

Output-Based Rebates

For Energy-Intensive Manufacturers:

“Don’t Move – Improve.”

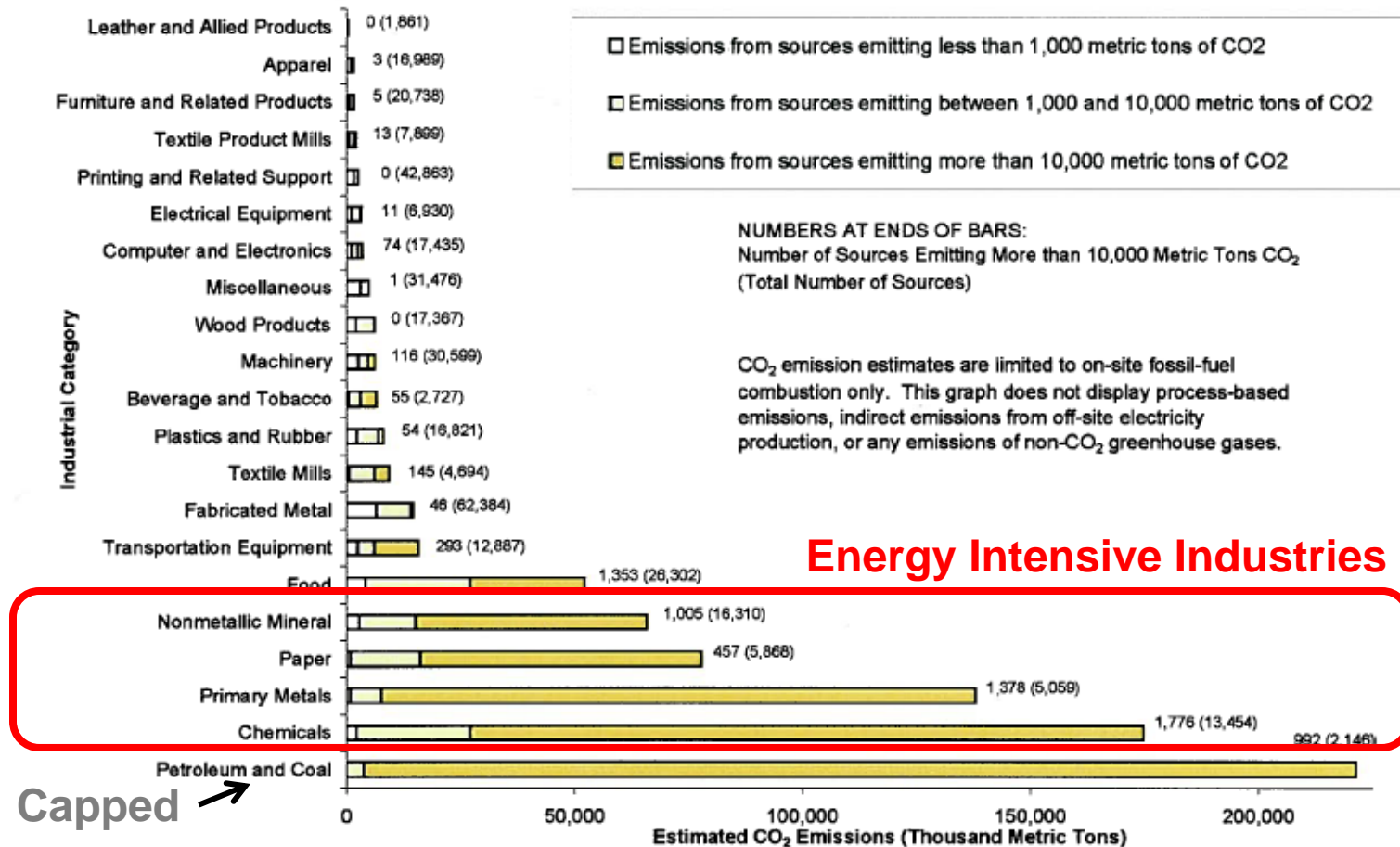
May 5, 2009

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Most of the Industrial GHG Emissions Covered by a Cap-and-Trade Policy are in 5 Sub-Sectors

Figure 7: Large Emitters of CO₂ from Fossil Fuel Combustion in Each Manufacturing Industry



Data taken from West and Peira, "Determining Thresholds for Mandatory Reporting of Greenhouse Gas Emissions," *Environmental Science & Technology*, Vol. 37, No. 6, 2003

As U.S. Industries Pass New Costs on to Customers, Two Effects:

- ✓ 1. Consumers rationalize use in response to higher prices
 - Example: Use less steel. Eliminate waste and substitute with less energy-intensive materials.

- ✗ 2. Consumers substitute for cheaper sources of supply
 - Example: Avoid paying the higher cost by purchasing more steel from foreign sources.

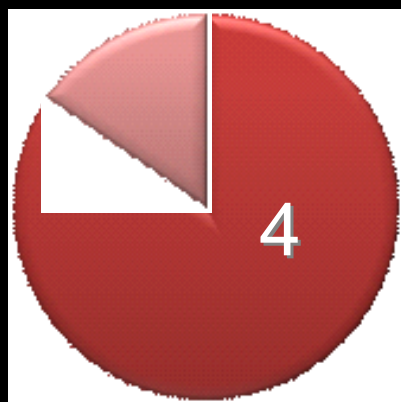
Concentration of Economic Power

Just a few firms control more than half of major energy-intensive subsectors in the U.S.

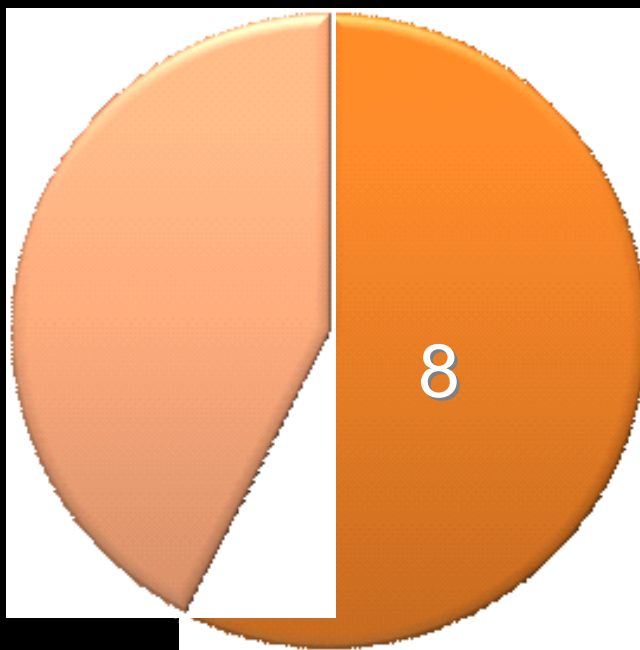
Charts are scaled to relative size of total value shipped in 2002.



Tires



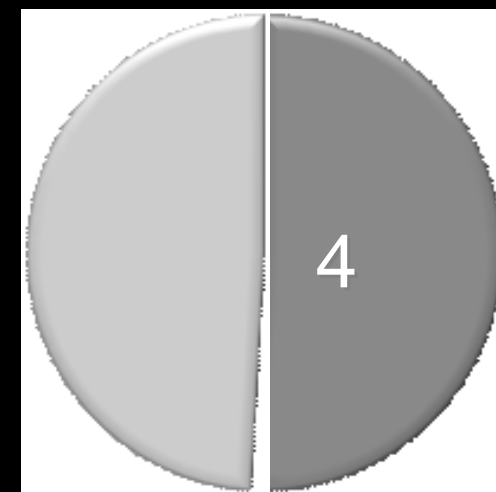
Petrochemicals



Iron & Steel



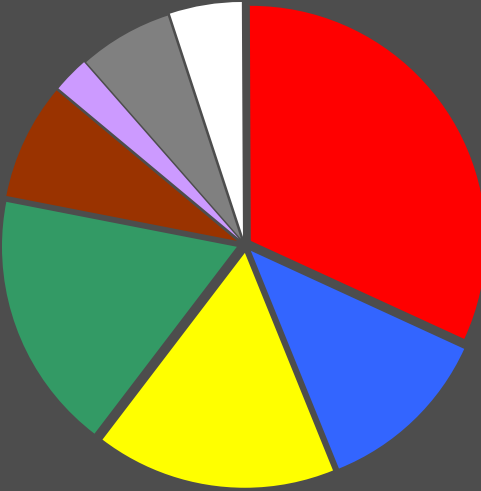
Pulp



Aluminum

Free Allowances in the Lieberman-Warner Bill

2012

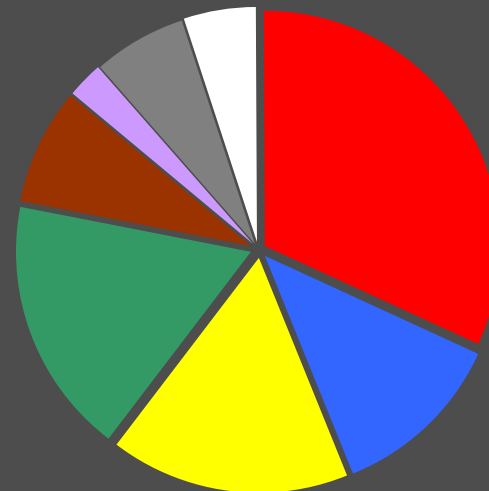


- Unaccounted
- Agency & Budget Deficit
- International Commitments
- Adaptation
- Complementary Policies
- Price Relief
- Job Protection
- Patrons / Opponents

