Article 6 and its potential for increased ambition

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The Paris Agreement of 2015

- The goal: *"Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels"*

- The key feature was the Nationally Determined Contributions (NDCs).



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Article 6

- Allows countries to work together to meet their NDC goals
- But, DO NOT DOUBLE COUNT
- DO NOT REDUCE AMBITION



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What is the potential of Article 6?

- If Article 6 were implemented perfectly
- How much could costs be reduced?
- If those cost savings were applied to enhance ambition, how much more ambition might there be?

2030 Article 6 Potential Cost reduction (billions 2015 USD/year), Ambition increase ($GtCO_2$/y)		
	Reduction in Cost	**Increased Ambition**
Combined	~$300 billion/yr	**~9 $GtCO_2$/yr**

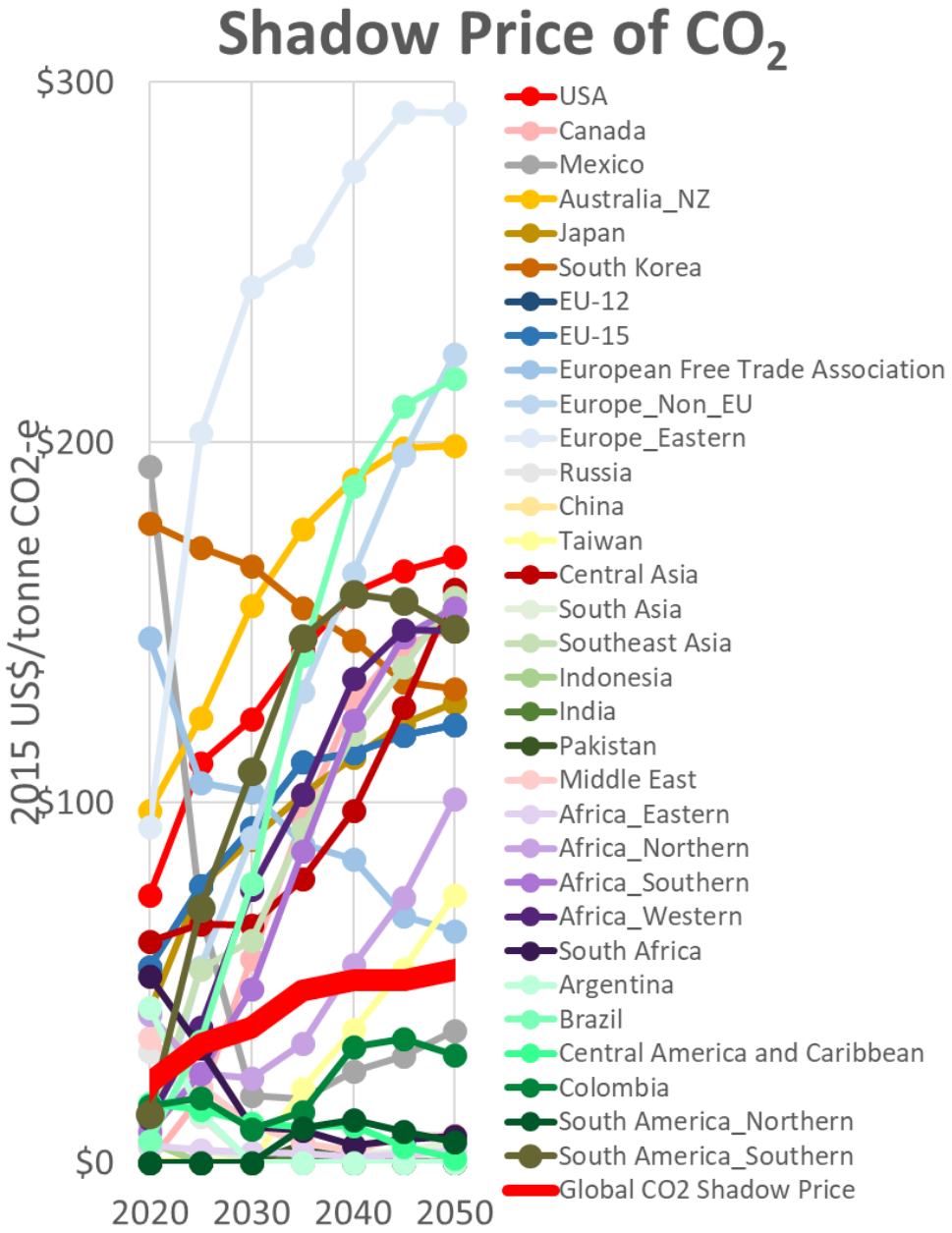
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Potential for Cost Savings

