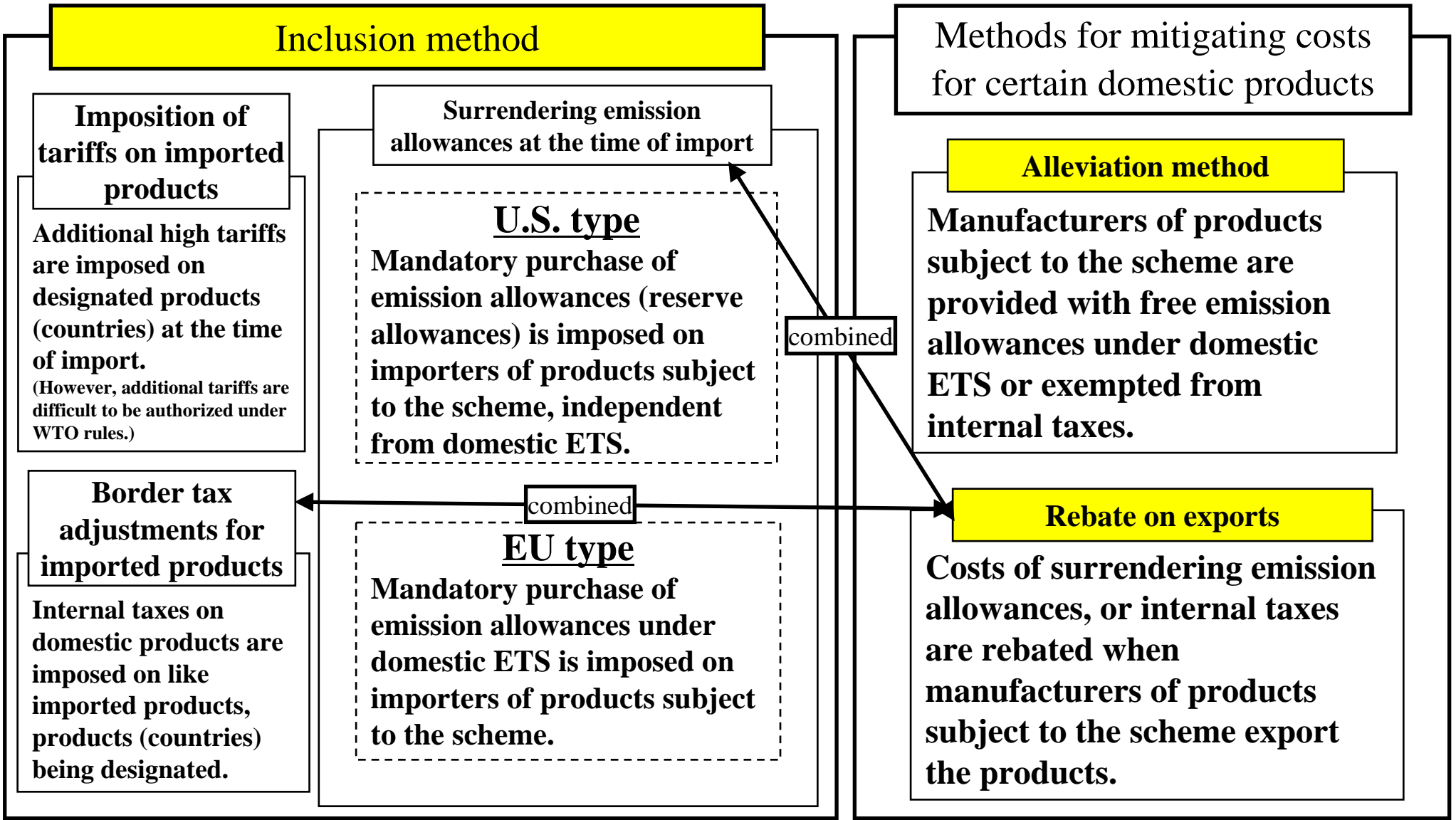
○ After implementing emission regulations only in A



International discussions on carbon leakage measures

(Concrete measures for carbon leakage)

The following are the concrete measures for carbon leakage internationally discussed.



Border adjustment measures in EU/U.S.

