

The Value of Article 6

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How Valuable is Article 6?

What is the potential economic value of implementing Article 6?

- What is the **potential** size of the carbon market?
- Who would be the sellers and who would be the buyers?
- How much could costs be reduced?



Source: https://unfccc.int/files/focus/long-term_strategies/application/pdf/mid_century_strategy_report-final_red.pdf

Potential Economic Value of Article 6

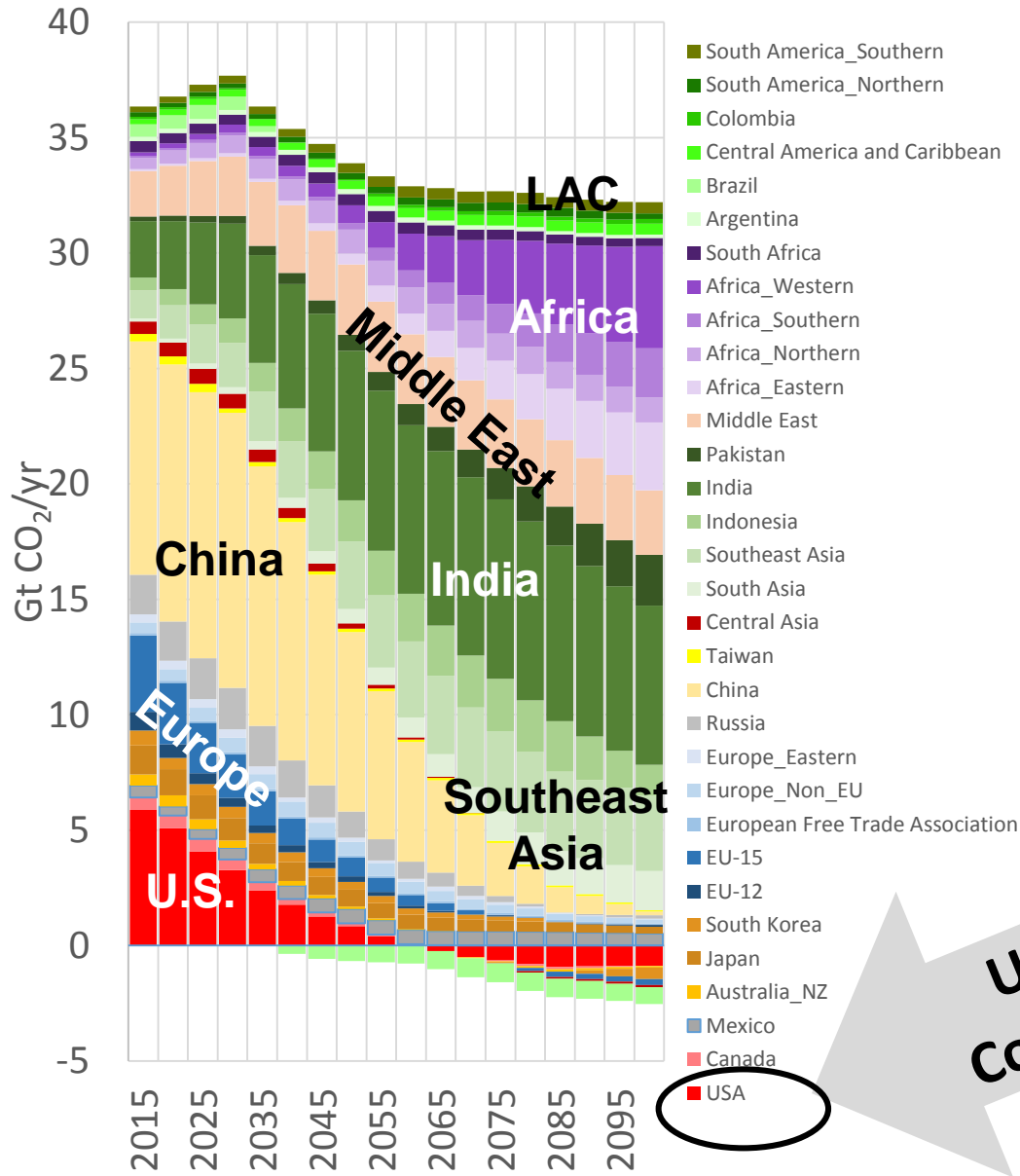
- Article 6 holds significant potential to reduce cost and enhance ambition
 - 2030 ~\$270 billion 2015 US\$
- Everyone could be better off through collaboration
- Realizing this potential is a real-world challenge



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NDC Emissions: Independent Implementation

