

Spatial & Multisectoral Impacts of Paris Agreement Article 6

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MEETING



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PARIS AGREEMENT, ARTICLE 6

- Key, understated outcome of COP-26 at Glasgow
- Co-operative implementation of NDCs
- Reducing the variability of marginal abatement costs between regions (Aldy et al. 2016)
- Gains from increased efficiency leading to enhanced ambition (Edmonds et al. 2021)
- International transfers of mitigation obligations and outcomes
- Carbon markets can take different forms



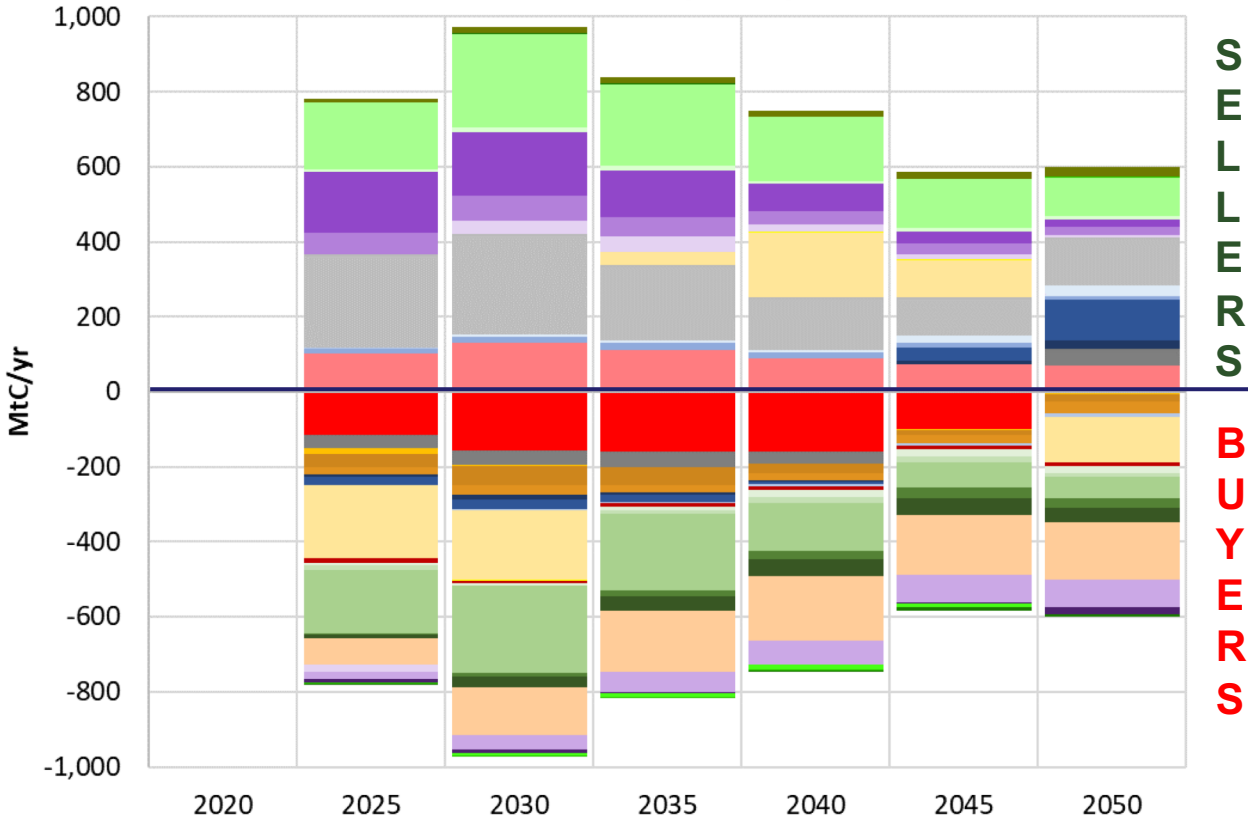
STUDY DESIGN

- 2 core scenarios: (A) Global Net Zero attainment in 2050, (B) Regional net zero targets by GDP/capita
- Effect of Article 6 Global Market
- Effect of including/excluding nature-based mitigation options (LUC=1, 0.25, 0)
- Impacts on:
 - Volume of trade and market efficiency
 - Mitigation costs
 - Electricity sector investments, CCS, RE