(A mandatory surrender of emission allowances)

	EU	U.S.
Legal basis	EU Directive 2009/29/EC	Waxman-Markey Bill (Passed the House)
Products subject to the border adjustment measures	<p>Products by sectors and subsectors (*) determined to be likely exposed to significant risks of carbon leakage</p> <p>*The European Commission shall determine a list of energy-intensive industry sectors and subsectors to be likely exposed to significant risks of carbon leakage and, by June 2010, submit a report including carbon leakage measures. In this report, the Commission can propose the introduction of border adjustment measures</p>	<p>Products of certain industry sectors determined by the President (*)</p> <p>* The President reports the effect of free allocation of emission allowances to industry sectors determined to be likely exposed to significant risks of carbon leakage. At the same time, the President also reports the feasibility and effectiveness of border adjustment measures in the industry sectors</p>
Countries subject to the border adjustment measures	Third countries that manufacture the products identical with the ones manufactured in the facilities fall into covered sectors and subsectors in EU	<p>Third countries that manufacture the products identical with the ones manufactured in the facilities fall into designated industry sectors. The following countries are exempted from the scheme;</p> <ol style="list-style-type: none"> 1. Countries that ratify international agreements the U.S. signed or that conduct the same level of greenhouse gas emissions regulations as the U.S. and so on 2. LDC 3. Countries whose greenhouse gas emissions account for less than 0.5% of the global greenhouse gas emissions and whose exports to the U.S. account for less than 5% of the whole imports of the U.S.
Who surrenders emission allowances?	<p>Importers of products that are manufactured in covered sectors and subsectors (*)</p> <p>*The EU-ETS stipulates that the European Commission may propose introduction of a measure that includes importers of certain products which are produced by covered sectors and subsectors in its mandatory participants</p>	Importers of products subject to the scheme from countries registered in the list of target countries
Characteristics of emission allowances	<p>No provision (*)</p> <p>* Emission allowances under domestic emission trading schemes (the EU-ETS) might be used</p>	“International reserve allowances”(impossible to exchange them with domestic emission allowances)
Price of emission allowances	<p>No provision(*)</p> <p>* The price of domestic emission trading schemes (market price) seems to be used</p>	It is stipulated that the price for purchasing the international reserve allowances shall be equivalent to the auction clearing price for emission allowances for the most recent emission allowance auction
Practicable implementing period	2013~2020	2020 and after
Carbon leakage measures other than border adjustment measures	Free allocation of emission allowances up to 100% for installations of sectors and subsectors subject to the scheme, based on benchmarks	Free allocation of emission allowances to industry sectors determined by the President (can be implemented together with border adjustment measures)

Considerations in other countries

○ The criteria for eligible industrial sectors in the U.S. Waxman-Markey Bill

(the criteria for the provision of free allowances and/or the criteria for the adoption of mandatory surrender of allowances):

① energy intensity or greenhouse gas intensity > 5% **and** trade intensity > 15%

② energy intensity or greenhouse gas intensity > 20% **only**

$$\left. \begin{aligned} \text{energy intensity} &= \frac{\text{fuel costs} + \text{electricity cost}}{\text{shipment value}} \\ \text{greenhouse gas intensity} &= \frac{\text{CO}_2 \text{ emission cost}}{\text{shipment value}} \\ \text{trade intensity} &= \frac{\text{import value} + \text{export value}}{\text{shipments value} + \text{import value}} \end{aligned} \right\}$$

○ The criteria for eligible industrial sectors in the EU directive (phase III)

(the criteria for the provision of free allowances):

① emission reduction costs > 5% **and** trade intensity > 5%

② emission reduction costs > 30% **or** trade intensity > 30%

$$\left. \begin{aligned} \text{emission reduction costs} &= \frac{\text{direct cost} + \text{indirect cost}}{\text{gross value added}} \\ &= \frac{\text{CO}_2 \text{ emission cost} + \text{CO}_2 \text{ cost of electricity consumption}}{\text{gross value added}} \\ \text{trade intensity} &= \frac{\text{export value} + \text{import value}}{\text{shipment value} + \text{import value}} \end{aligned} \right\}$$