Global I-NDC Scenario CO₂ Emissions



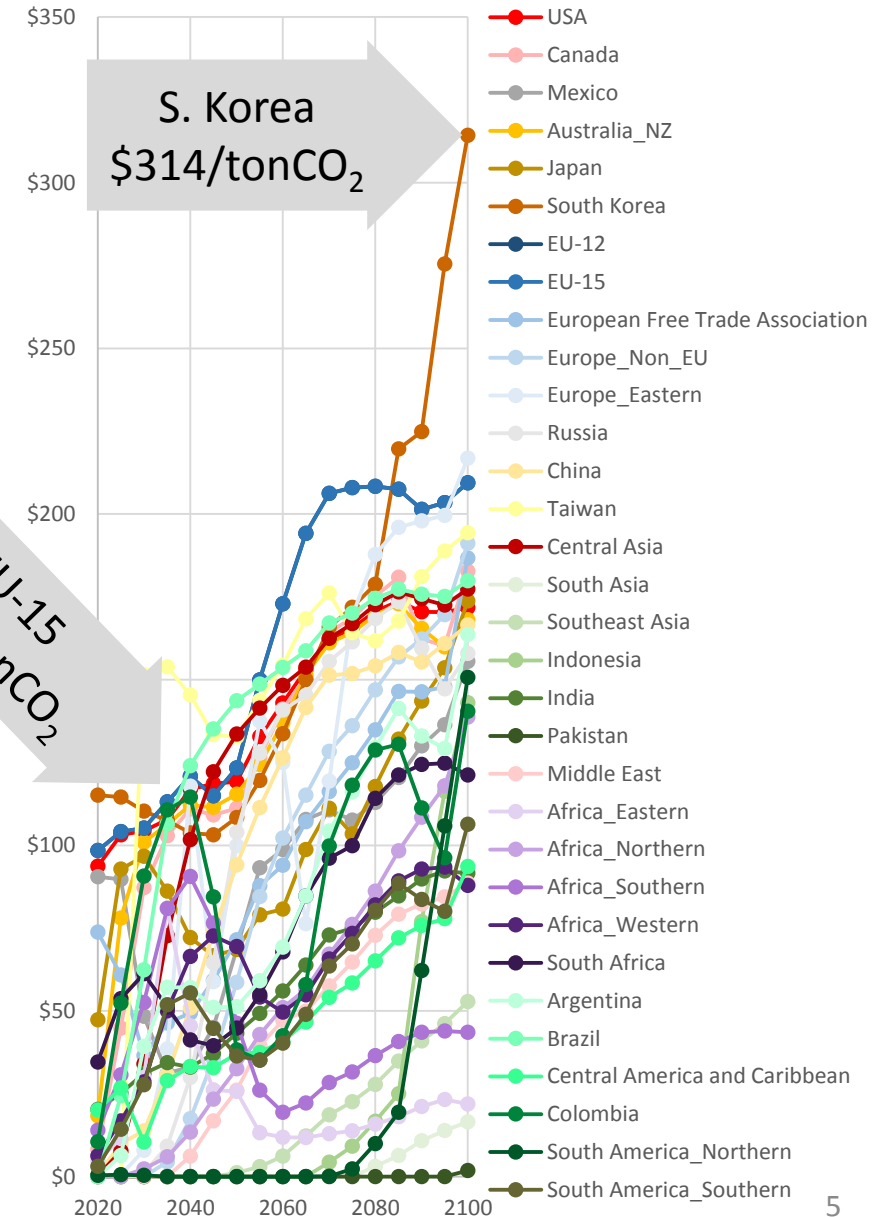
- Geopolitical distribution of emissions evolves over time
- The level of emissions reduction varies by country

NDC Shadow Prices: Independent Implementation

- Wide range in shadow prices

	2030	2050	2100
Independent Implementation	\$0 to \$152/tonCO ₂	\$0 to \$144/tonCO ₂	\$2 to \$314/tonCO ₂

Shadow Price of CO₂

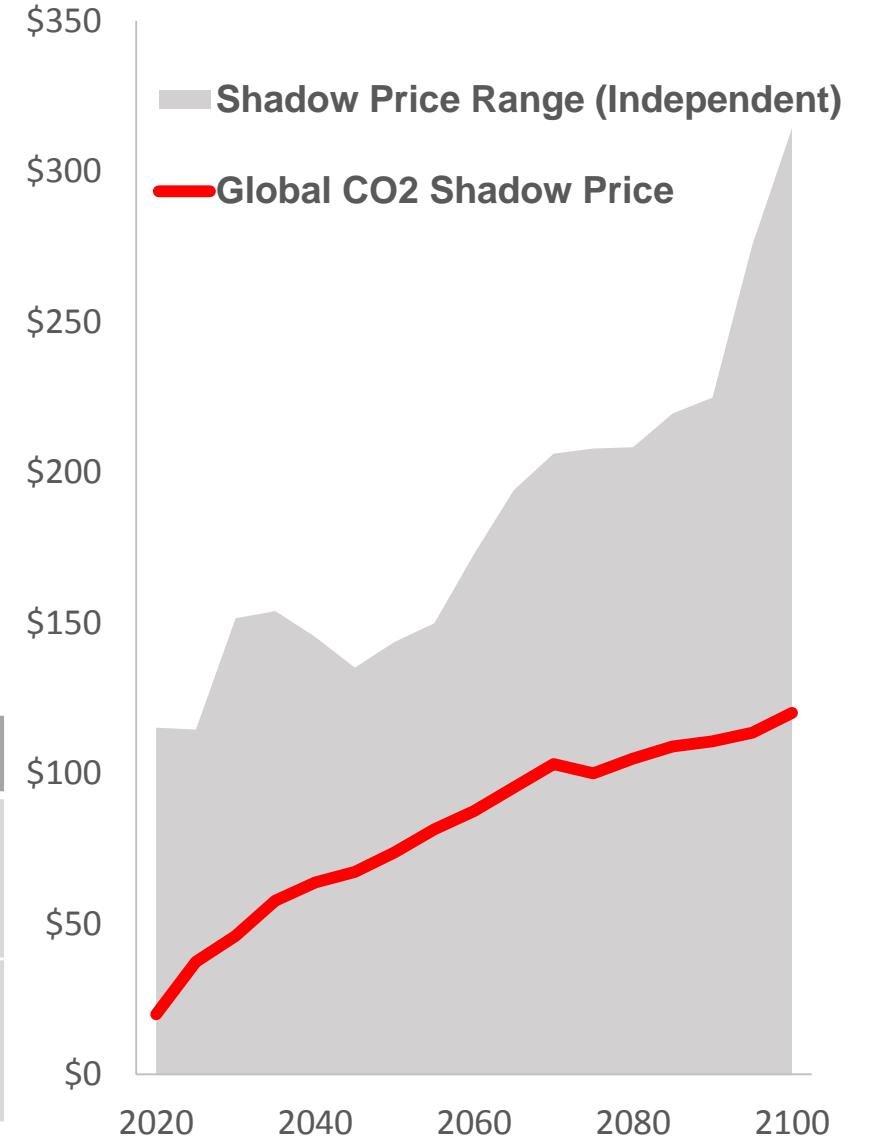


\$0/tonCO₂

NDC Shadow Prices: Independent vs. Joint Implementation

- Joint implementation shadow price lies between high and low prices of independent implementation