Free Allowances in the Lieberman-Warner Bill

2012 EMISSION ALLOWANCES	
Recipient	%
PREVENTING ECONOMIC HARDSHIP	
Worker Training	1
Carbon Intensive Manufacturing	11
Fossil Fuel-Fired Power Plants	18
Petroleum Refiners	2
Natural Gas Processors	0.75
Financial Relief for Consumers	3.5
Companies That Took Early Action	5
PARTNERSHIPS WITH STATES, LOCALITIES, AND TRIBES	
Electricity and Gas Consumers	12.75
Assisting Transitioning States	3
Mass Transit	1
Energy Efficiency Block Grants	2
Reducing Emissions	4
Adapting to Climate Impacts	3
State and Tribal Wildlife Adaptation	2
EFFICIENCY AND RENEWABLES	
Efficient Buildings	0.75
Efficient Appliances	0.75
Efficient Manufacturing	0.75
Renewable Energy Technology	4
LOW CARBON TECHNOLOGY AND ADVANCED RESEARCH	
Low Carbon Technology	1.75
Advanced Energy Research	0.25
FUTURE OF COAL	
Kick Start for Coal Technology	1
CCS Bonus Allowances	3
FUTURE OF TRANSPORTATION	
Clean Vehicle Fleets	0.5
Advanced Vehicle Technology	1
Cellulosic Biofuels	1
INTERNATIONAL PARTNERSHIPS TO REDUCE EMISSIONS AND ADAPT	
International Forest Protection	1
Technology Transfer	0.5
International Adaptation	1
OTHER PROGRAMS	
U.S. Farmers and Foresters	4.25
Federal Wildlife Adaptation	3
Deficit Reduction	5.75
Agency Funding	0.75

2012



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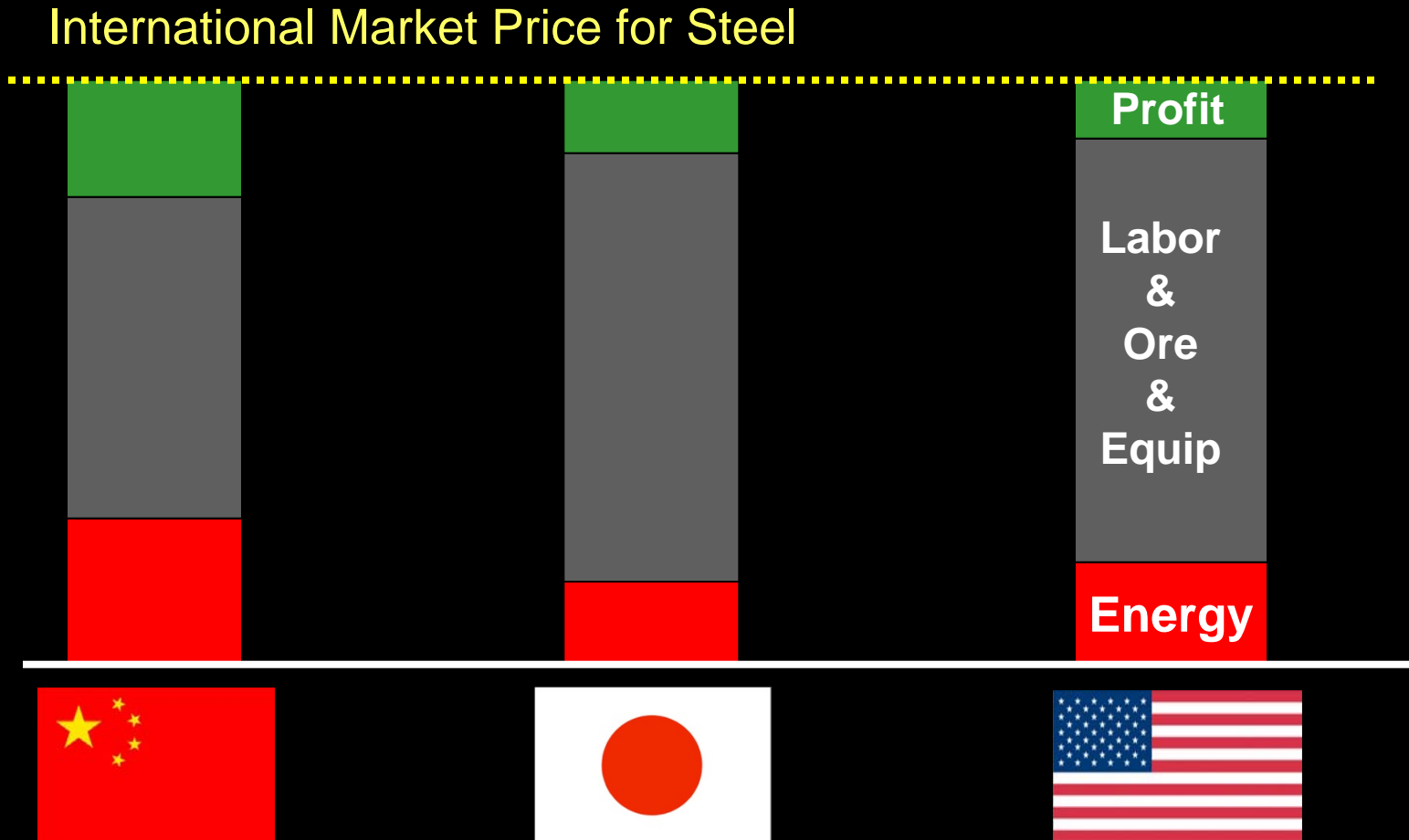
Concerns about Competitiveness

Illustration: Steel



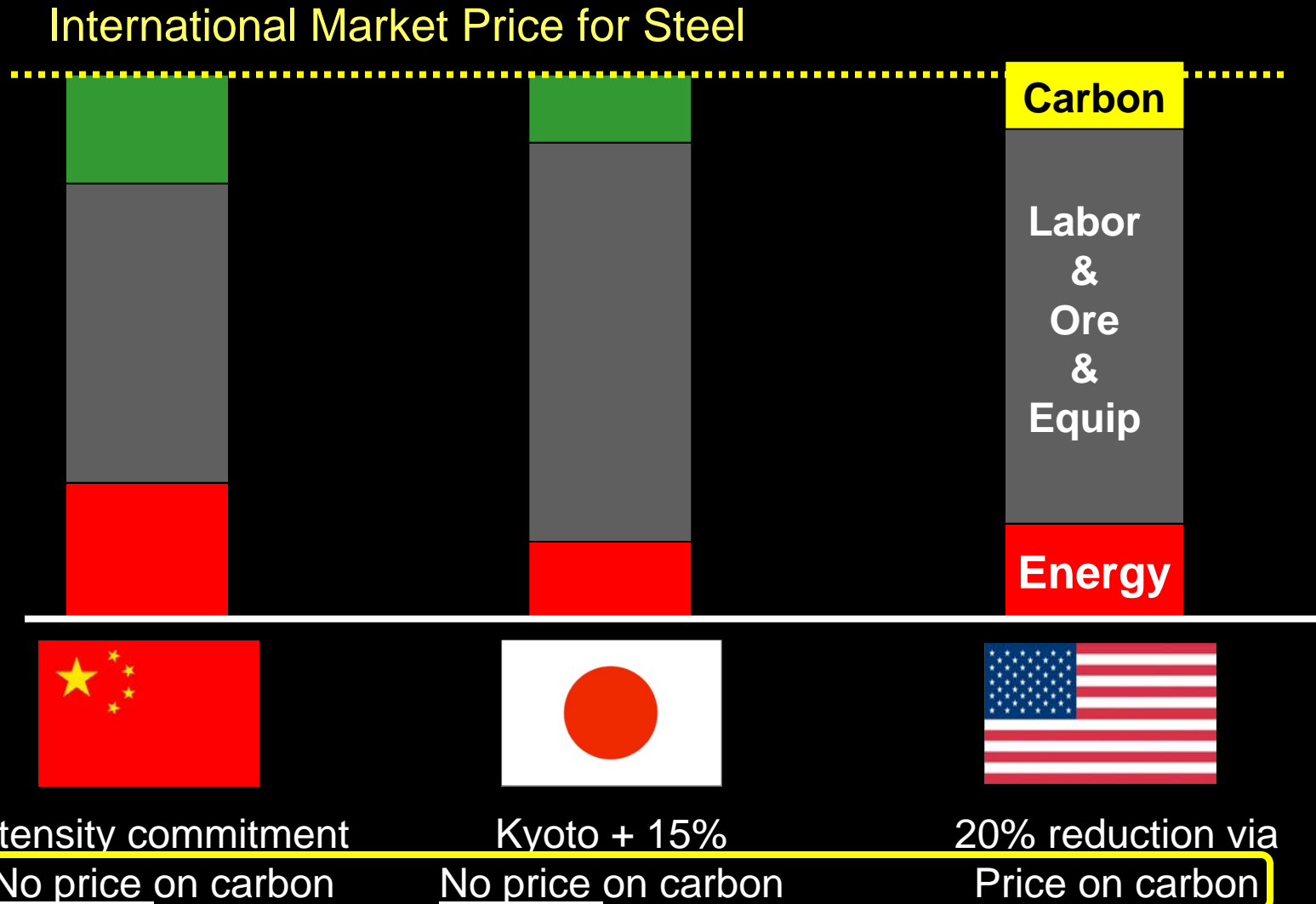
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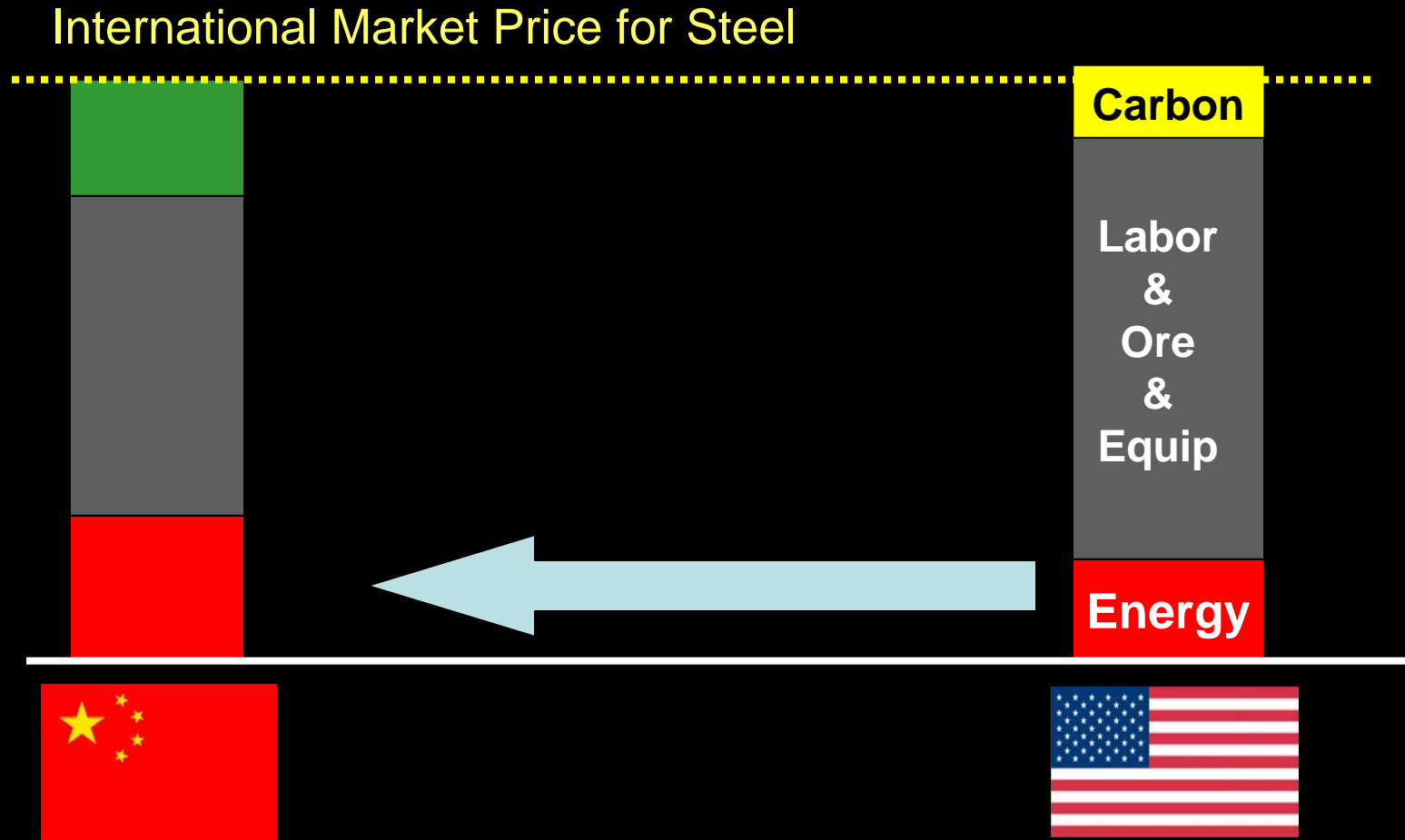
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Concerns about Competitiveness