energy intensity

greenhouse gas intensity

emission reduction costs

= costs that are needed to reduce carbon emissions

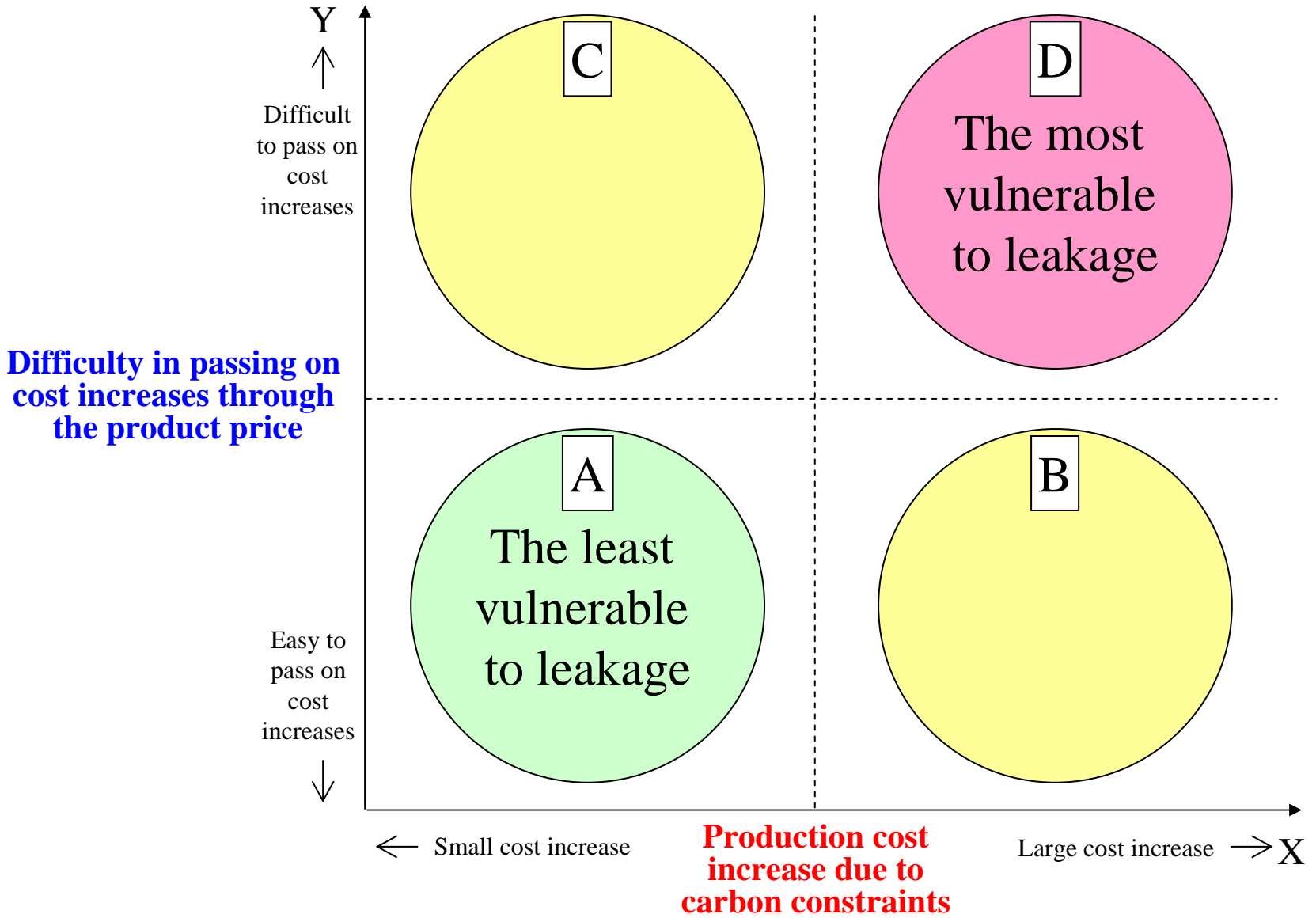
⇒ **indicators of production cost increase owing to carbon constraints**

trade intensity

= how substitutable domestic/intraregional products are to imported products in domestic/intraregional market

⇒ **an indicator of difficulty in passing on cost increases through the product price**