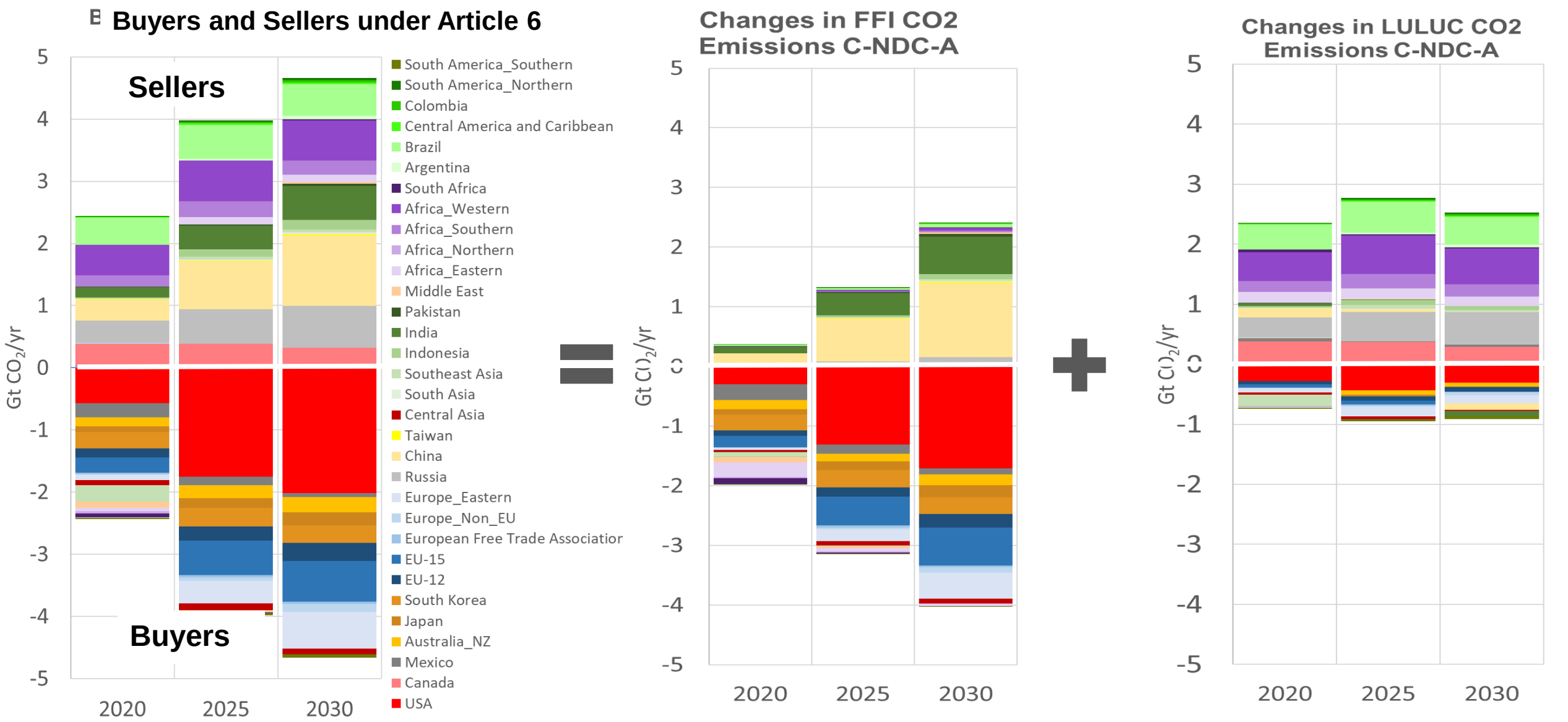
NDC Shadow Prices: Nature-based Solutions

Significantly reduce shadow prices in the near term

	2030	2050
Independently Implemented NDCs **Fossil Only**	\$0 to \$243/tonCO_2	\$0 to \$290/tonCO_2
Cooperatively Implemented NDCs **Fossil Only**	\$38/tonCO_2	\$54/tonCO_2
Cooperatively Implemented NDCs **Fossil & Nature-Based**	\$22/ tonCO_2	\$56/ tonCO_2