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Climate Policy

Intensity commitment

No price on carbon

20% reduction via

Price on carbon

Concerns about Competitiveness

Illustration: Steel

International Market Price for Steel



**Climate
Policy**

Intensity commitment

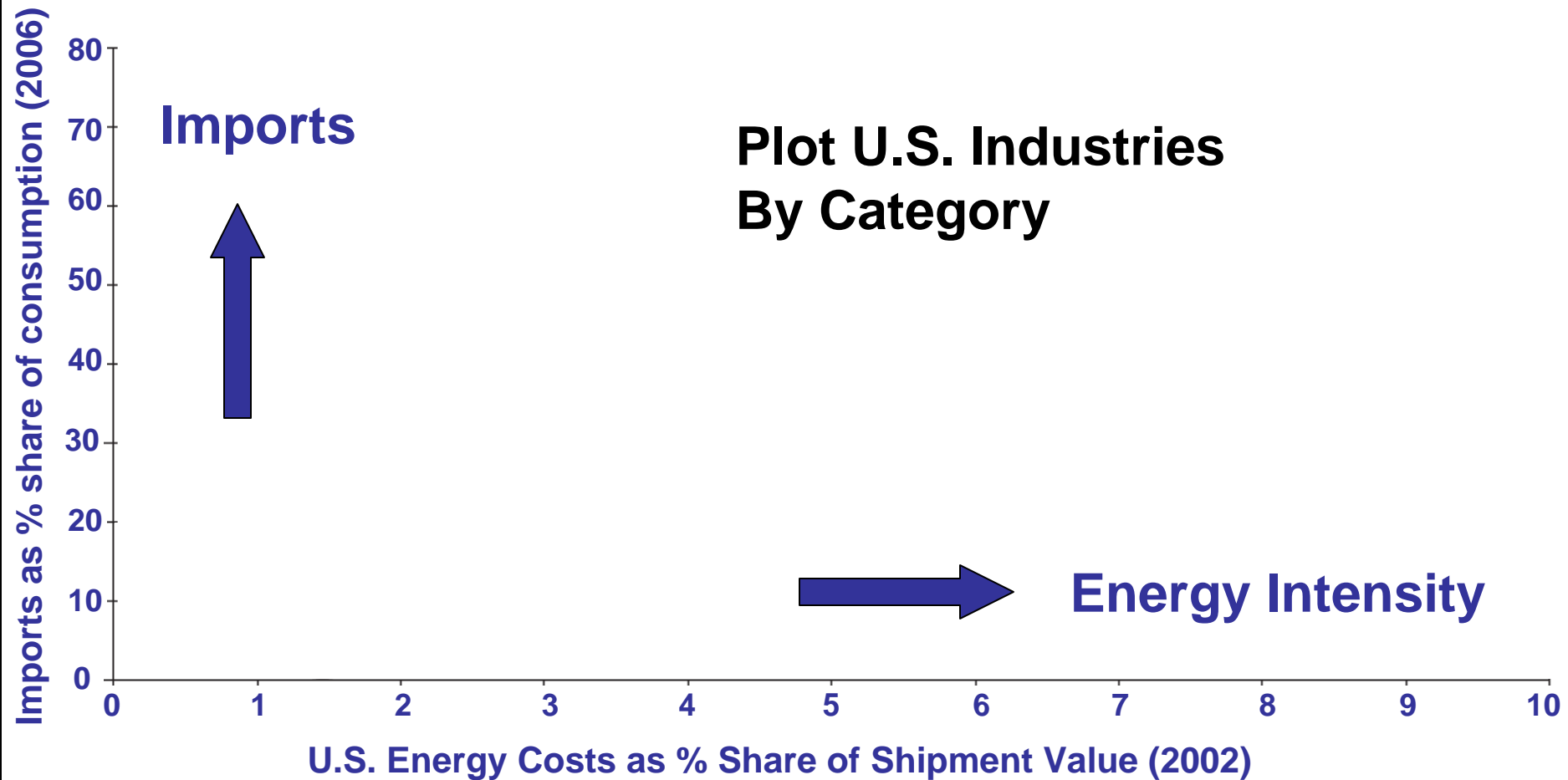
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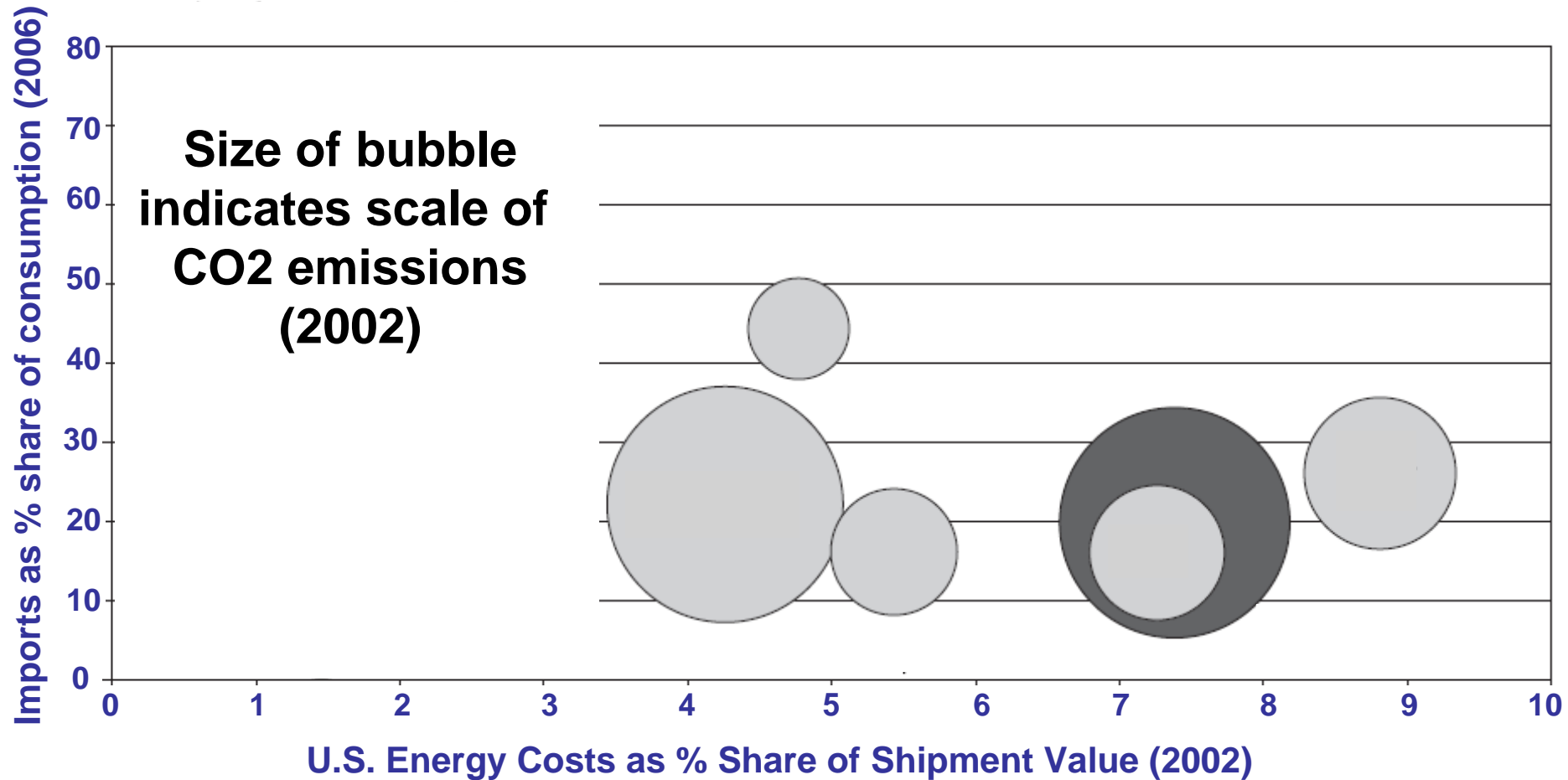
Price on carbon