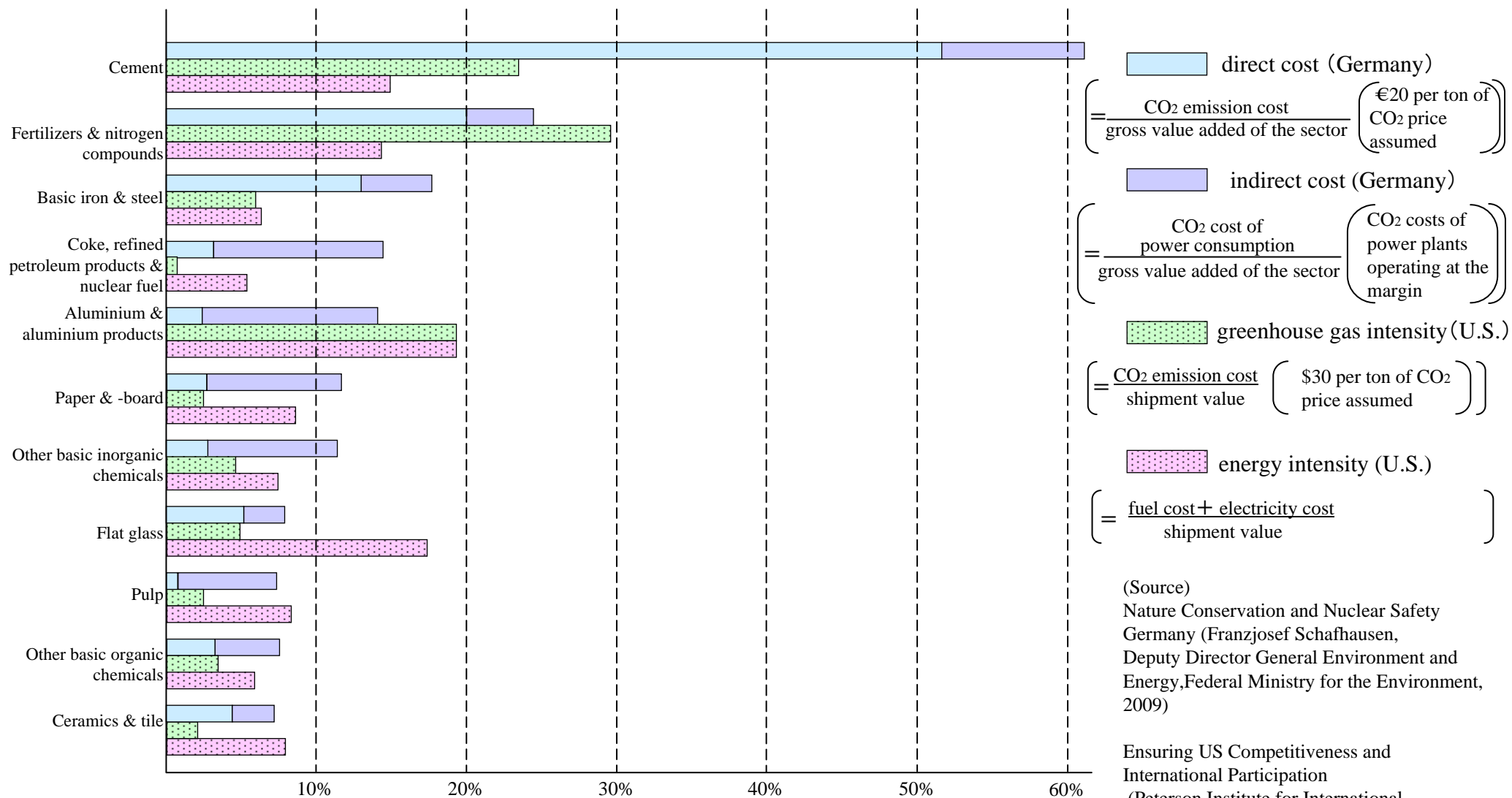
Difference in influence of carbon constraints among industries



Carbon leakage measures seem to be most required for industries in quadrant D

Production cost increase due to carbon constraints

○ CO₂ emission costs and energy intensity in U.S. and Germany



direct cost (Germany)

$$\left(= \frac{\text{CO}_2 \text{ emission cost}}{\text{gross value added of the sector}} \left(\begin{array}{l} \text{€20 per ton of} \\ \text{CO}_2 \text{ price} \\ \text{assumed} \end{array} \right) \right)$$

 indirect cost (Germany)

$$\left(= \frac{\text{CO}_2 \text{ cost of power consumption}}{\text{gross value added of the sector}} \left(\begin{array}{l} \text{CO}_2 \text{ costs of} \\ \text{power plants} \\ \text{operating at the} \\ \text{margin} \end{array} \right) \right)$$

 greenhouse gas intensity (U.S.)

$$\left(= \frac{\text{CO}_2 \text{ emission cost}}{\text{shipment value}} \left(\begin{array}{l} \$30 \text{ per ton of CO}_2 \\ \text{price assumed} \end{array} \right) \right)$$

 energy intensity (U.S.)

$$\left(= \frac{\text{fuel cost} + \text{electricity cost}}{\text{shipment value}} \right)$$

(Source)
 Nature Conservation and Nuclear Safety
 Germany (Franzjosef Schafhausen,
 Deputy Director General Environment and
 Energy, Federal Ministry for the Environment,
 2009)

Ensuring US Competitiveness and
 International Participation
 (Peterson Institute for International
 Economics, 2009)

Methods for imposing a mandatory surrender of emission allowances on imported products

Taxes

Regulations

Customs duties
General exceptions
(GATT Article XX)

Border tax adjustments of internal taxes/ internal charges
(Tax theory requirements)
• Most-favoured-nation treatment
(GATT Article I)
• National treatment
(GATT Article III 1., 2.)