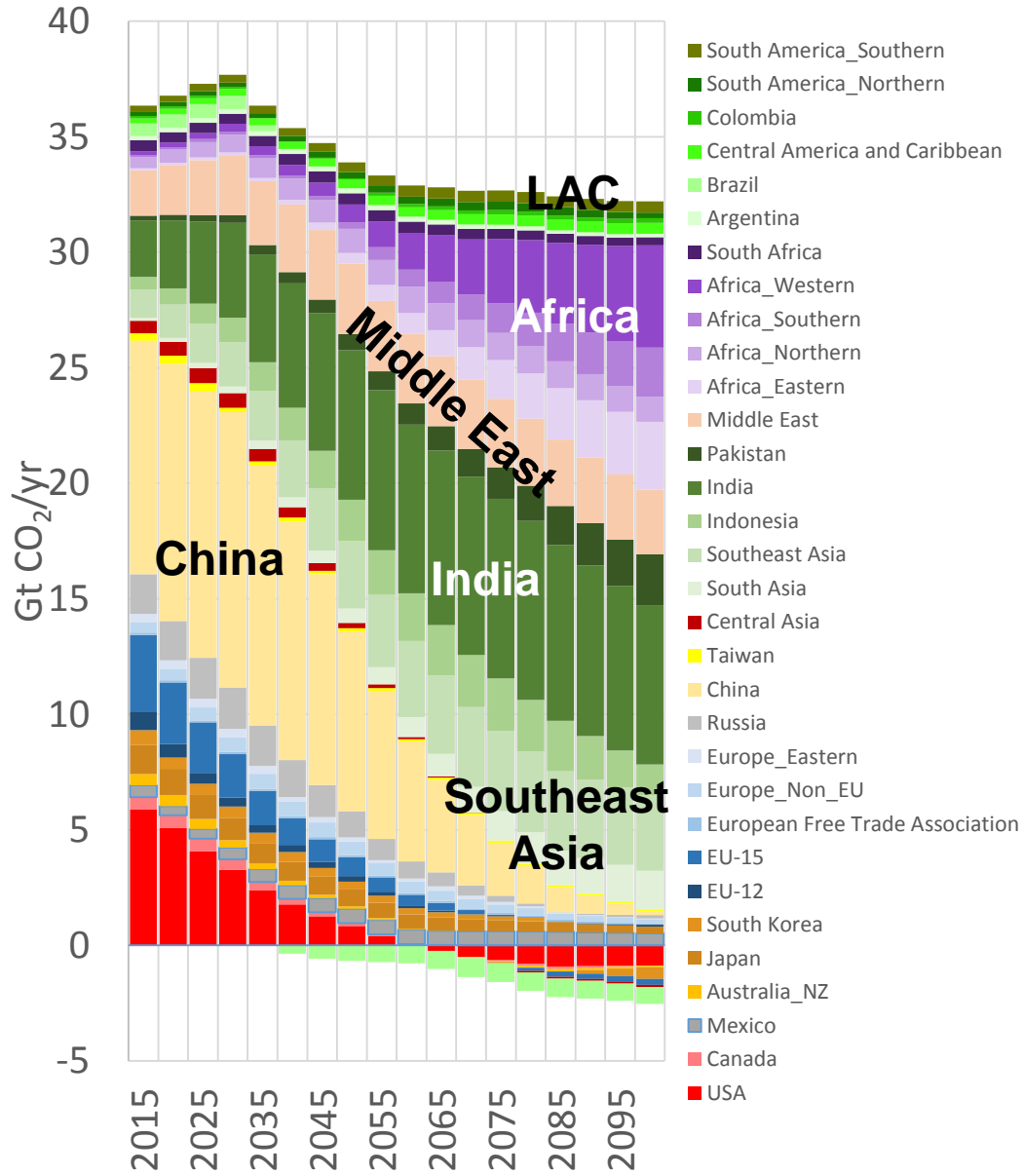
Shadow Price of CO₂



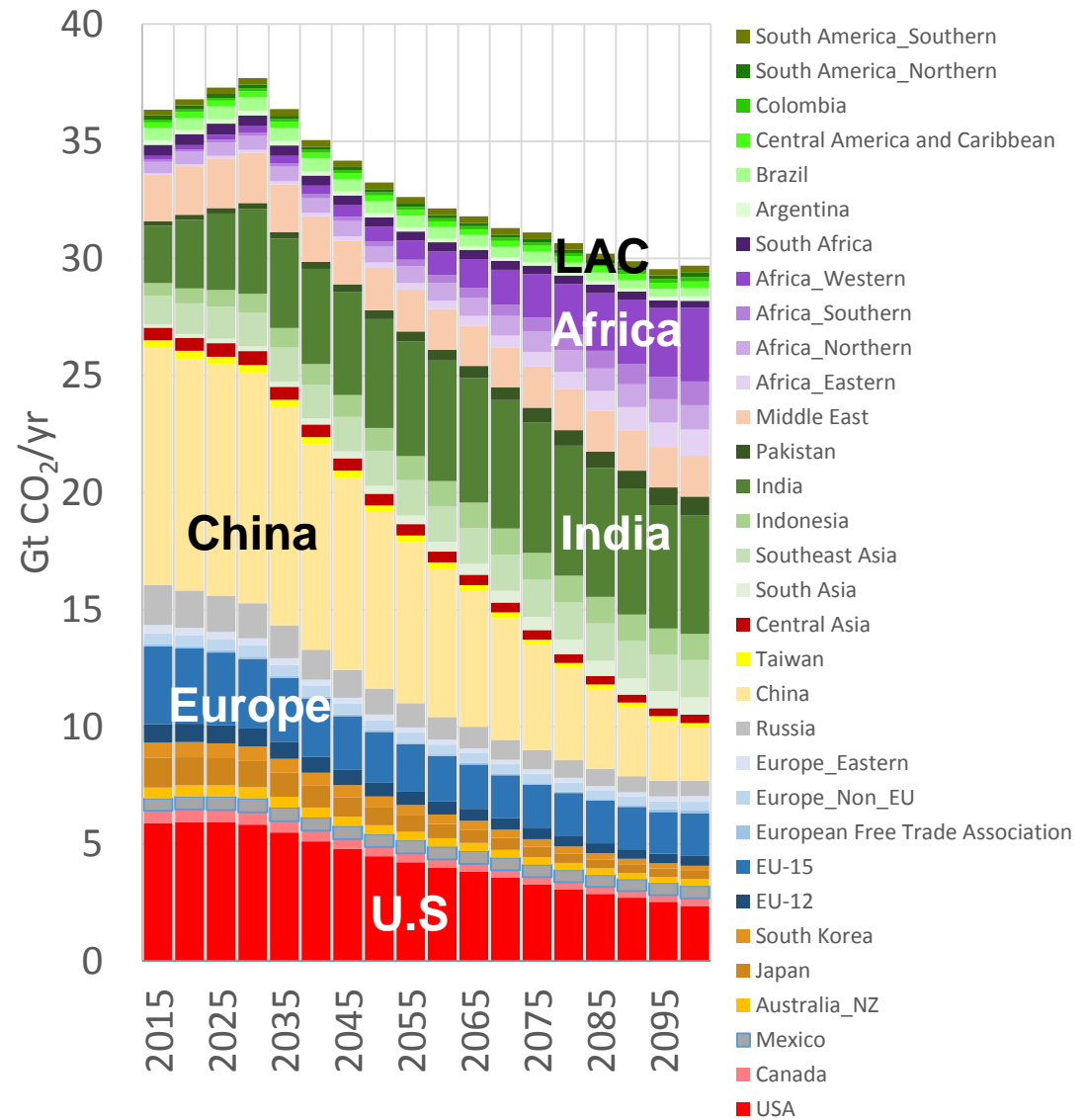
	2030	2050	2100
Independent Implementation	\$0 to \$152/tonCO ₂	\$0 to \$144/tonCO ₂	\$2 to \$314/tonCO ₂
Joint Implementation	\$46/tonCO₂	\$74/tonCO₂	\$120/tonCO₂