U.S. Industry Exposure to Competitiveness Concern Due to a Price on Carbon

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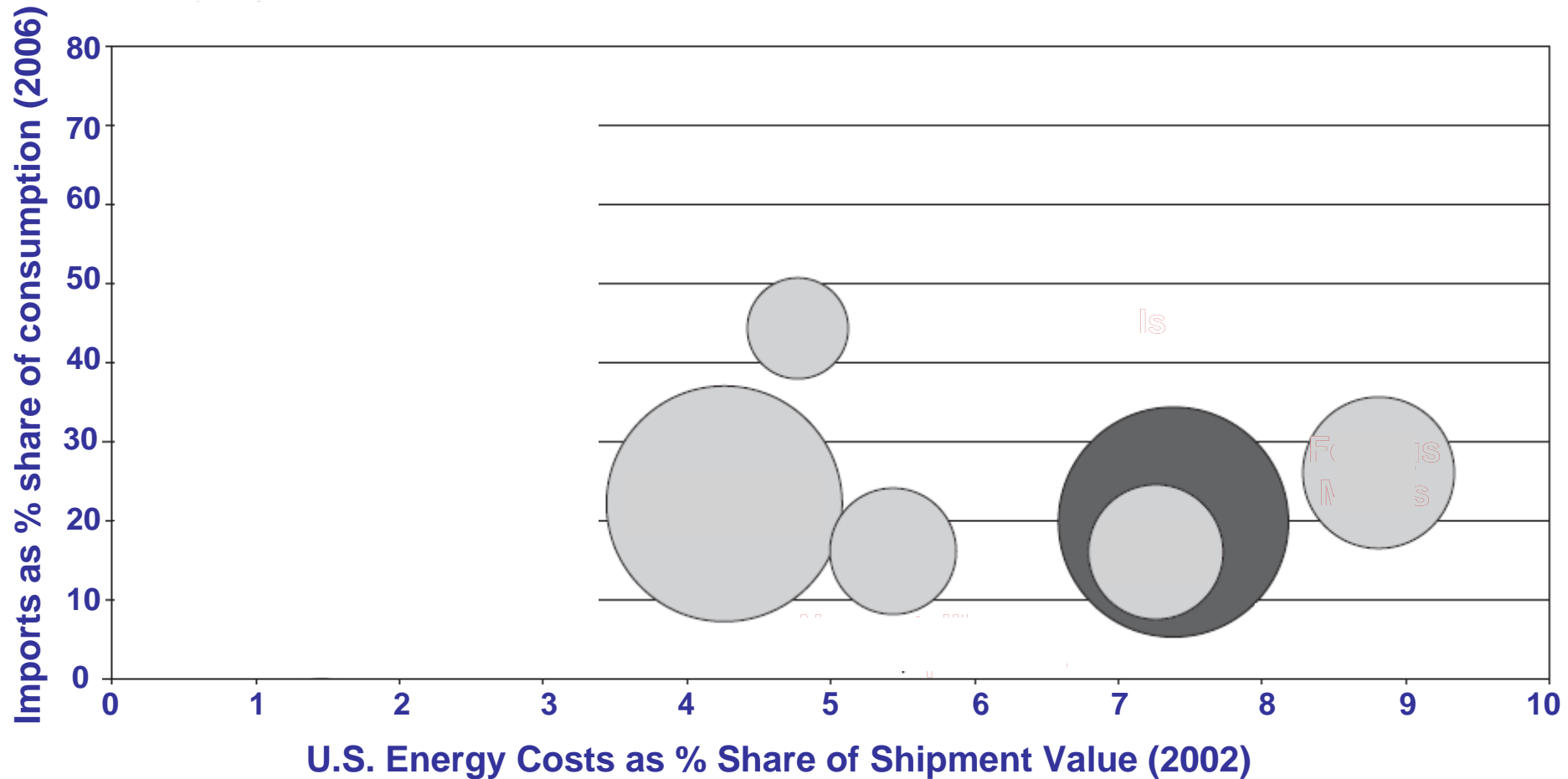
U.S. Industry Exposure to Competitiveness Concern Due to a Price on Carbon



Note: The size of the bubbles indicates the total CO₂ emissions from the industry in 2002.

Sources: US Department of Commerce, Bureau of Economic Analysis, Industry Economic Accounts, 2007; US Department of Energy, Energy Information Administration, Manufacturing Energy Consumption Survey 2002.

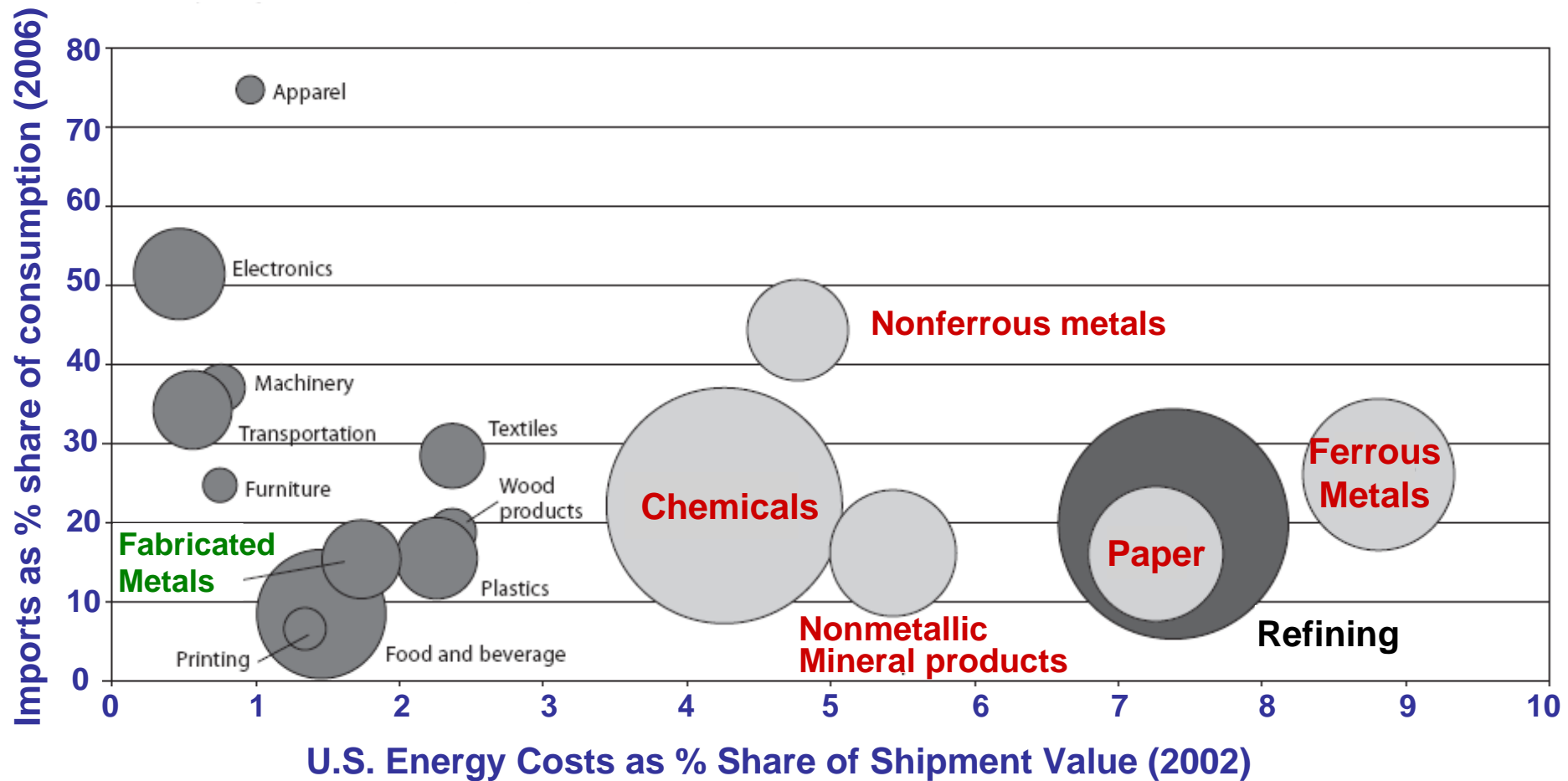
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NAICS Categories and Codes

If there is an international price, suppliers may not be able to pass on additional costs – which causes them to become uncompetitive...

Commodity	Sample International Competitive Price
Aluminum	\$ 0.9029 / lb
Steel – Hot Rolled Coil	\$ 1,093 / metric ton
Pulp	\$ 870 / metric ton
Cement	\$ 92.50 / metric ton
Glass – Float	\$ 250 / metric ton

What should the U.S. do about “competitiveness concerns” raised by a carbon price?

If the U.S. takes action on climate change, foreign competitors will be at an advantage, so we should use a ‘stick’ as a consequence to make them take *comparable action*.

Restricting access to our markets for energy-intensive goods like iron, steel, cement, etc.

What kind of ‘stick’?

I see, so I’m in favor of climate policy, but to protect jobs in our industrial sector, we should insist China and India taking **comparable action**.

This is the rhetorical linkage between **competitiveness** and **developing country commitments**.