General exceptions
(GATT Article XX)

Quantitative import restrictions
(GATT Article XI)
General exceptions
(GATT Article XX)

Border adjustment of domestic regulations (footnote)
(GATT Article III 1., 4.)

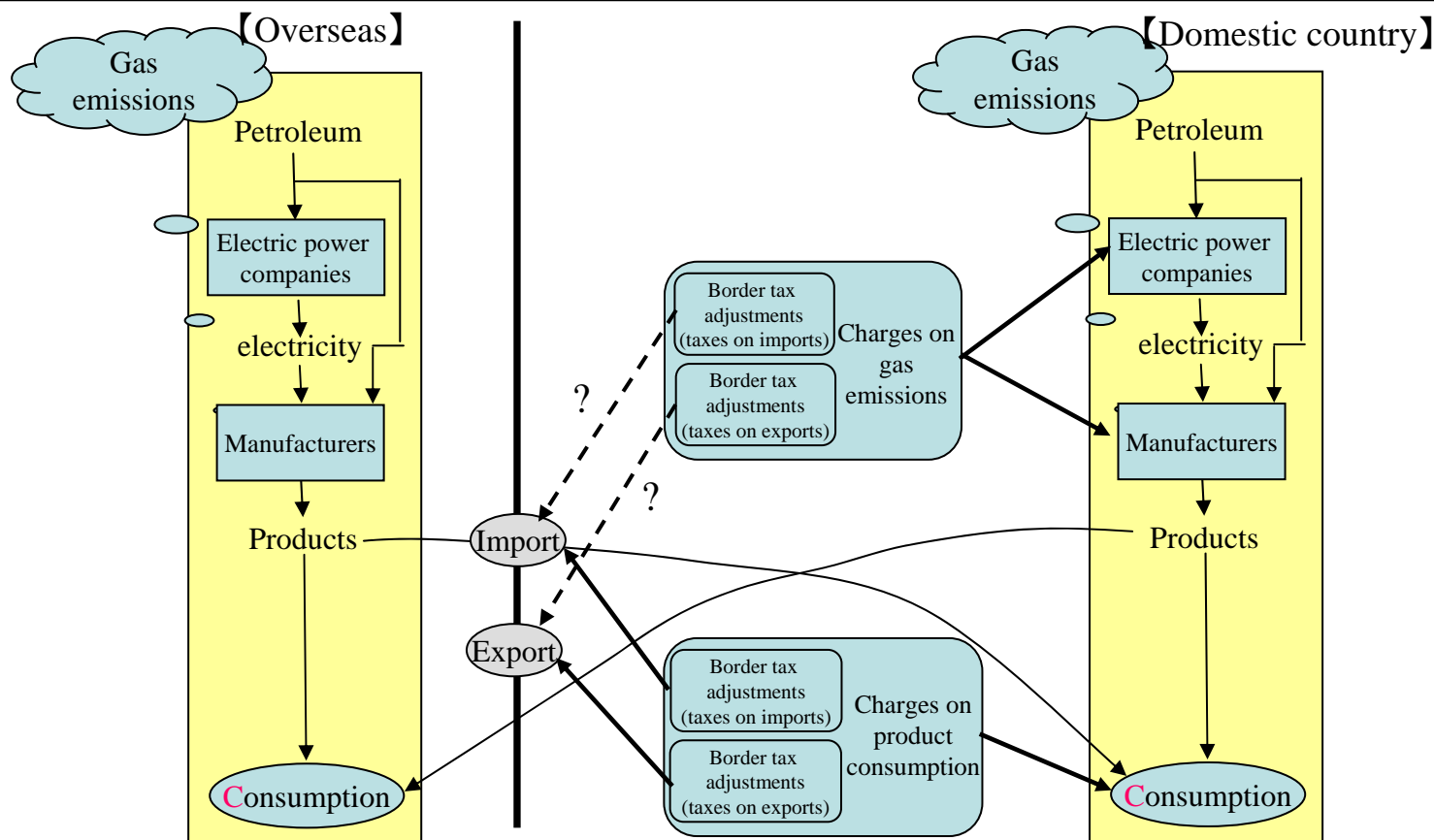
(footnote) "laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products, and internal quantitative regulations requiring the mixture, processing or use of products in specified amounts or proportions" (GATT III 1.)

General exceptions
(GATT Article XX)

It is required to study whether imposing a mandatory surrender of emission allowances on imported products can be explained as domestic regulations.

How should border tax adjustments be implemented?