NDC Emissions: Independent vs. Joint Implementation

Global I-NDC Scenario CO₂ Emissions



Global J-NDC Scenario CO₂ Emissions



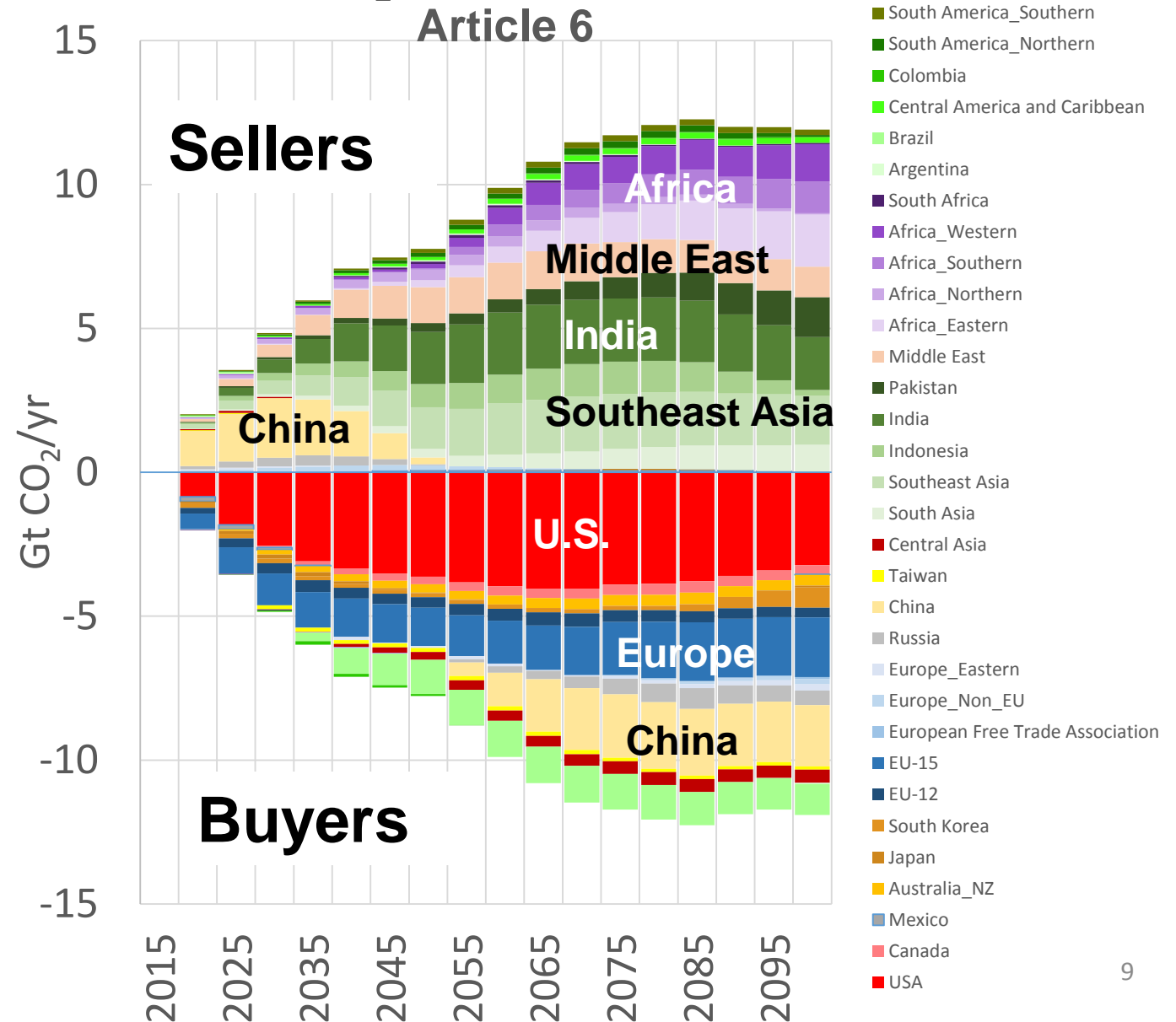
Potential Changes in Emissions—CO₂

Year	Change in Emissions Distribution
2030	5 GtCO₂/yr (13% of total emissions in 2030)
2050	8 GtCO₂/yr (23% of total emissions in 2050)
2100	12 GtCO₂/yr (40% of total emissions in 2100)