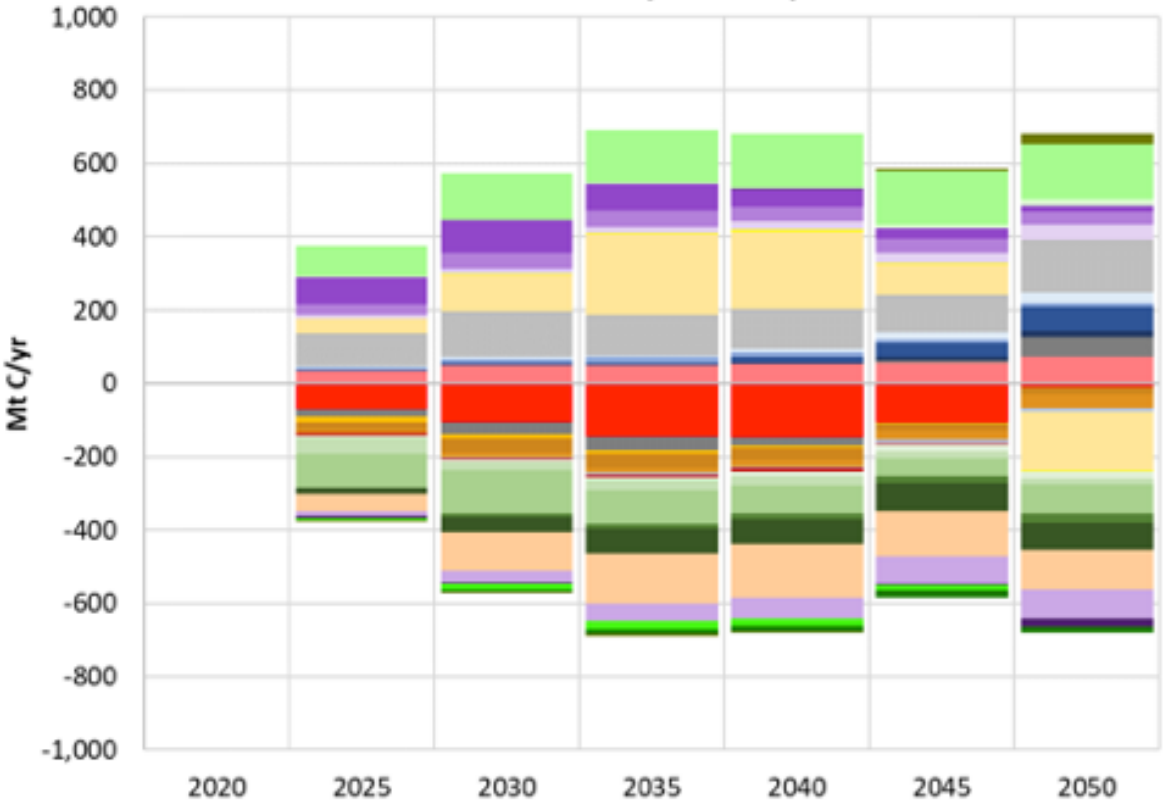


CARBON TRADE VOLUMES WITH ARTICLE 6 (SCENARIO A)

Net CO2 emissions (LUC=1)



Net CO2 emissions (LUC=0.25)