		Issues of border tax adjustments for exported or imported products	Notes
Taxes/charges on products		No problem	—
Taxes/charges focused on the manufacturing process	Taxes/charges on <u>inputs (energy)</u> used in the manufacturing process.	Can border tax adjustments be applied for inputs which are not physically incorporated into products?	With regard to consumption tax, border tax adjustments are applied for taxes on energy prices. <i>US-Superfund</i> case is often referred.
	Taxes/charges on <u>byproducts (CO₂)</u> generated in the manufacturing process.	Can border tax adjustments be applied for byproducts which are not inputs in the manufacturing process?	—



“Subsidies”

A subsidy shall be deemed to exist if:

(a) there is a financial contribution (footnote) by a government or any public body or there is any form of income or price support and

(b) a benefit is thereby conferred. (Article 1.1)

(footnote) a financial contribution: ① a government practice involves a direct transfer of funds, etc., ② government revenue that is otherwise due is foregone or not collected, ③ a government provides goods or services other than general infrastructure, or purchases goods, ④ a government makes payments to a funding mechanism

“Specific” subsidies

A subsidy shall be subject to the provisions of Part II or shall be subject to the provisions of Part III or V (countervailing measures) only if such a subsidy is specific. (Article 1.2)

Where the granting authority, or the legislation pursuant to which the granting authority operates, explicitly limits access to a subsidy to certain enterprises (footnote), such subsidy shall be specific. (Article 2.1(a), etc.)

(footnote) Certain enterprises :an enterprise or industry or group of enterprises or industries

Prohibited subsidies [Red-light subsidies] (Part II)

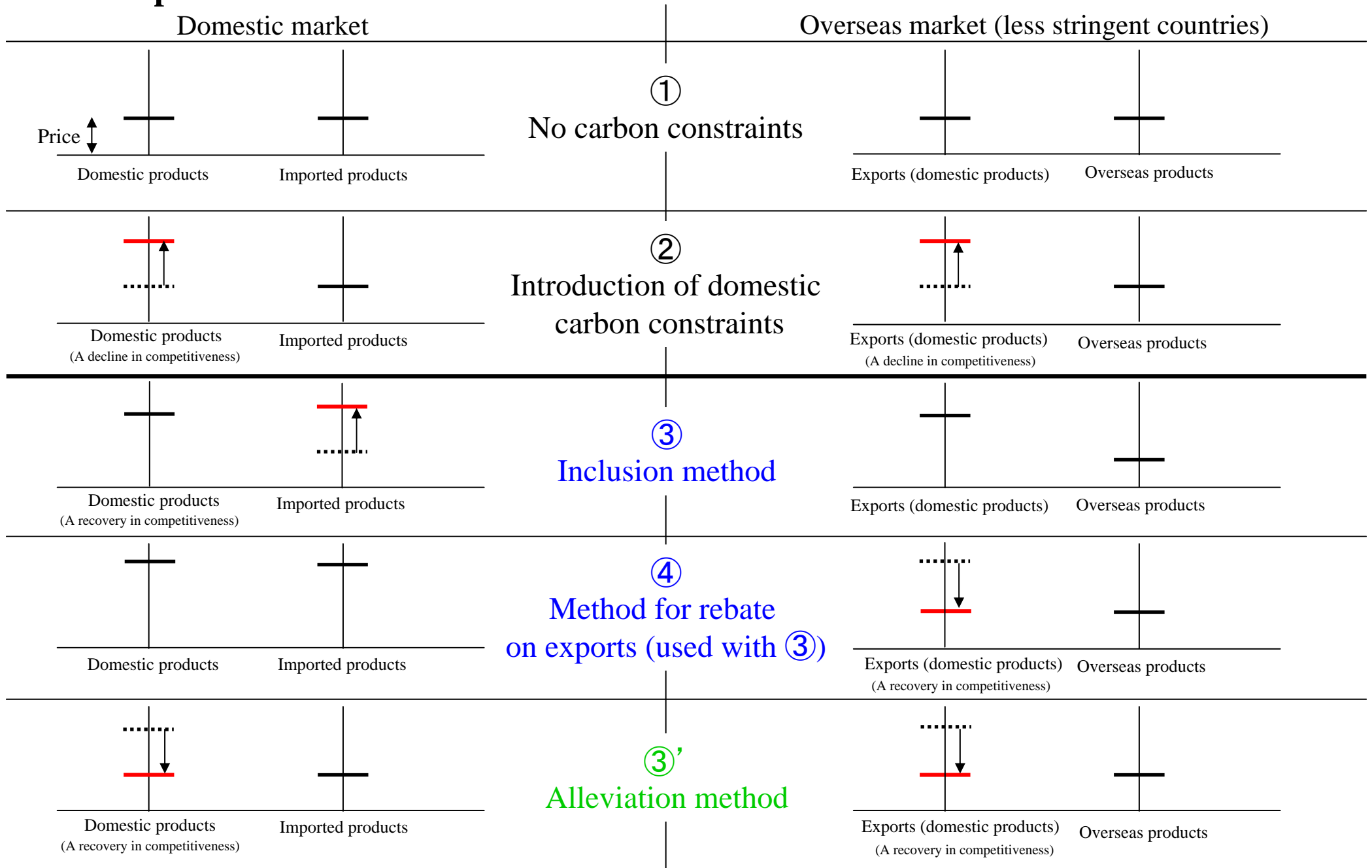
Within the meaning of Article 1, subsidies contingent upon export performance (export subsidies), subsidies contingent upon the use of domestic over imported goods. (Article 3.1)