Potential Changes in Emissions—CO₂

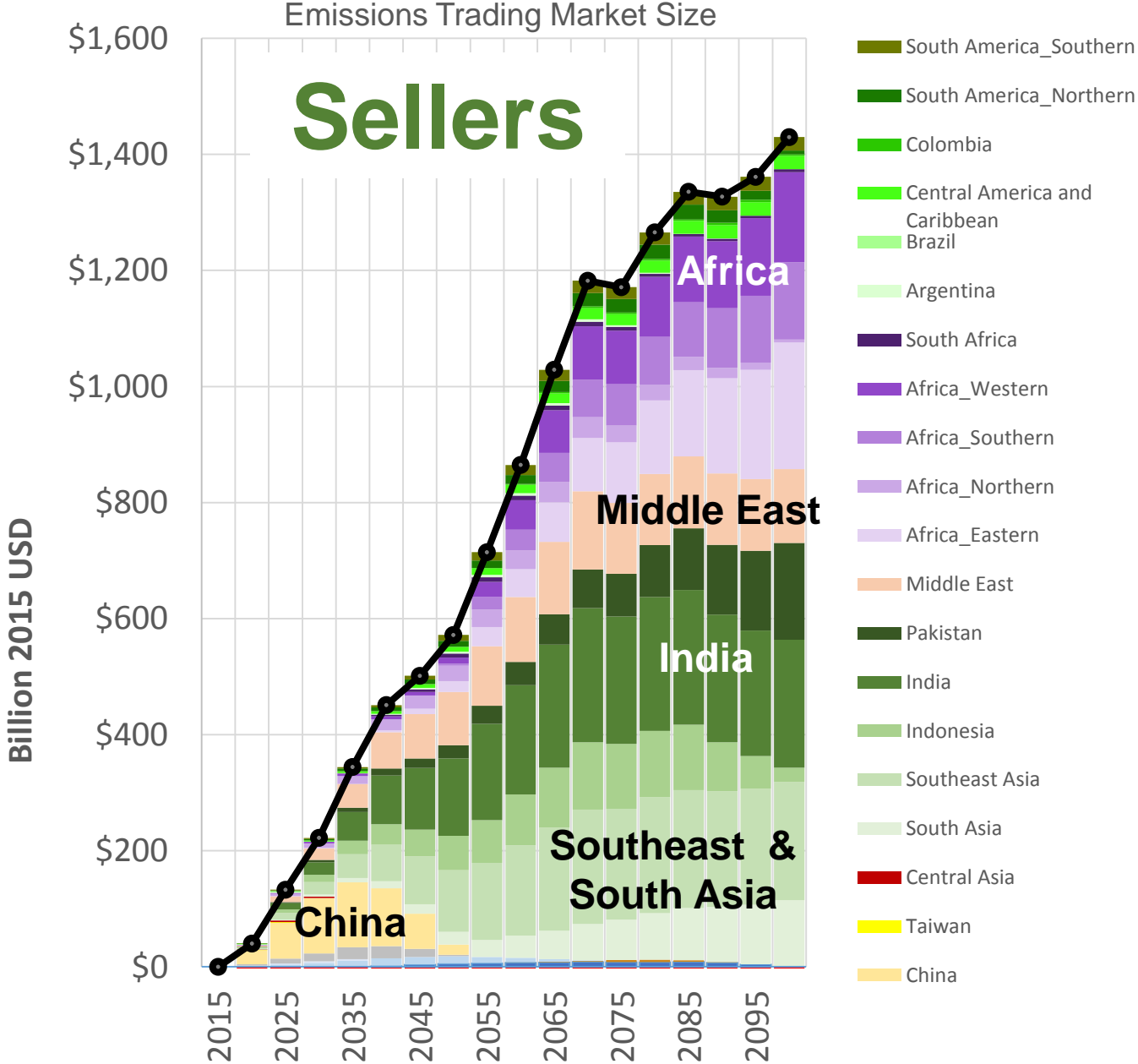
- Seller (13 regions)
- Buyer (6 regions)
- Seller to buyer (10 regions)
- Buyer to seller (South Africa)
- Seller to buyer to seller (Colombia)
- Buyer to seller to buyer (European Free Trade)