Potential Changes in CO_2 Emissions



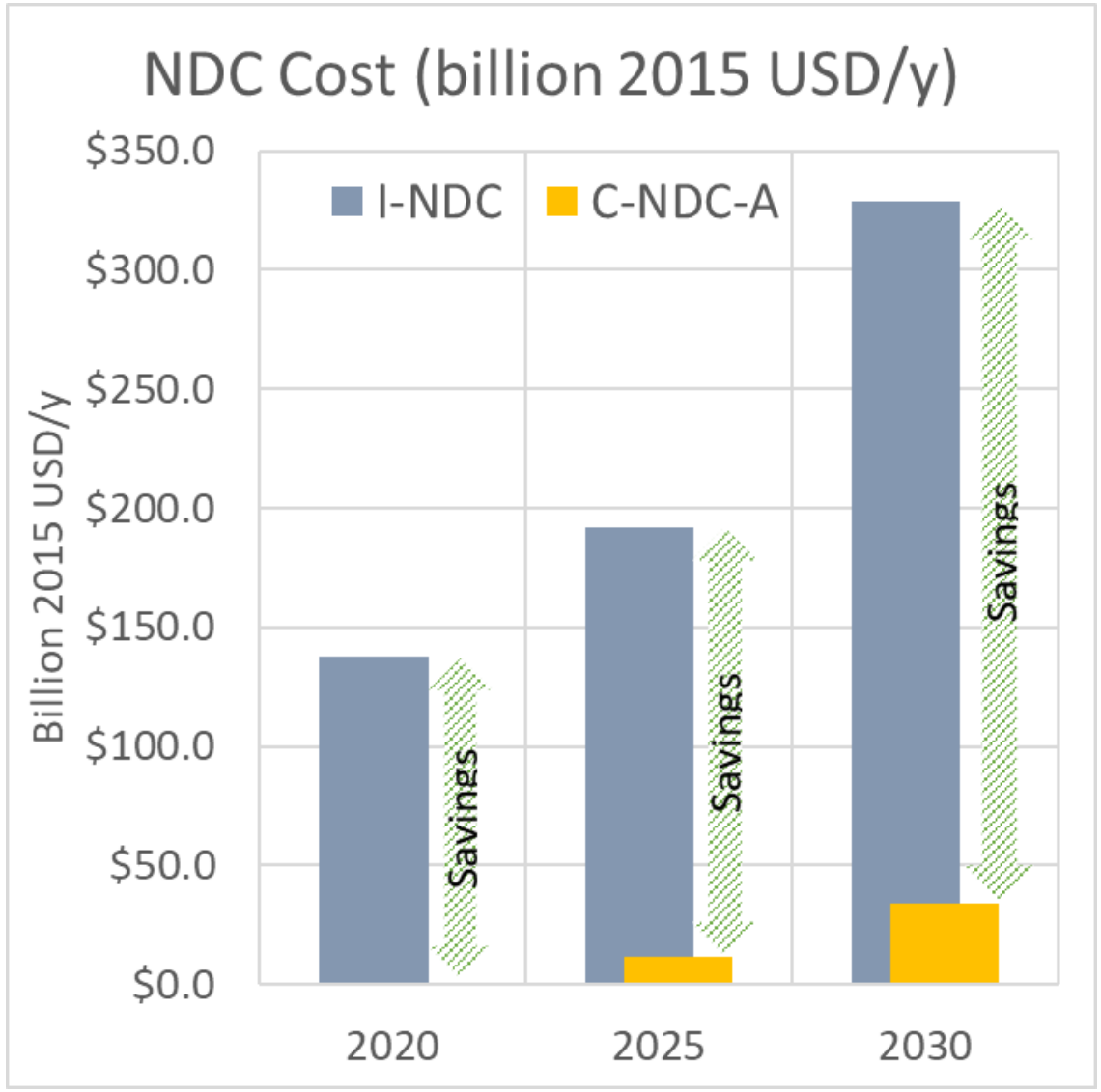
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The Potential for Enhancing Ambition