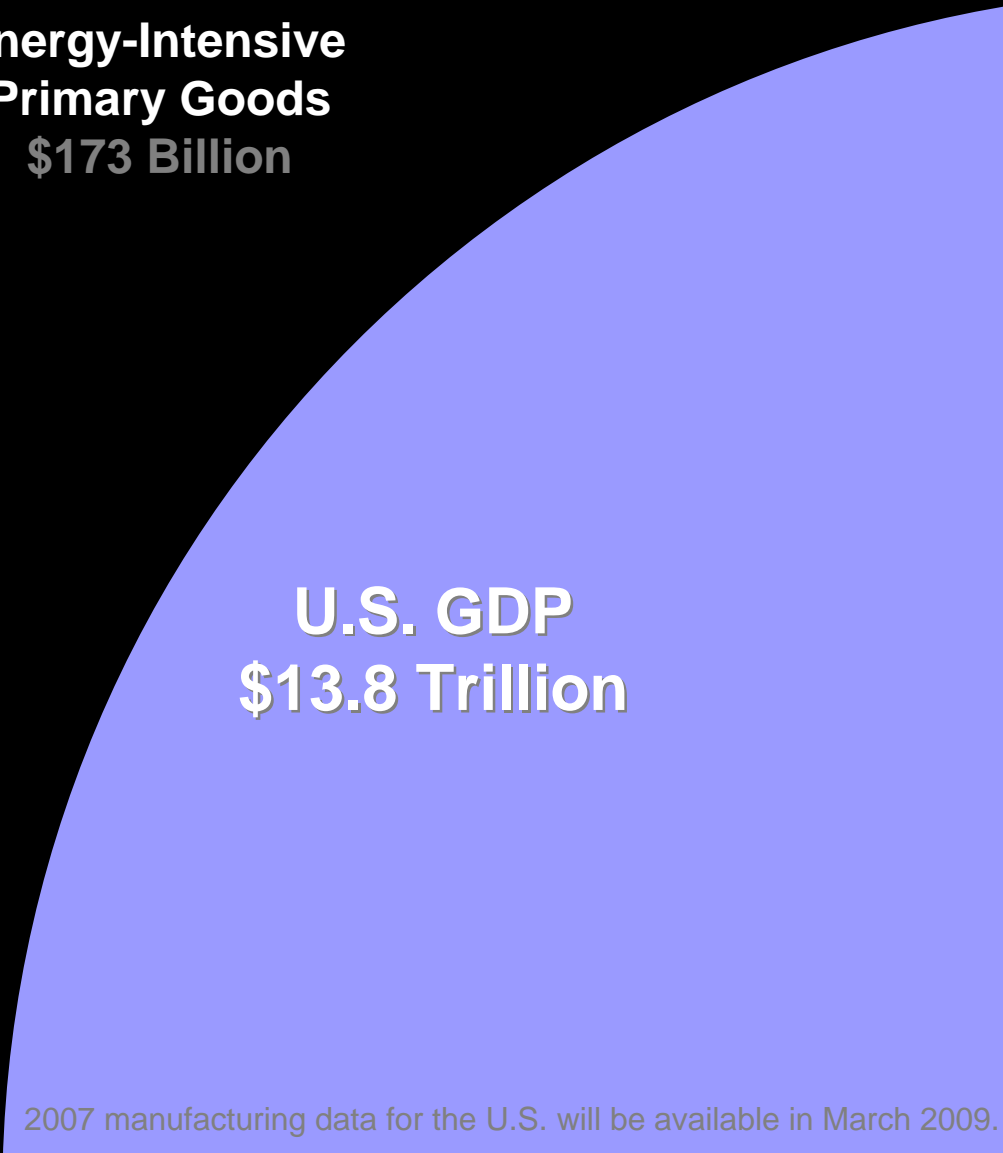
Energy-Intensive Primary Goods in Perspective

U.S. GDP
\$13.8 Trillion

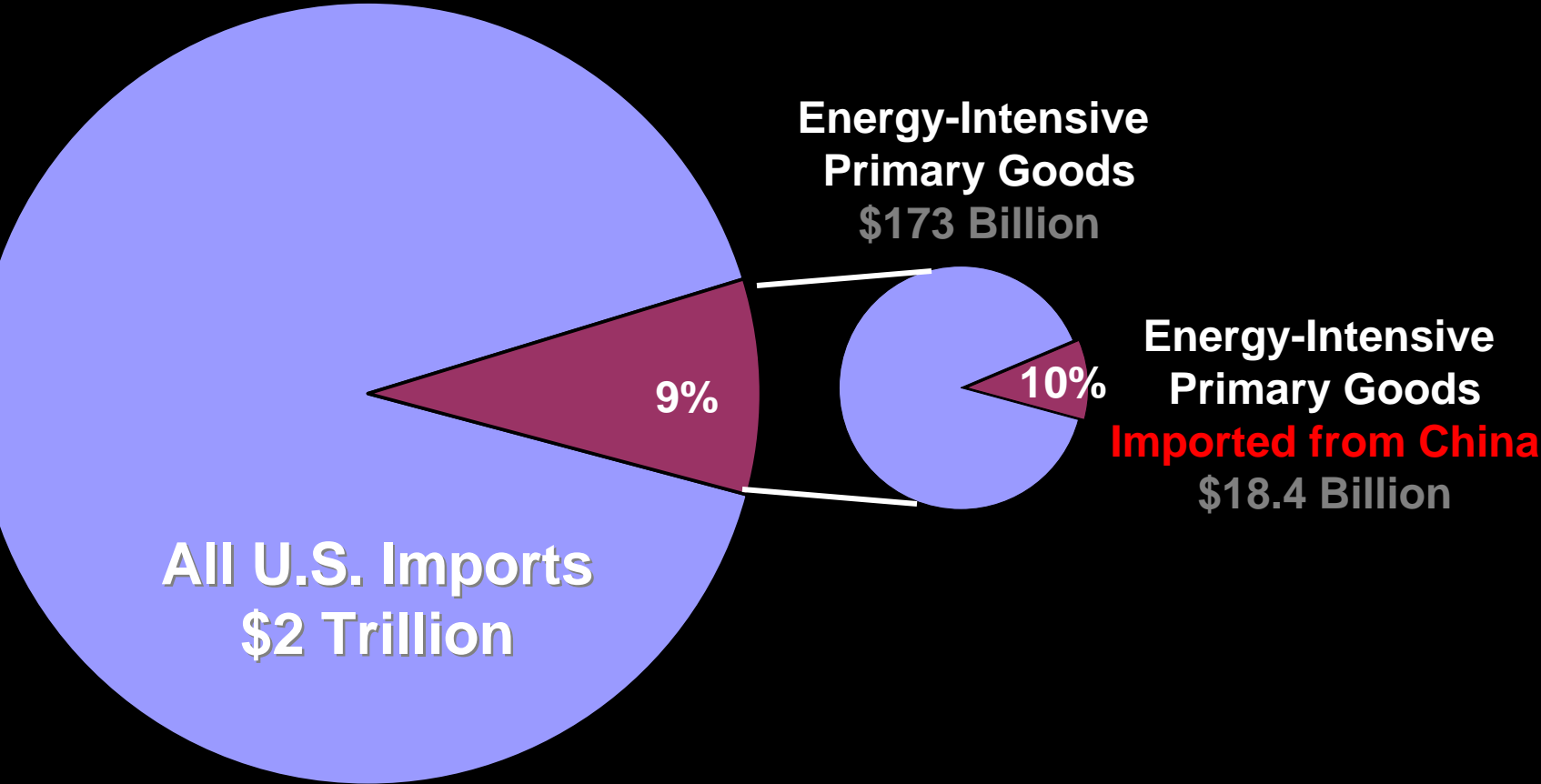
Energy-Intensive Primary Goods in Perspective