Change in CO₂ Emissions under Perfect Article 6



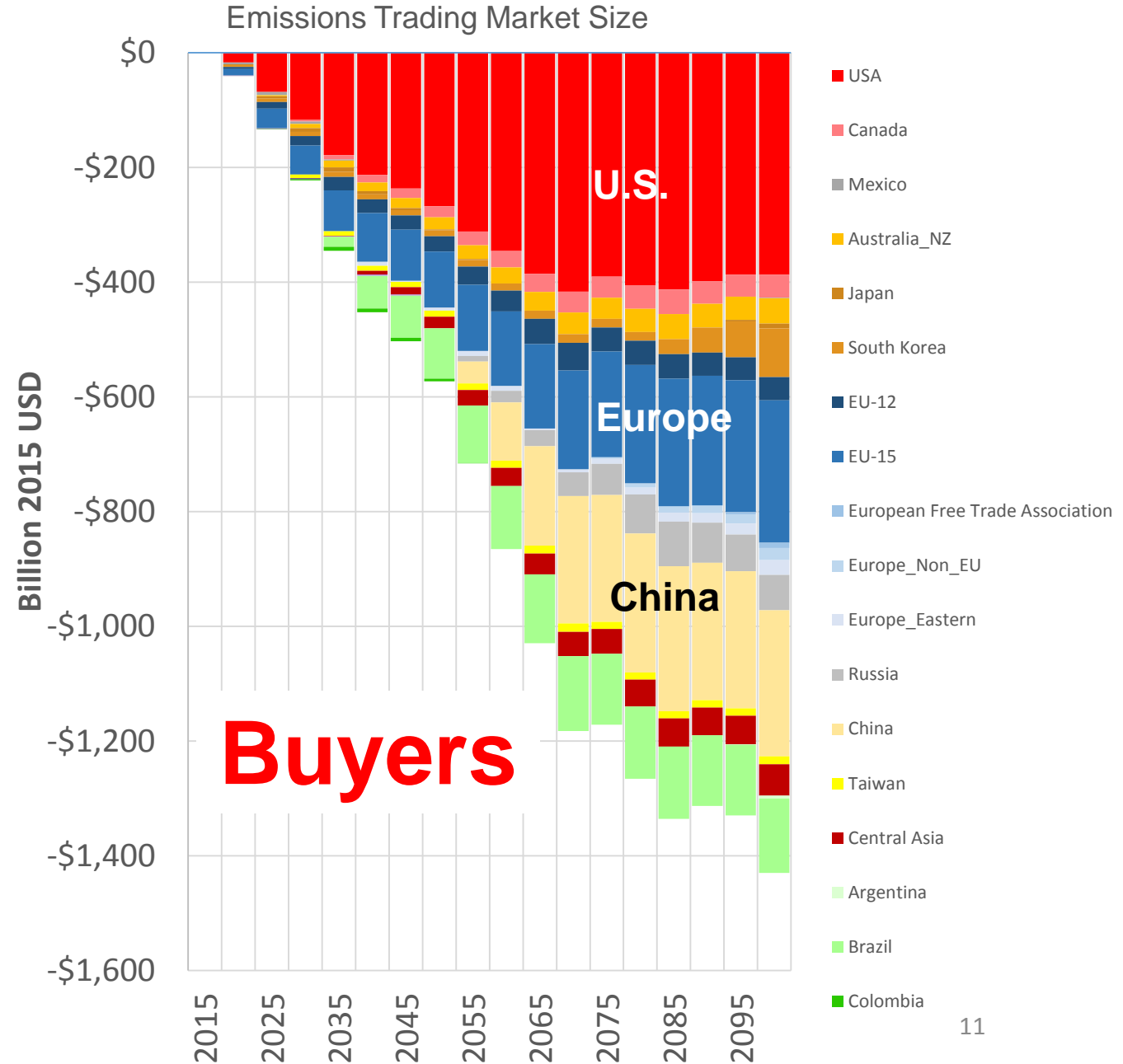
Potential Market Size—Billion of 2015 US\$