Potential Enhanced Ambition

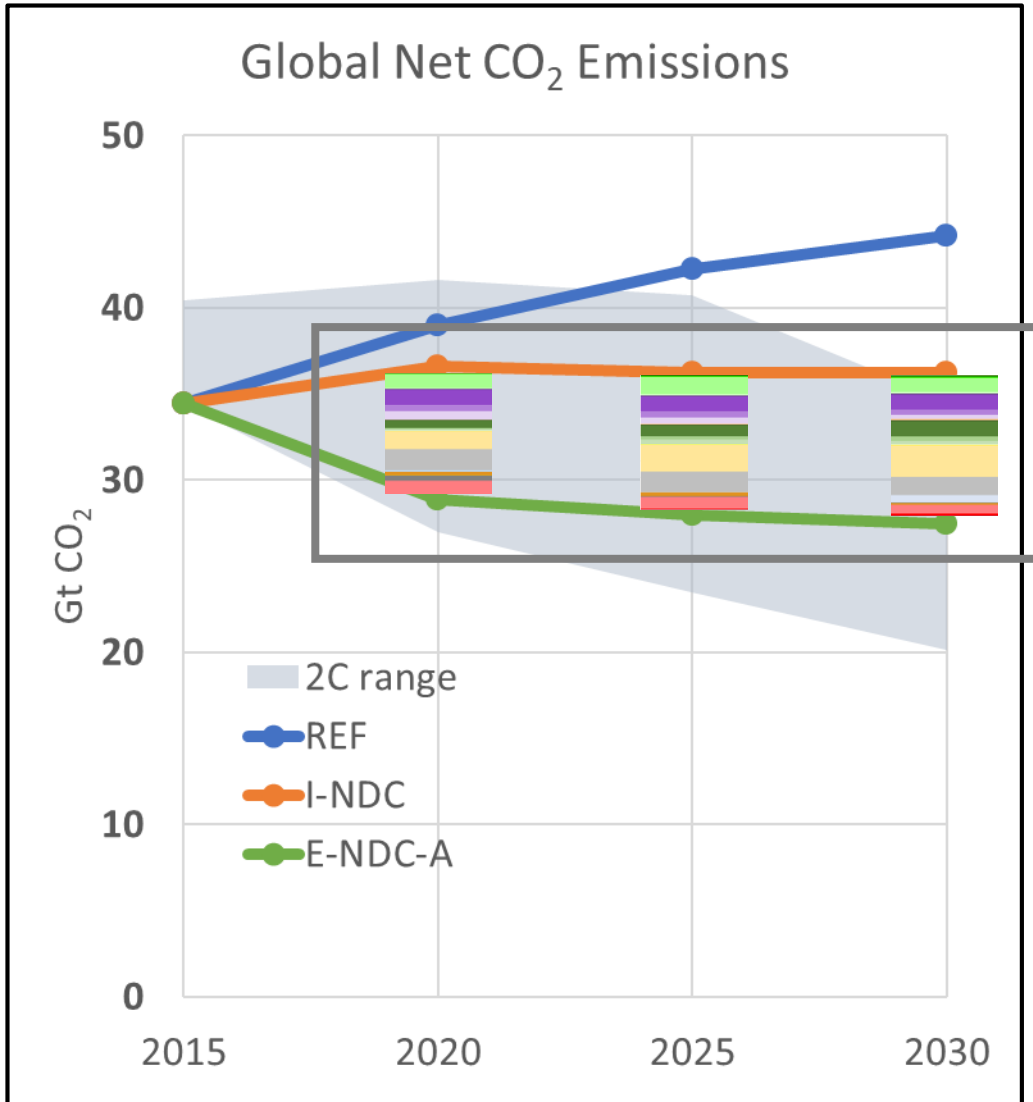
What if each country reinvested its Article 6 cost savings back into enhanced ambition?

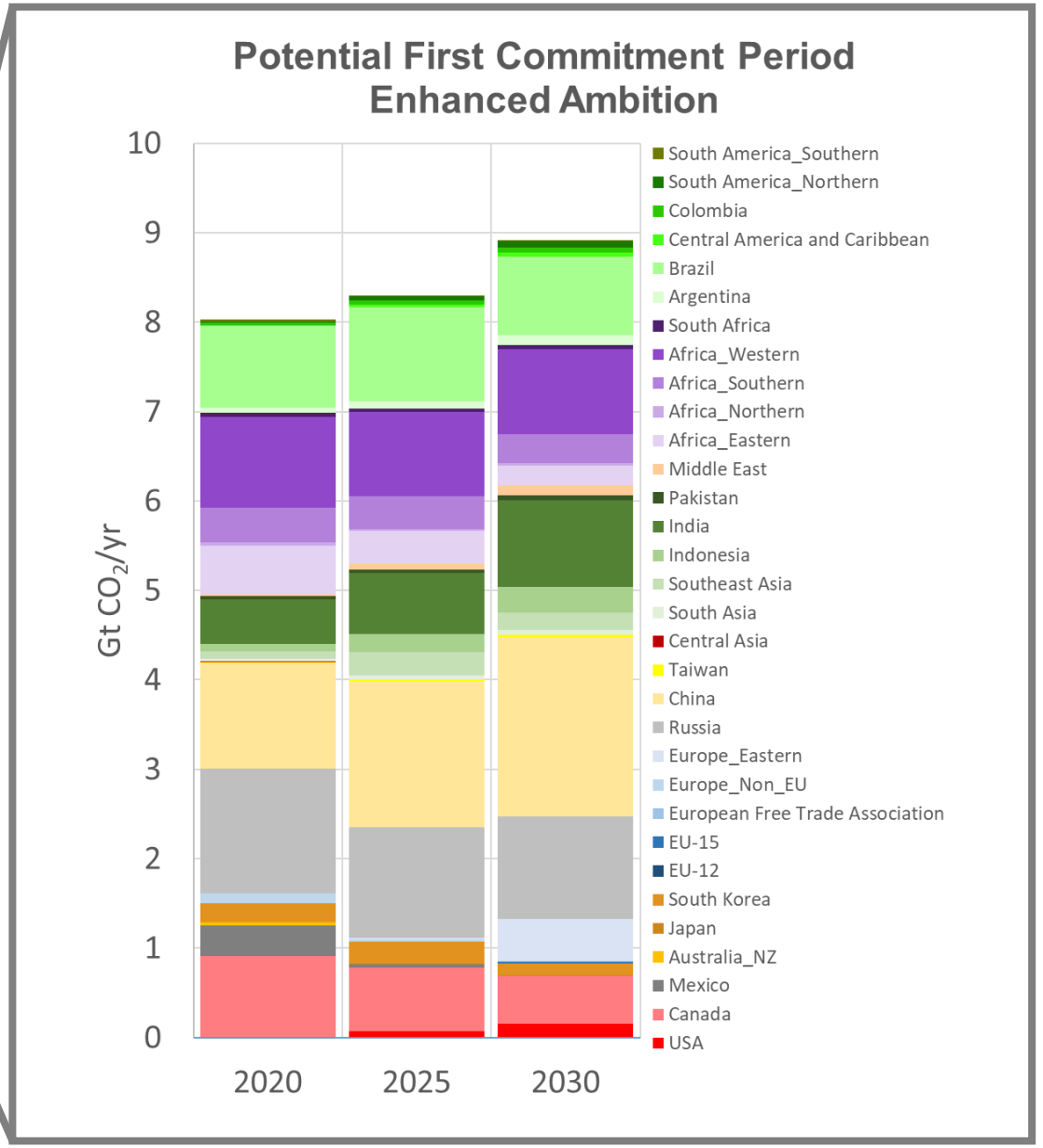
- Apply each country's savings from employing Article 6 to jointly achieving additional mitigation.
- Total cost will be the same as in the I-NDC scenario
- Emissions mitigation will increase.