- USA

EU-12

China

India

Africa_Western

South America_Northern
- Canada

EU-15

Taiwan

Pakistan

South Africa

South America_Southern
- Mexico

Europe_Eastern

Central Asia

Middle East

Argentina
- Australia_NZ

Europe_Non_EU

South Asia

Africa_Eastern

Brazil
- Japan

European Free Trade Association

Southeast Asia

Africa_Northern

Central America and Caribbean
- South Korea

Russia

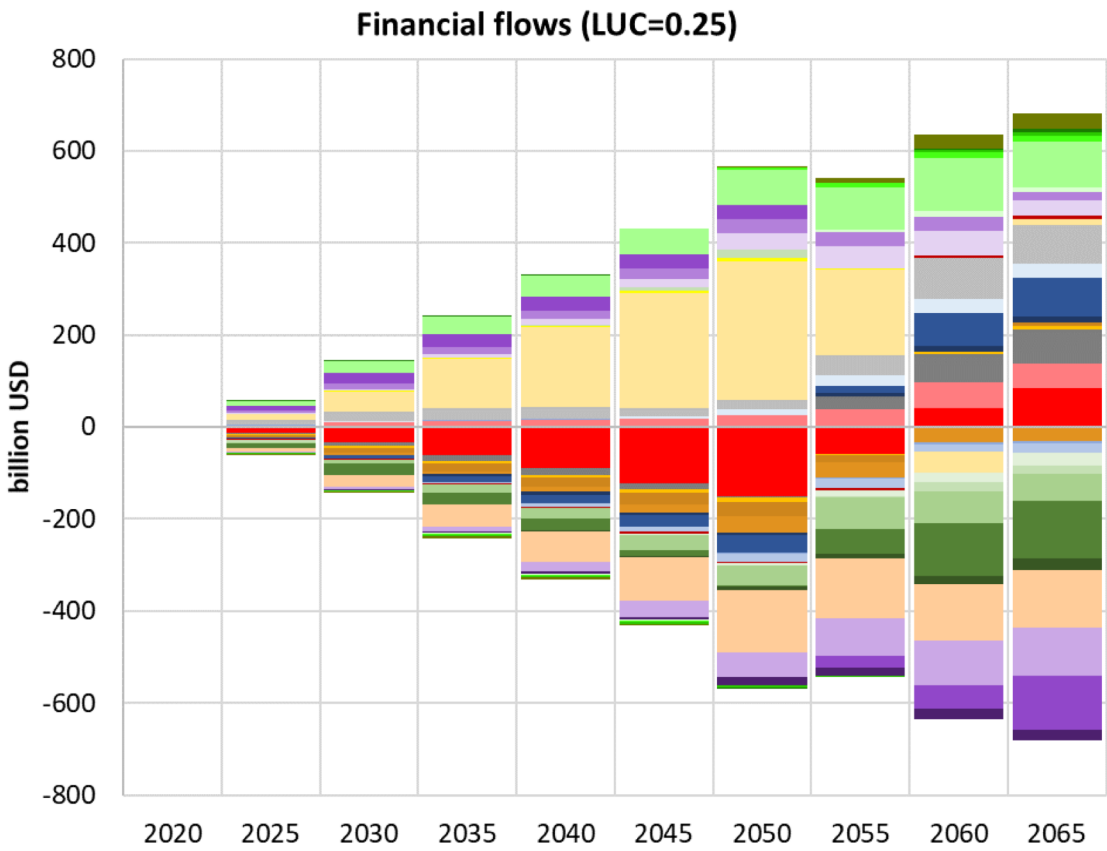
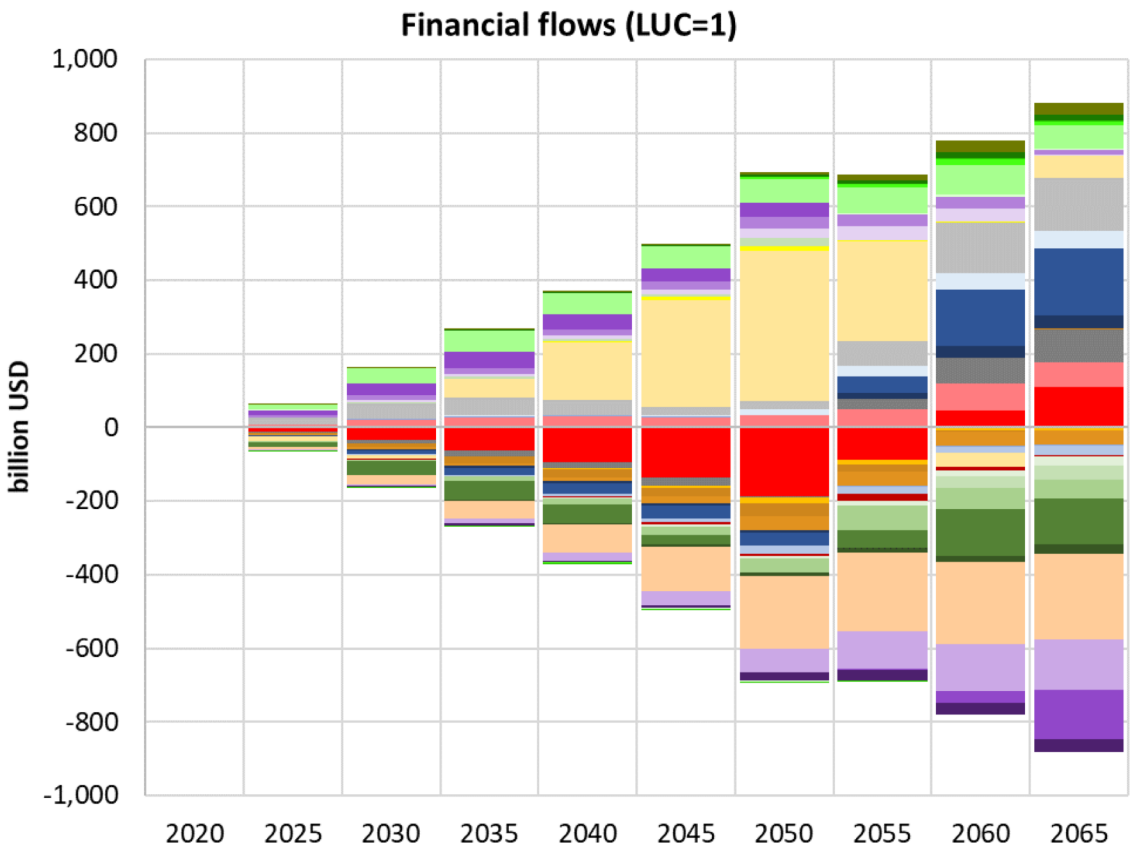
Indonesia