**Energy-Intensive
Primary Goods**
\$173 Billion

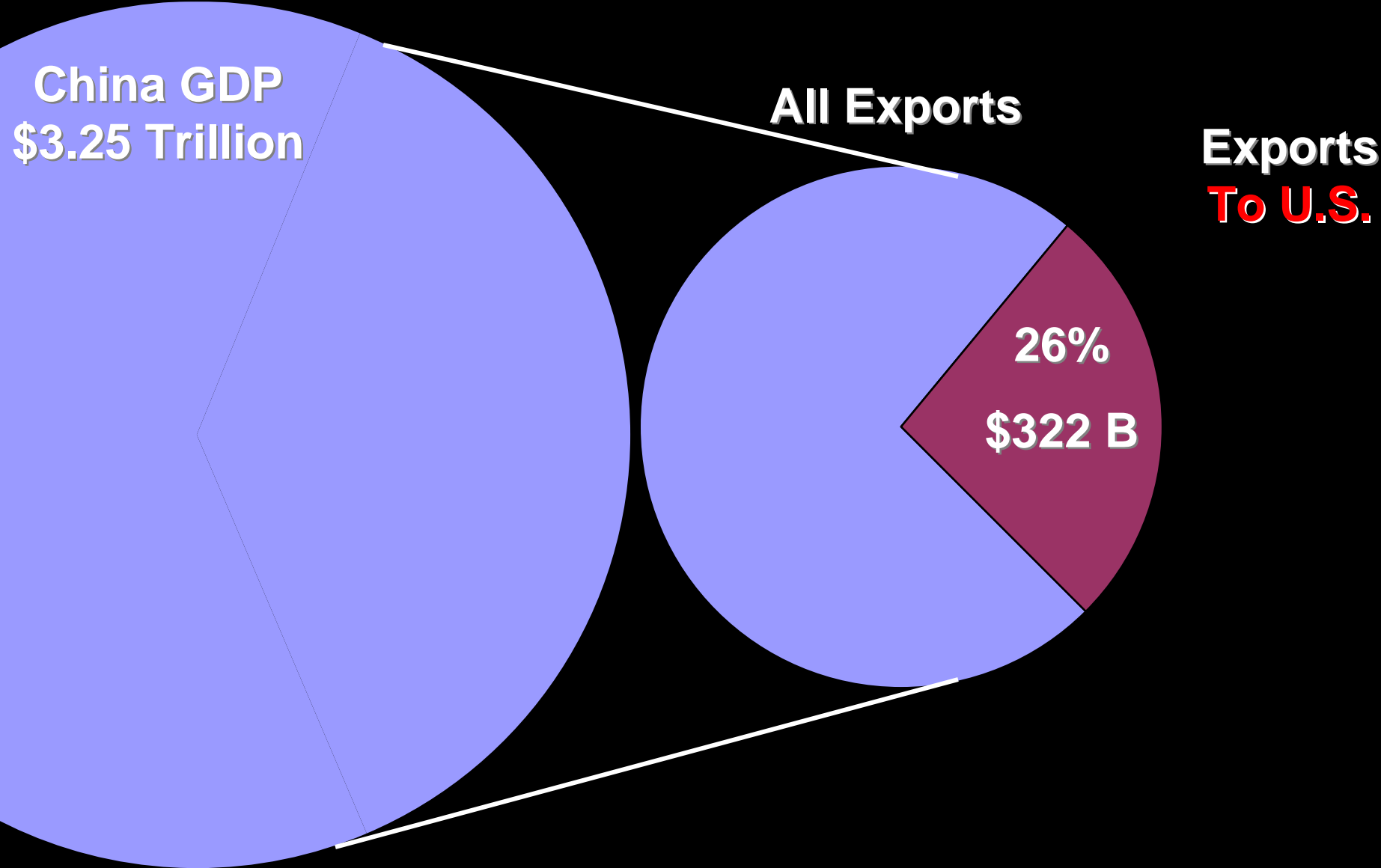


Energy-Intensive Primary Goods in Perspective

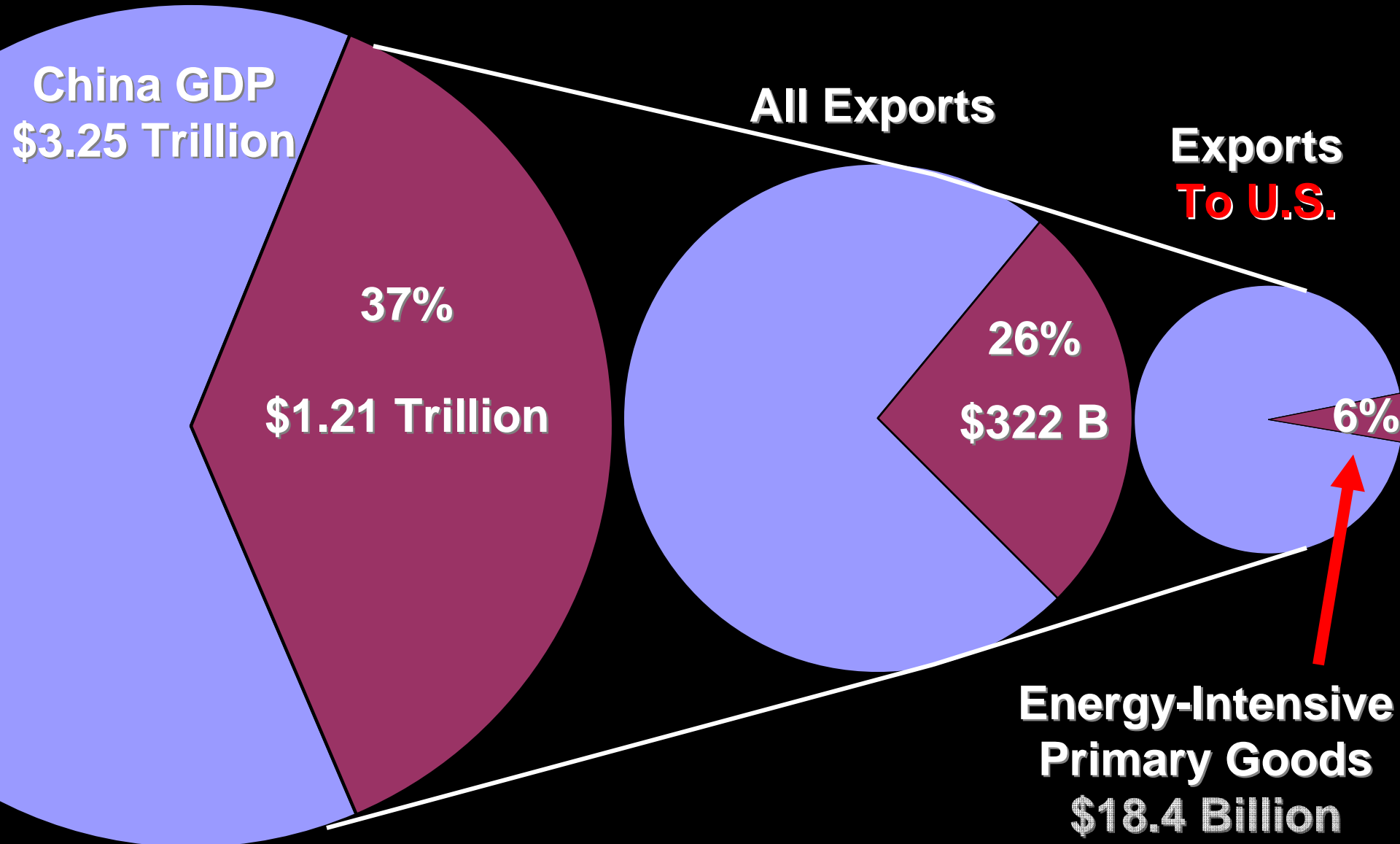


Energy-Intensive Primary Goods in Perspective

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Energy-Intensive Primary Goods in Perspective



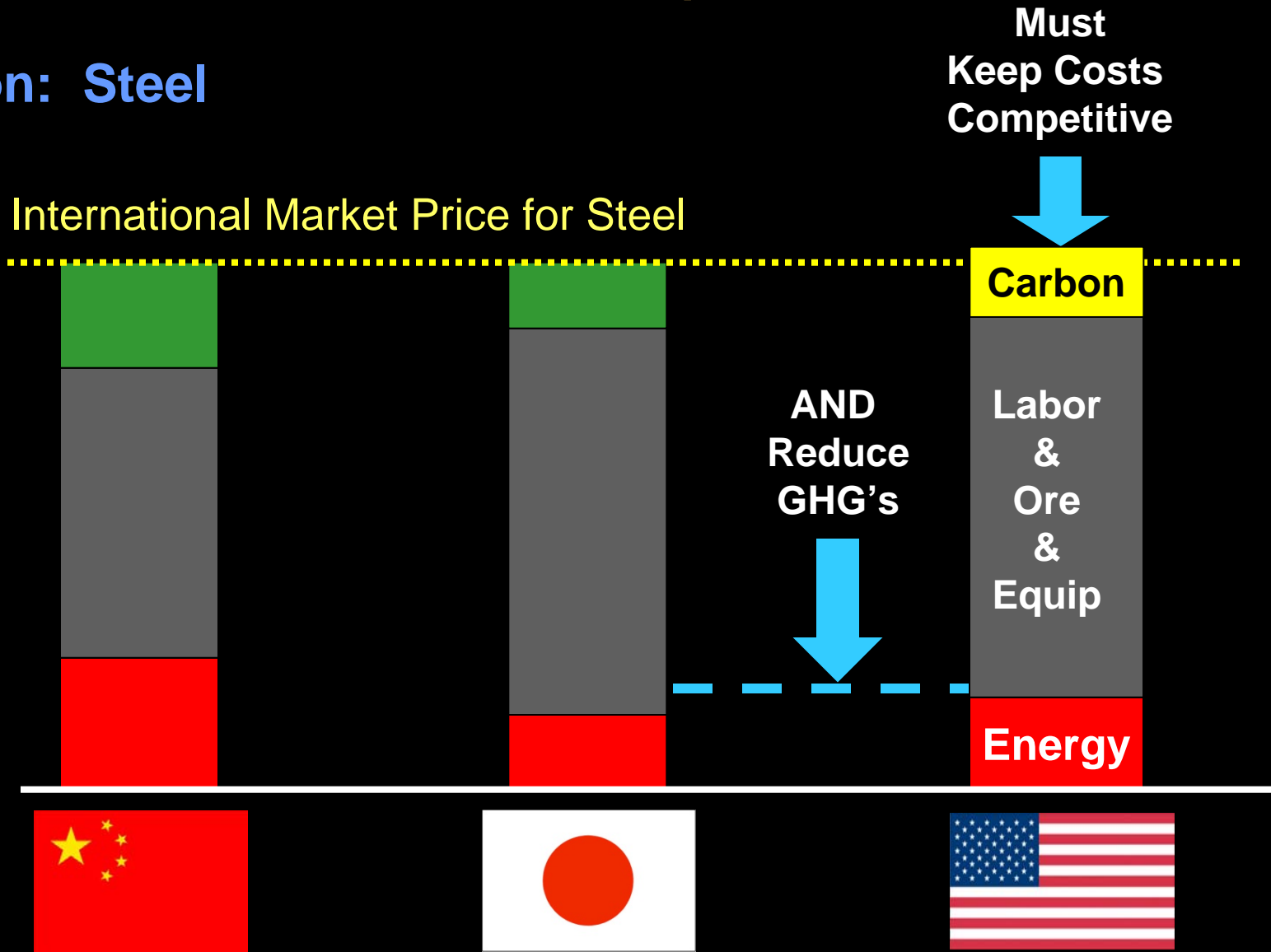
Bottom line:

Linking Competitiveness and Developing Country

Action Makes Both Problems Harder to Address

Concerns about "Competitiveness"

Illustration: Steel



Climate Policy

No price on carbon;
Intensity commitment

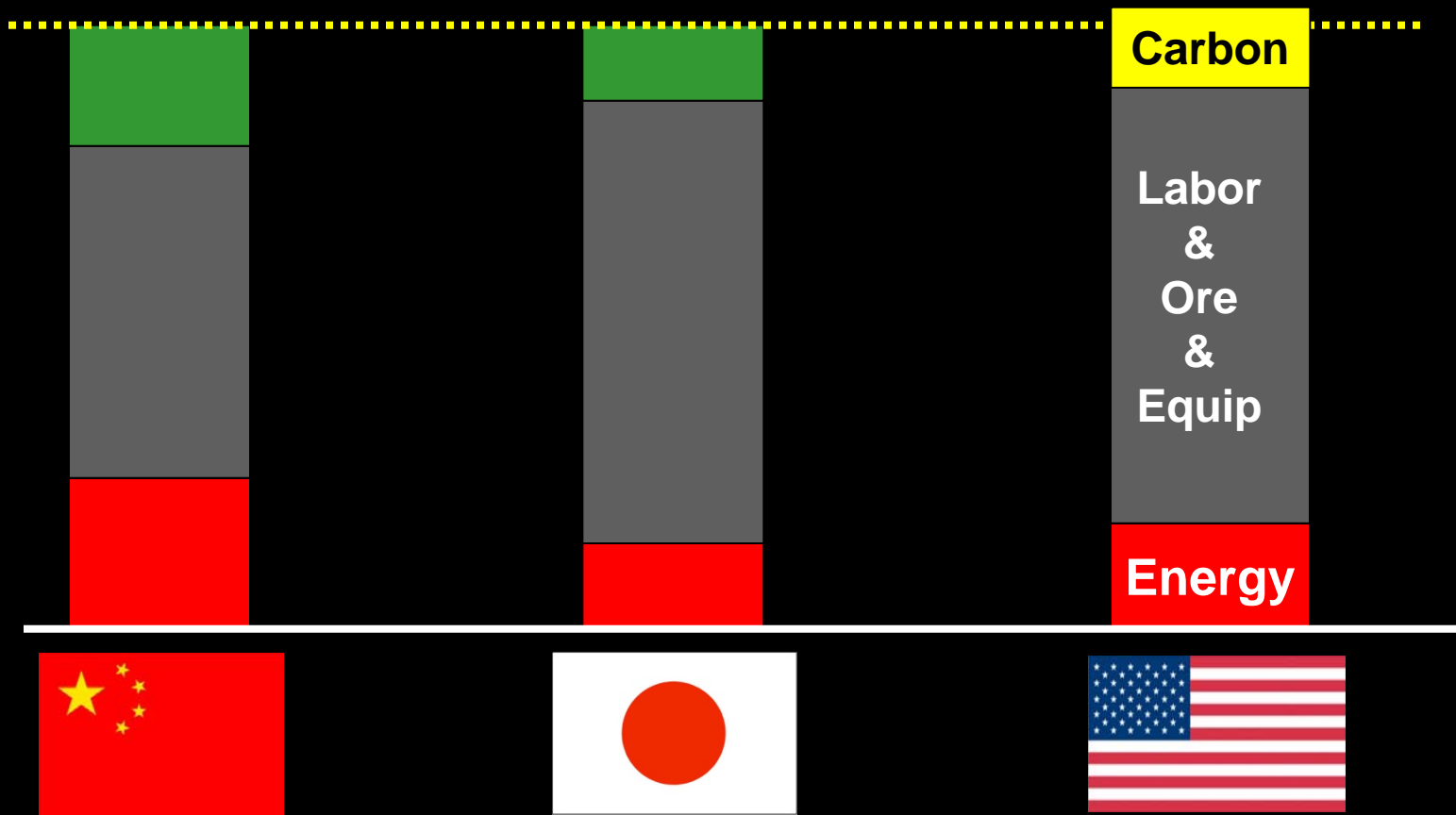
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Kyoto + 15%