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Enhanced Ambition by A6 with Nature-based Solutions





Challenges

The Challenges

- **Near-term challenges**:
  - How to translate heterogeneous NDCs into Internationally Transferred Mitigation Outcomes (ITMOs)?
  - Ensure that rules prevent "hot air"
    - Offsets are problematic
    - Calvin, et al. showed that seemingly air-tight rules for CDM-types of emissions trading can have perverse macro-outcomes.



Source: https://news.harvard.edu/gazette/story/2017/02/for-better-health-reduce-greenhouse-gases/

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The Challenges

- **Near-term challenges with Land Use**:
  - Potential for leakage from incomplete land-use systems. That is, when not all land-use systems are controlled, market forces can shift deforestation from protected areas to unprotected areas.
  - How to communicate the marginal cost of carbon to land-use decision makers?



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The Challenges

- **Longer-term challenges:**
  - Can dynamic incentives be developed to increase ambition?
  - Nature-based solutions are a limited time offer.

- Substantially more research is needed.



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

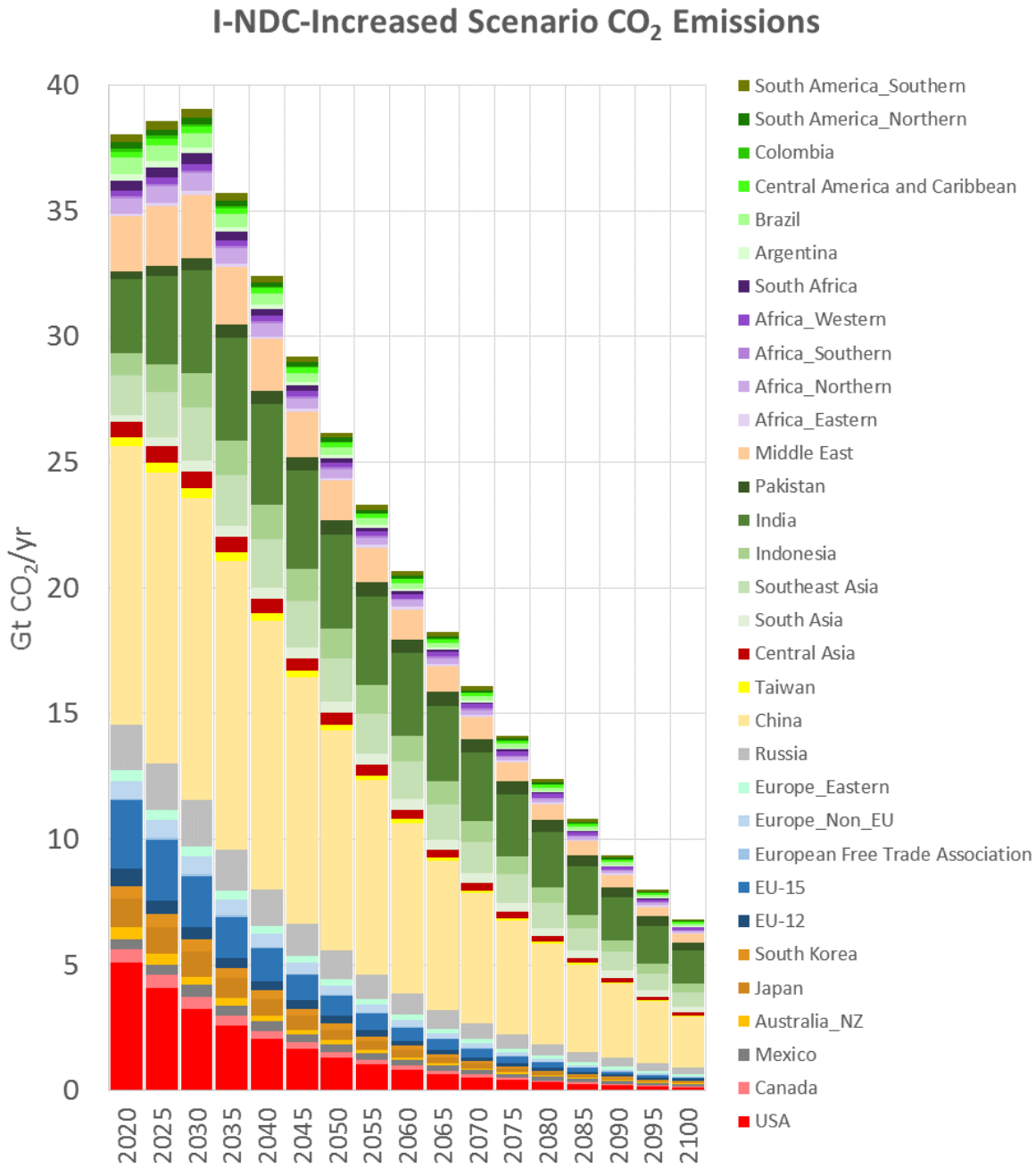
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DISCUSSION

2 Degrees

Two-Degree Ambition

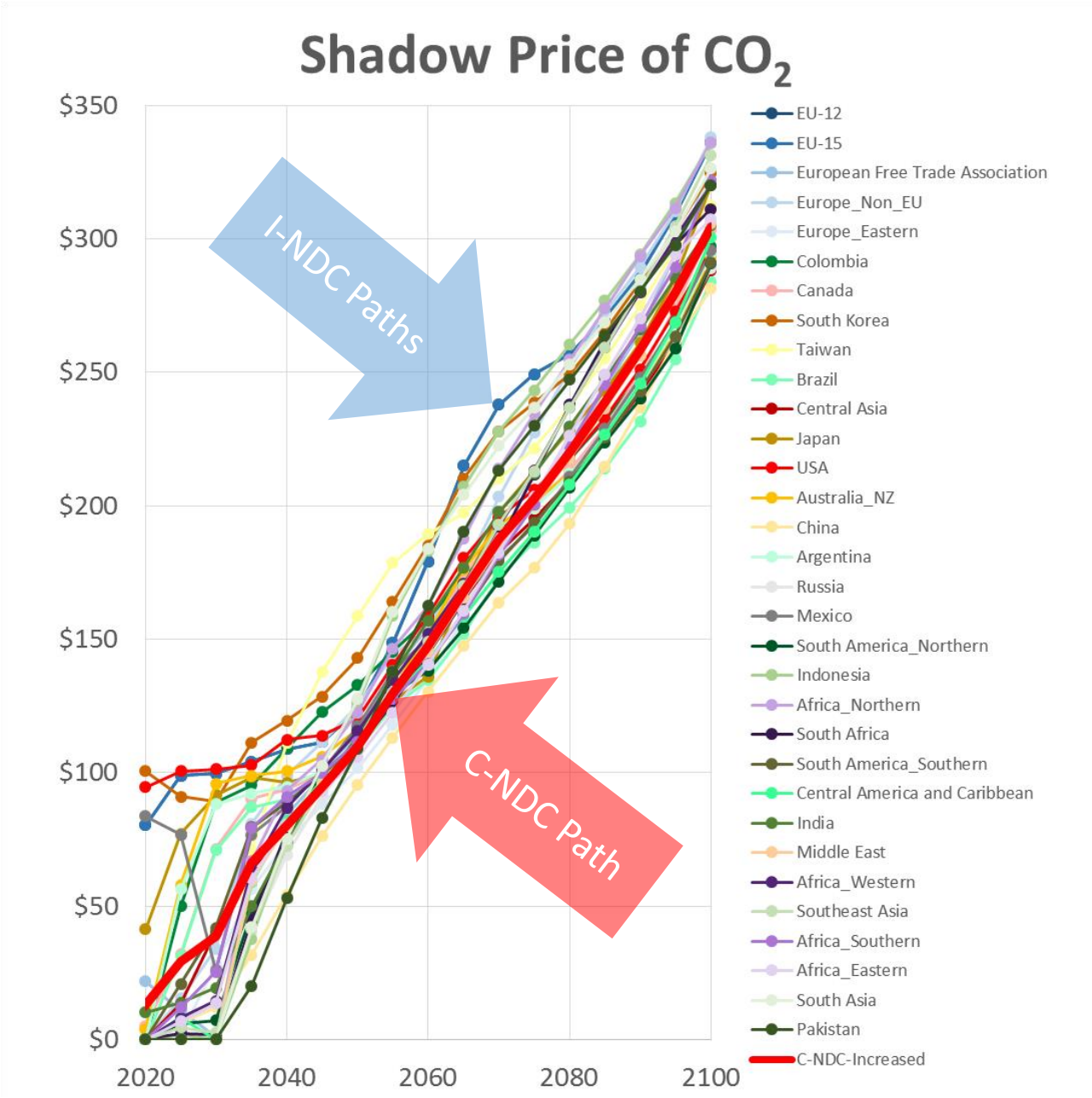
- We roughly double the rate of increase in ambition relative to their ambitions embodied in announced NDCs for the first ambition period (to 2030) in all countries post-2030.
- All countries emissions decline.
- Two degrees is impossible if any significant region does not engage.
- Some region's emissions are near zero by 2100.