Actionable subsidies [Yellow-light subsidies] (Part III)

Where a panel report or an Appellate Body report is adopted in which it is determined that any subsidy has resulted in adverse effects to the interests of another Member, the Member granting or maintaining such subsidy shall take appropriate steps to remove the adverse effects or shall withdraw the subsidy. (Article 7.8)

In the event the Member has not taken appropriate steps to remove the adverse effects of the subsidy or withdraw the subsidy within six months, and in the absence of agreement on compensation, the DSB shall grant authorization to the complaining Member to take countermeasures, commensurate with the degree and nature of the adverse effects determined to exist. (Article 7.9)

The primary effect of carbon leakage measures on the international competitiveness of domestic industries in domestic and overseas markets



The primary effect of carbon leakage measures on import substitution/overseas transfer

Inclusion method (border tax adjustments at the time of import/surrender of emission allowances, etc.)		Import substitution by products from less stringent regulation countries	Overseas transfer to less stringent regulation countries
		Increase in the price of imported products in the domestic market ⇒ Import substitution will be restrained.	Decline in the price competitiveness of domestic products in overseas markets due to increase in domestic production cost ⇒ Incentive to overseas transfer will remain. However, incentive to overseas transfers that aim for reverse importing will be restrained.
(2) Method for mitigating costs for certain domestic products	Alleviation method (reduction or exemption of internal tax/the provision of free emission allowances)	Reduction of domestic production cost and keeping the price competitiveness of domestic products in the domestic market ⇒ Import substitution will be restrained.	Reduction of domestic production cost and keeping the price competitiveness of domestic products in overseas markets ⇒ Incentive to overseas transfer will be restrained.
	Rebate on exports (rebate of internal tax/ rebate of the cost of surrendering emission allowances)		Reduction of domestic production cost and keeping the price competitiveness of domestic products in overseas markets ⇒ Incentive to overseas transfer will be restrained.

combined

(footnote) In case of markets in stringent regulation countries, carbon leakages will not arise if domestic adjustment measures are not implemented there, and inclusion method, however, can bear double burden if products of targeted countries are exported. When exporting, double burden may be avoided and the international competitiveness of the same countries' products may be ensured by using rebates on exports with it. On the other hand, alleviation method will not bear double burden, and will ensure the international competitiveness of the same countries' products.

The primary effect of carbon leakage measures on each industrial sectors (footnote1)