Year	Market Size (Billion 2015 US\$)
2030	\$222
2050	\$572
2100	\$1,430



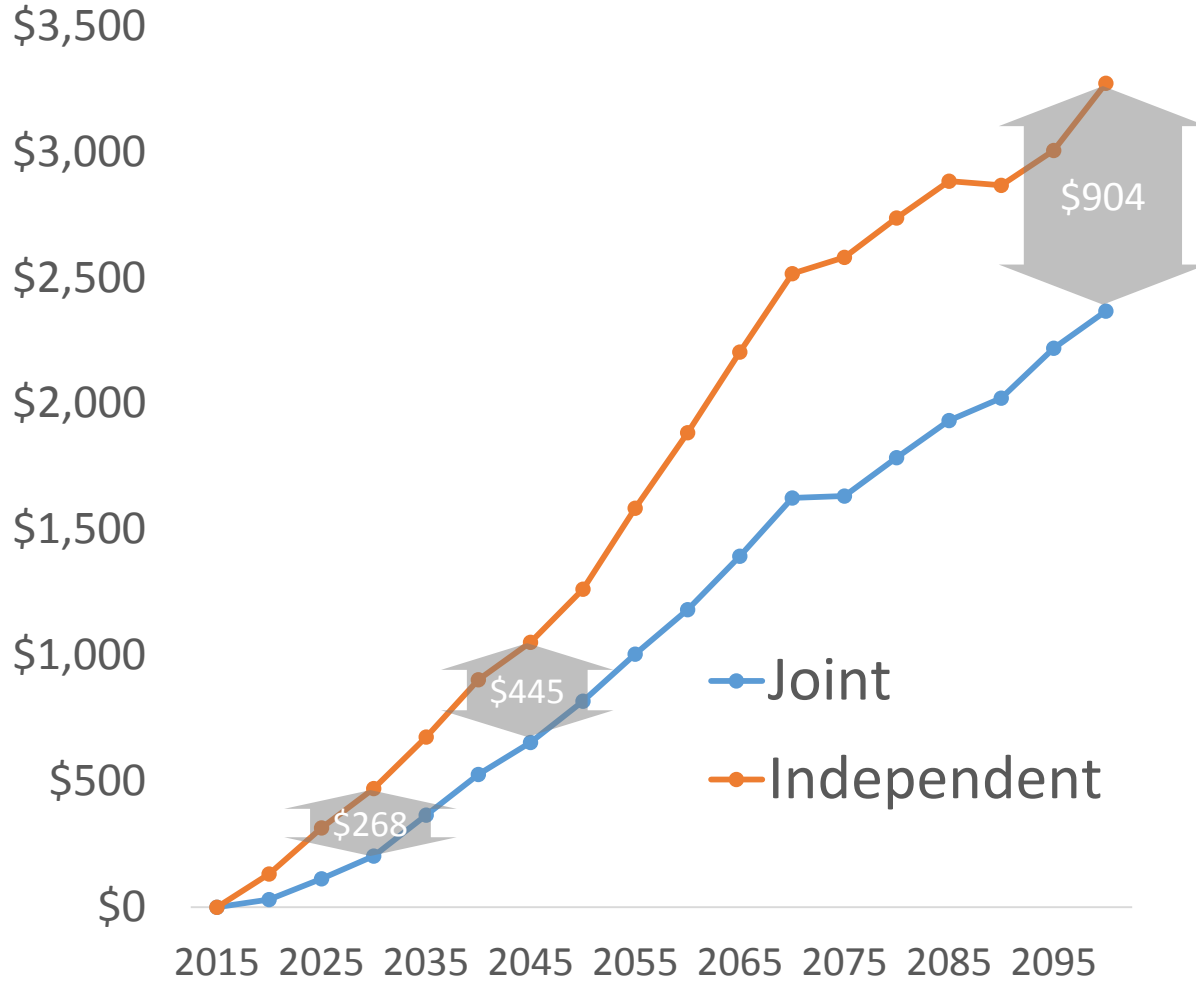
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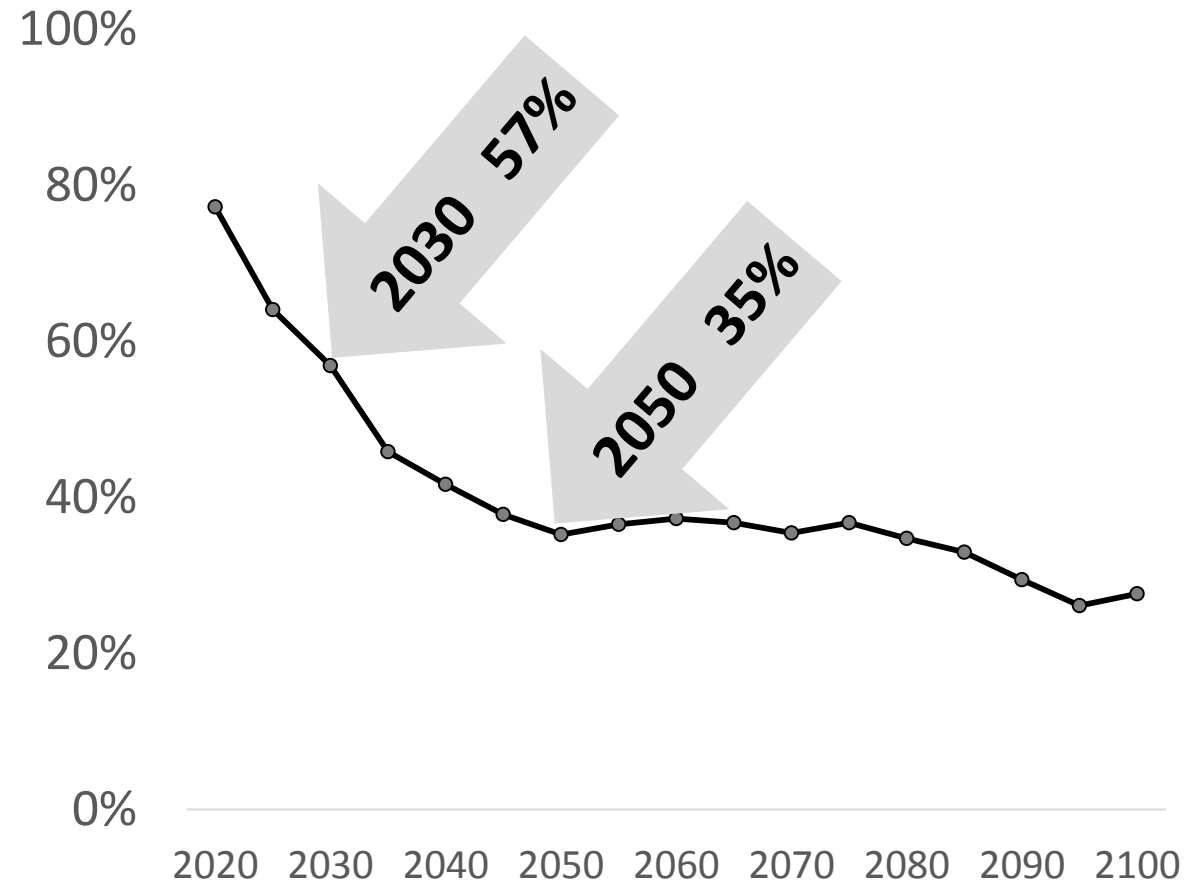


Emissions Mitigation Cost: Independent vs. Joint Implementation

Emissions Mitigation Cost (billion 2015 US\$/yr)