Price on carbon;
20% reduction

Concerns about “Competitiveness”

Option A: International Sectoral Agreement

International Market Price for Steel



Climate Policy

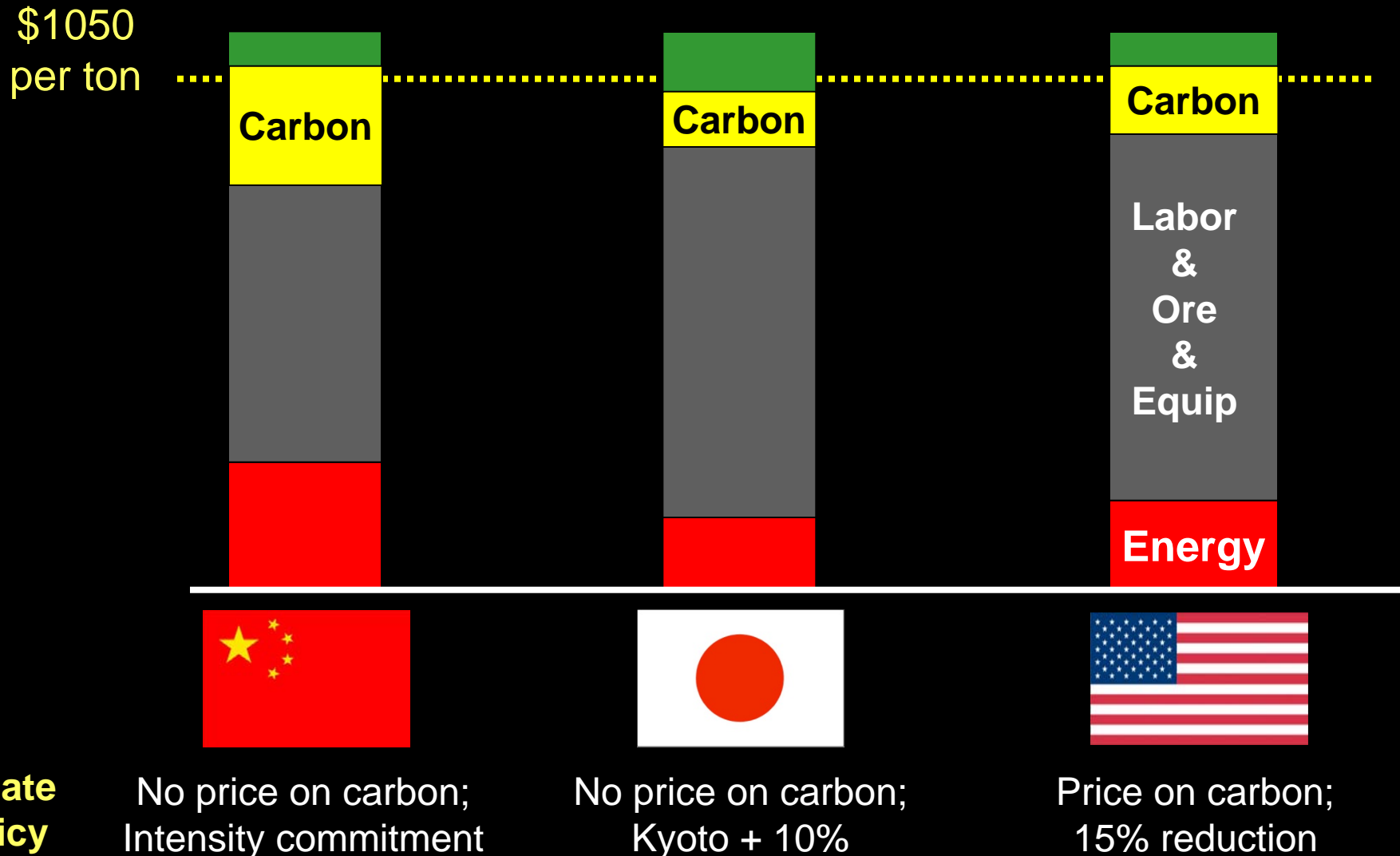
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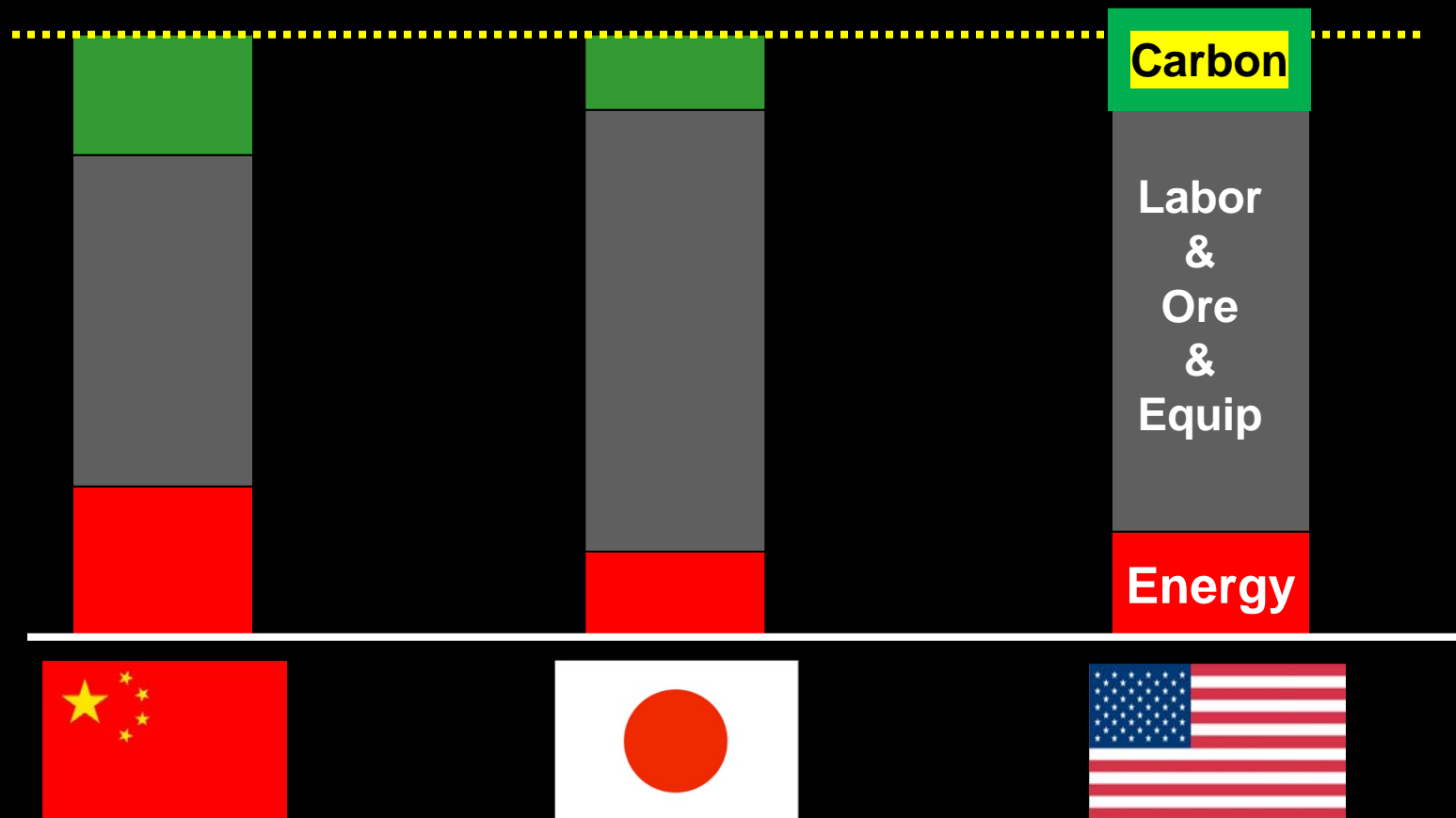
Concerns about “Competitiveness”

Option A: International Sectoral Agreement



Concerns about “Competitiveness”

Option B: Exemption from Carbon Price
(... or free permits of comparable value)