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Two-Degree Ambition

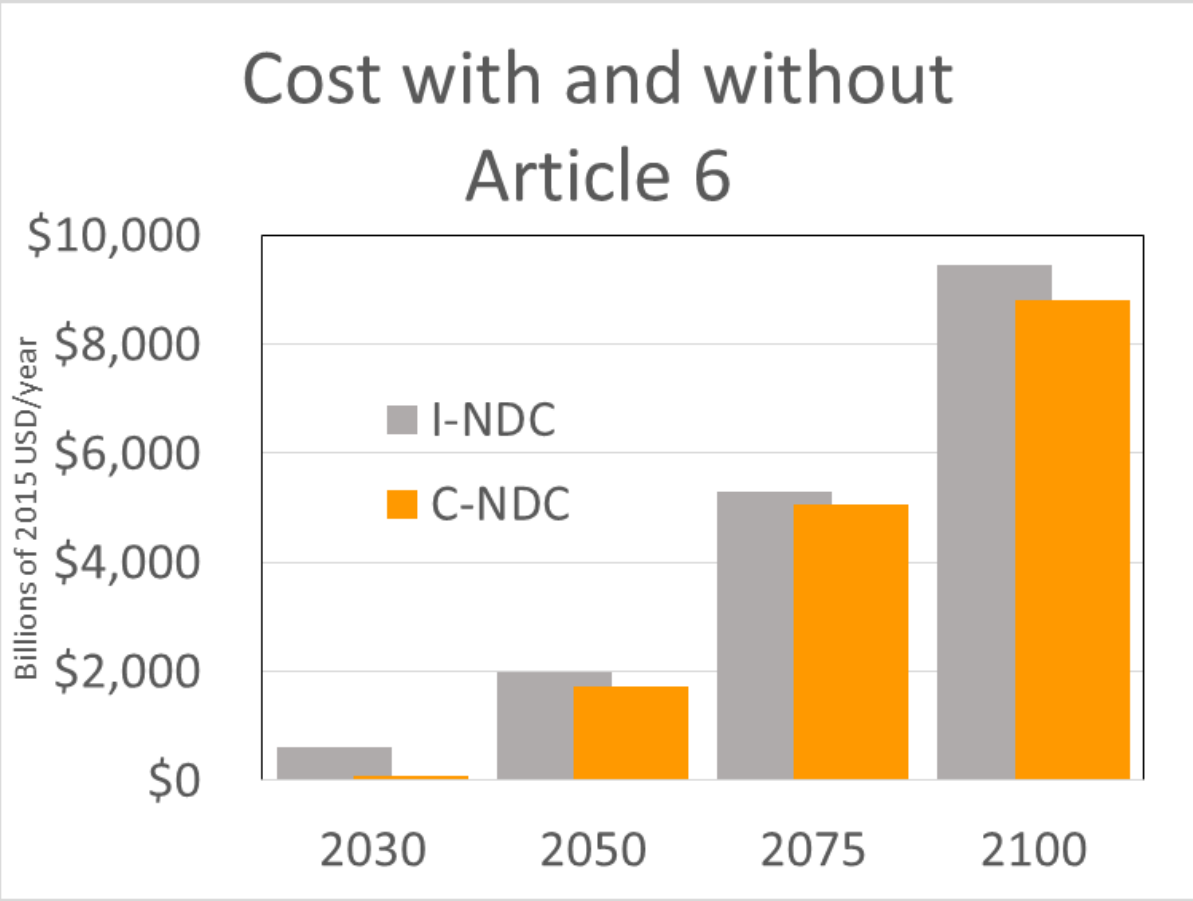
- Shadow prices all rise with time.
- The range of shadow prices tends to narrow late in the century.
- As emissions limits get tighter everywhere, technology choice narrows.
- Opportunities remain throughout the century for economic efficiency gains through Article 6.