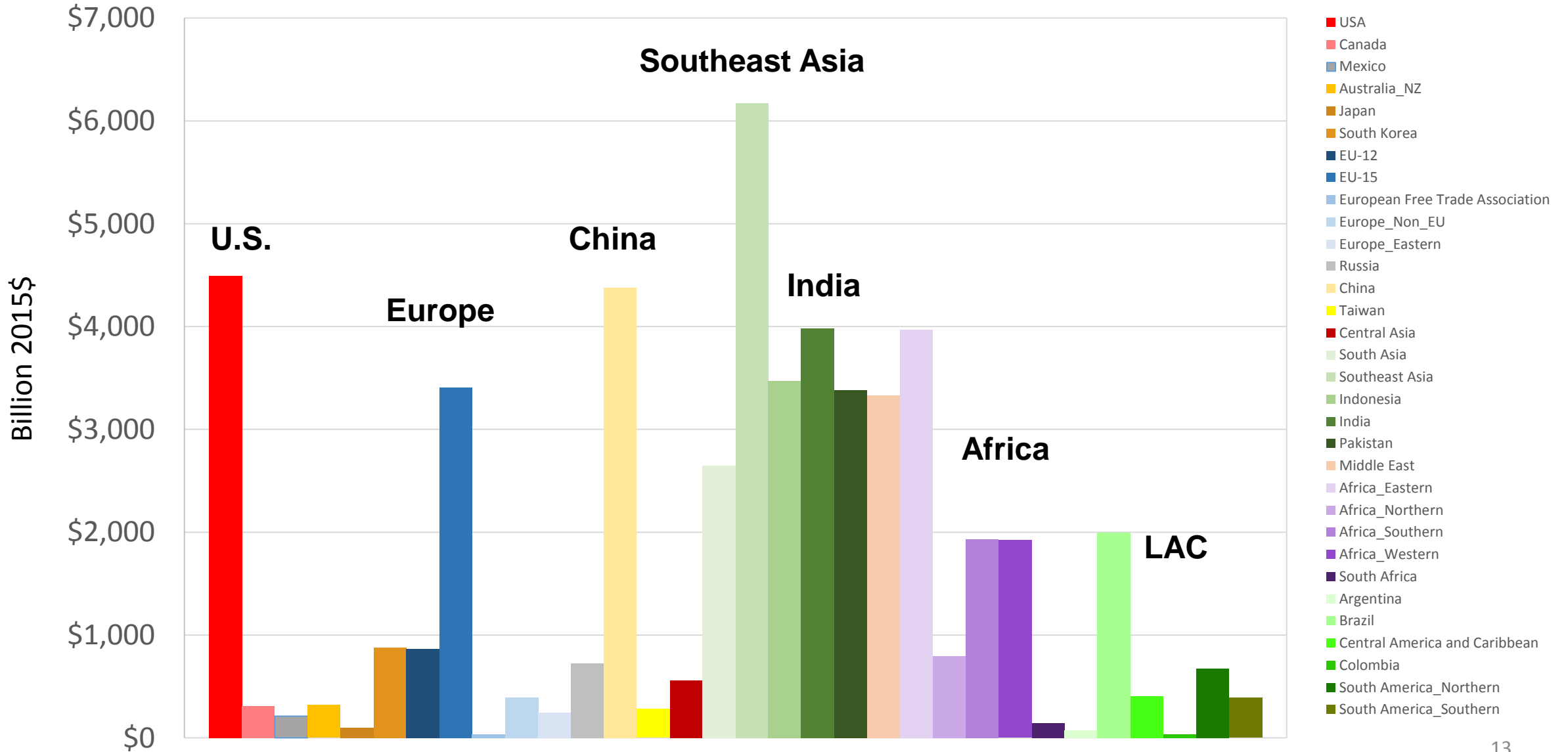


Percentage Reduction in Cost



GDP Change by Region – Billion of 2015 US\$

Net GDP Change (Cumulative)



How Valuable is Article 6?

Article 6 holds significant potential to reduce cost and enhance ambition

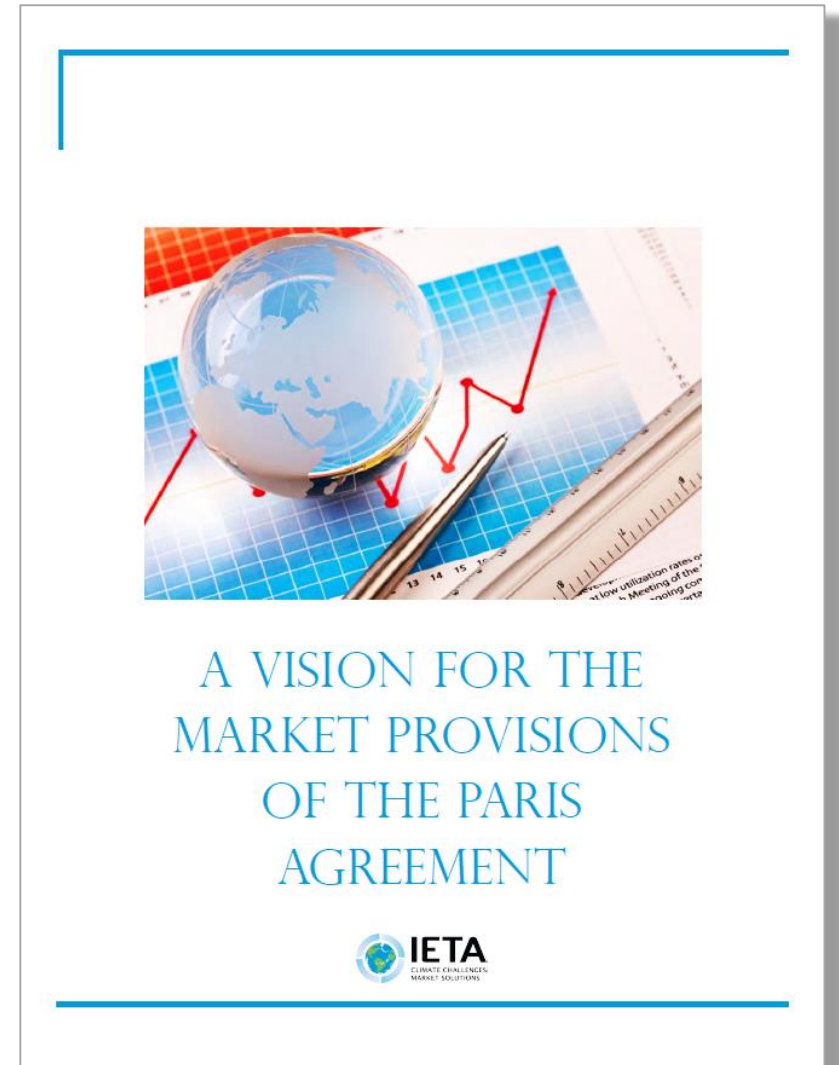
- Everyone could be better off through collaboration
- Estimated potential
 - 2030 ~\$270 billion 2015 US\$
 - 2050 ~\$445 billion 2015 US\$
 - 2100 ~\$900 billion 2015 US\$



Source: https://unfccc.int/files/focus/long-term_strategies/application/pdf/mid_century_strategy_report-final_red.pdf

The Challenges

- **Near-term challenges:**
 - How to translate heterogeneous NDCs into **Internationally Transferred Mitigation Outcomes (ITMOs)**?
 - Can clubs collaborate to extract the benefits without a formal trading regime?
- **Longer-term challenges:**
 - How to create incentives to increase ambition?
 - Can dynamic incentives be developed to increase ambition?
 - Clearly the rules matter—Calvin, et al. showed that seemingly air-tight rules for CDM-types of emissions trading can have perverse macro-outcomes.



Source:

https://www.ieta.org/resources/Resources/Position_Papers/2016/IET_A_Article_6_Implementation_Paper_May2016.pdf

DISCUSSION