Africa_Southern

Colombia



RESULTANT FINANCIAL FLOWS (SCENARIO A)

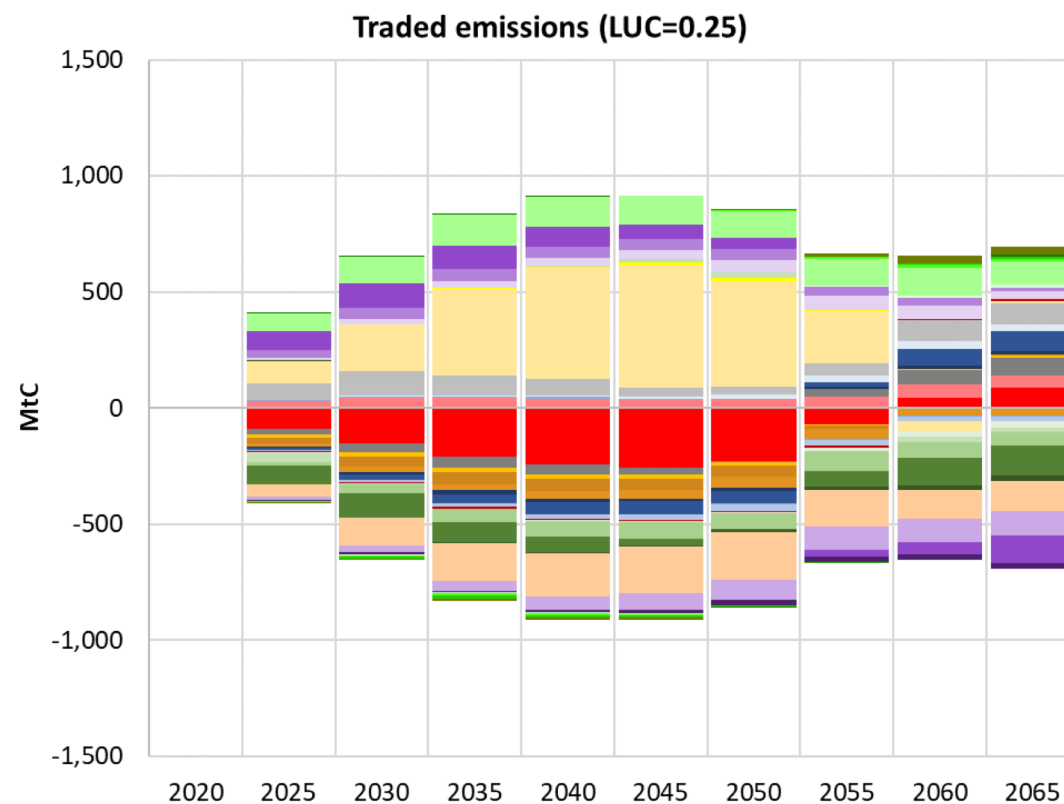
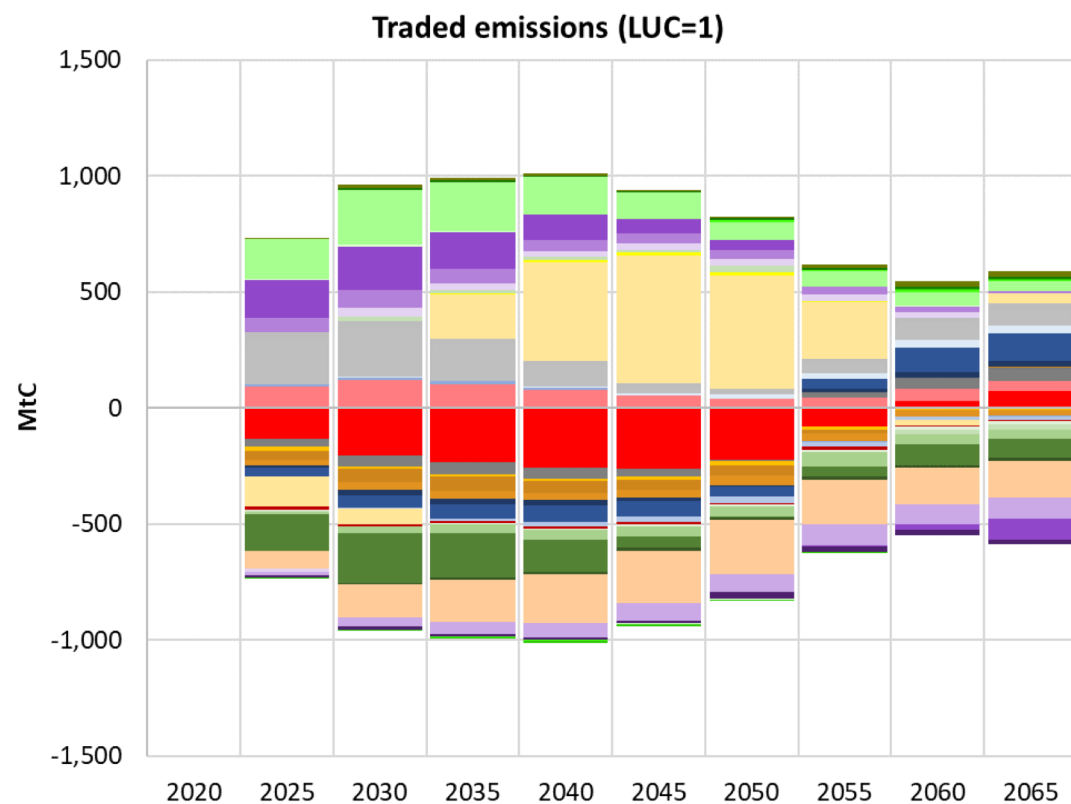