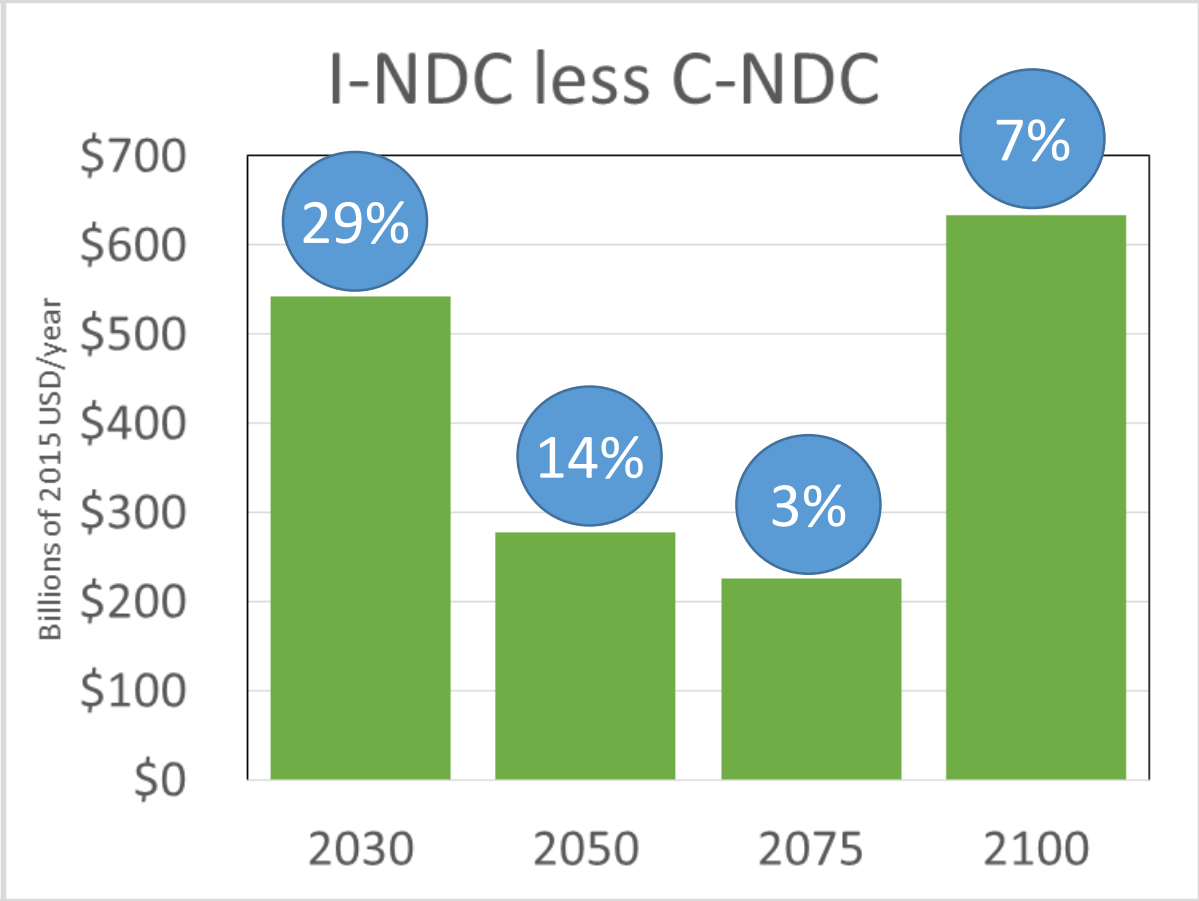


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Perfect Implementation of Article 6

- Global cost reduction ranges from 29% in 2030 to 3% in 2075





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