Climate Policy

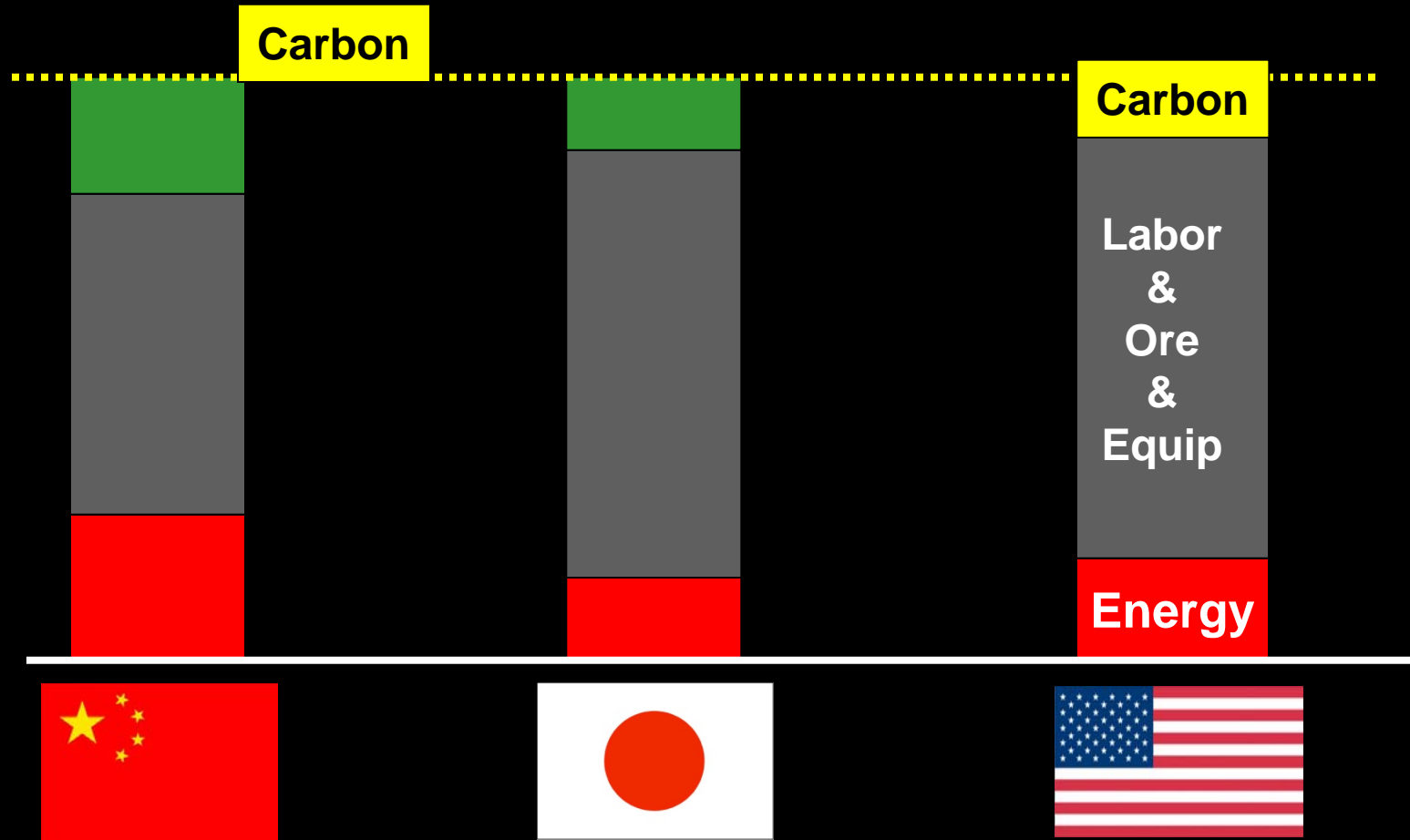
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Concerns about “Competitiveness”

Option C: Border Taxes on Imports from countries that do not take “comparable action”



Climate Policy

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Intensity commitment

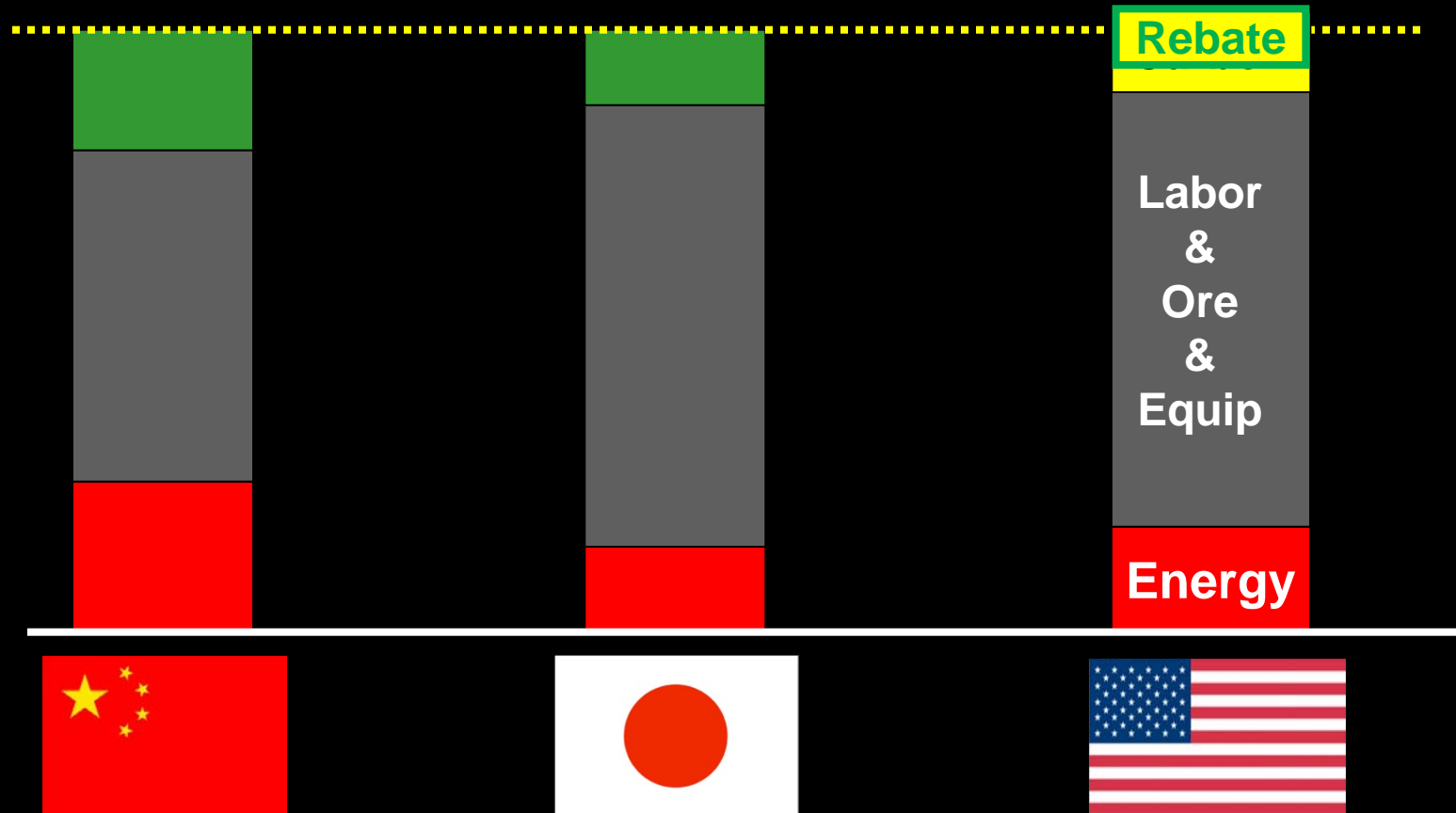
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Concerns about “Competitiveness”

Option D: Output-Based Rebate (or allocation)

Free Allowances Based
on Best Practice (tCO₂/tSteel)



**Climate
Policy**

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Competitiveness Concern:

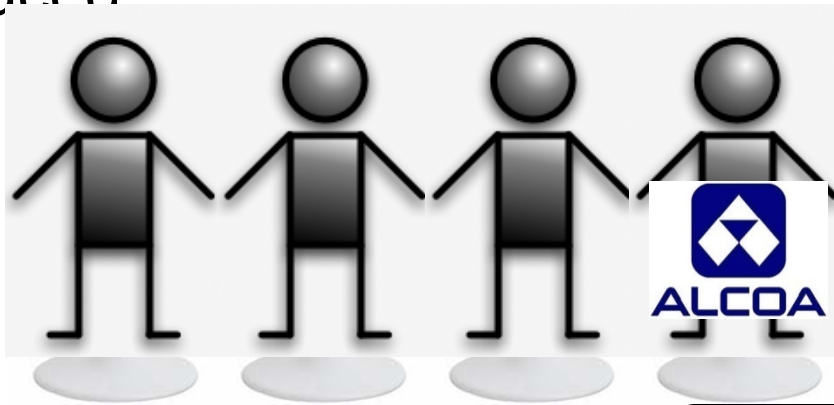
Output-Based Rebates can relax any competitive disadvantage for energy-intensive manufacturers of global commodities (e.g. iron, cement, steel, paper, glass)...

by refunding carbon costs based on (a) actual production and (b) best carbon intensity, motivating all to **improve – not move**.

Competitiveness Concern: Output-Based Rebate

For example, if a steel manufacturer made 3 mtCO₂ tons of pollution for each ton of steel, it would buy 3 'allowances'.

If the industry **best practice** were 2 mtCO₂, it would get a rebate of 2 'allowances' (not 3) for every ton of steel it produced



REBATE

CARBON

PRICE:

\$90

\$90

\$90

\$90 x

Best Practice

Pollution per Output

Actual

Pollution per Output

Competitiveness Concern: Output-Based Rebate:

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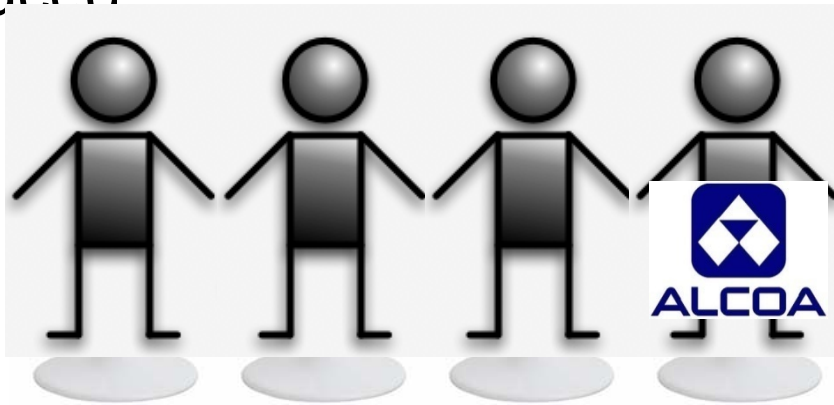
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CARBON

PRICE: \$90 \$90 \$90 \$90 – **\$60** = \$30/tCO₂

Output-Based Rebates

For Energy-Intensive Manufacturers:

“Don’t Move – Improve.”

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