	Effect on participating domestic industries		Effect on non-participating domestic industries		Effect on competing industries in less stringent regulation countries	
	Environmental policy perspective	Industrial policy perspective	Environmental policy perspective	Industrial policy perspective	Environmental policy perspective	Industrial policy perspective
Inclusion method	<p>【Positive effect on environment】</p> <ul style="list-style-type: none"> • Carbon leakage can be partially avoided. • Incentive can remain for participating domestic industries to reduce carbon emissions through maintaining domestic emission regulations. 	<p>【Positive effect on participating domestic industries】</p> <ul style="list-style-type: none"> • International competitiveness can be ensured in the domestic market. • International competitiveness may not be ensured in the overseas market (less stringent regulation countries). 	<p>【Positive effect on environment】</p> <ul style="list-style-type: none"> • Carbon emissions of the entire domestic industries can be restrained through spilling over of the price increase of imported products to the downstream industries. 	<p>【Negative effect on non-participating domestic industries】</p> <ul style="list-style-type: none"> • Broad downstream industries including industries with a few carbon emissions, will burden the price increase of imported products. 	<p>【Positive effect on environment】</p> <ul style="list-style-type: none"> • Carbon emissions will be reduced owing to restraint on carbon leakage. • Incentive can be provided for competing overseas industries to reduce carbon emissions, depending on the designing of the scheme. 	<p>【Negative effect on competing industries in less stringent regulation countries】</p> <ul style="list-style-type: none"> • Export will be restrained in less stringent regulation countries (production will decrease).
Rebate on exports	<p>【Positive/negative effect on environment】</p> <ul style="list-style-type: none"> • Prevention of the leakage in above method is reinforced. • There is a possibility that incentive for participating domestic industries to reduce carbon emissions is dampened and domestic carbon emissions are not restrained. 	<p>【Positive effect on participating domestic industries】</p> <ul style="list-style-type: none"> • International competitiveness can be ensured in the overseas market (less stringent regulation countries). 	—	<p>【Negative effect on non-participating domestic industries】</p> <ul style="list-style-type: none"> • Non-participating domestic industries may burden emission costs equivalent to the rebate. (footnote 3) 	—	<p>【Negative effect on competing industries in less stringent regulation countries】</p> <ul style="list-style-type: none"> • The international competitiveness of competing domestic industries in less stringent regulation countries may decline.
Alleviation method	<p>【Positive/negative effect on environment】</p> <ul style="list-style-type: none"> • Carbon leakage can be prevented. • There is a possibility that incentive for participating domestic industries to reduce carbon emissions is dampened and domestic carbon emissions are not restrained. 	<p>【Positive effect on participating domestic industries】</p> <ul style="list-style-type: none"> • International competitiveness can be ensured in the domestic market. • International competitiveness can be ensured in the overseas markets (less stringent regulation countries). • Participating domestic industries do not burden costs caused by domestic emission regulations. 	<p>【Negative effect on environment】</p> <ul style="list-style-type: none"> • There is a possibility that the carbon emissions of the entire domestic industries are not restrained through spilling over of the price decrease of domestic products to the downstream industries. (footnote 2) 	<p>【Positive/negative effect on non-participating domestic industries】</p> <ul style="list-style-type: none"> • Downstream industries will enjoy the price decrease of domestic products. (footnote 2)) • Non-participating domestic industries will have to bear the burden of emitting carbon which are not burdened by participating domestic industries as a result of free allocation of emission allowances for participating ones. (Footnote 3) 	<p>【Positive/negative effect on environment】</p> <ul style="list-style-type: none"> • Carbon emissions will be reduced owing to restraint on carbon leakage. • Incentive cannot be provided for competing overseas industries to reduce carbon emissions. 	<p>【Negative effect on competing industries in less stringent regulation countries】</p> <ul style="list-style-type: none"> • Export will be restrained in less stringent countries (production will decrease).

(footnote 1)Assessment of policy effect of carbon leakage measures is based on comparison with situations in which carbon leakage measures are not implemented while domestic carbon regulations are implemented.

(footnote 2)In case that participating domestic industries do not pass on market selling values of free emission allowances (opportunity costs) through the product price.

(footnote 3)In case of preventing increase in entire domestic carbon emissions.

WTO Members' Proposal in the WTO Doha Round

- In April 2007, Japan and other eight developed countries/regions proposed a co-sponsored list of environmental goods **including renewable energy-related products** as well as pollution prevention products (the list was proposed again in October 2009). In February 2010, Japan proposed a list of energy efficient goods.
- **Prospect of the negotiations has been uncertain** because of not only conflicts between developed and developing countries but less progress in entire negotiations of the Doha Round.

Proposals about approaches

Proposing countries/group	Substance of proposals
Friends of environmental goods (footnote)	Proposing an environmental goods list as a basis for the negotiations (list approach)
Brazil	The determination of environmental goods (biofuels) by request/offer approach
Argentina and India	The reduction/elimination of tariffs on goods imported by entities that are involved in environmental activities (air pollution control, waste water treatment, etc) (project approach)
Argentina	The reduction/elimination of tariffs on goods used in projects under the Kyoto Protocol's "Clean Development Mechanism" (project approach)

(footnote) Nine developed countries/regions (i.e. Japan, the U.S, EU, Canada, New Zealand, Switzerland, Norway, Korea and Chinese Taipei)

Proposals about environmental goods lists

Proposing countries/group	Substance of proposals
Friends of environmental goods	Renewable energy-related products, pollution prevention products, etc 153 items
Japan	Energy efficient goods 53 items
Philippines	Renewable energy-related goods, etc 17 items
Saudi Arabia	Carbon capture and storage related goods, goods that are related to gas flaring emission reduction technologies (those that undergo the incineration treatment), etc 263 items
Peru	Organically-grown agricultural goods produced with environmentally-friendly method