- USA
- EU-12
- China
- India
- Africa_Western
- South America_Northern
- Canada
- EU-15
- Taiwan
- Pakistan
- South Africa
- South America_Southern
- Mexico
- Europe_Eastern
- Central Asia
- Middle East
- Argentina

- Australia_NZ
- Europe_Non_EU
- South Asia
- Africa_Eastern
- Brazil
- Japan
- European Free Trade Association
- Southeast Asia
- Africa_Northern
- Central America and Caribbean
- South Korea
- Russia
- Indonesia
- Africa_Southern
- Colombia



TRADE VOLUMES (SCENARIO B)



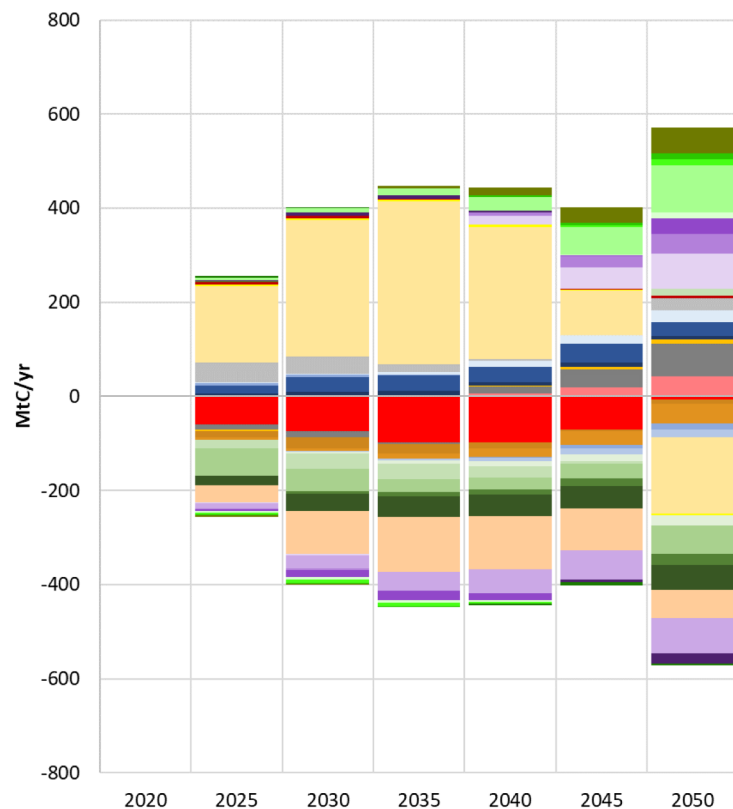
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| USA | Canada | Mexico |
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| China | Taiwan | Central Asia |
| India | Pakistan | Middle East |
| Africa_Western | South Africa | Argentina |
| South America_Northern | South America_Southern | |

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| Australia_NZ | Japan | South Korea |
| Europe_Non_EU | European Free Trade Association | Russia |
| South Asia | Southeast Asia | Indonesia |
| Africa_Eastern | Africa_Northern | Africa_Southern |
| Brazil | Central America and Caribbean | Colombia |

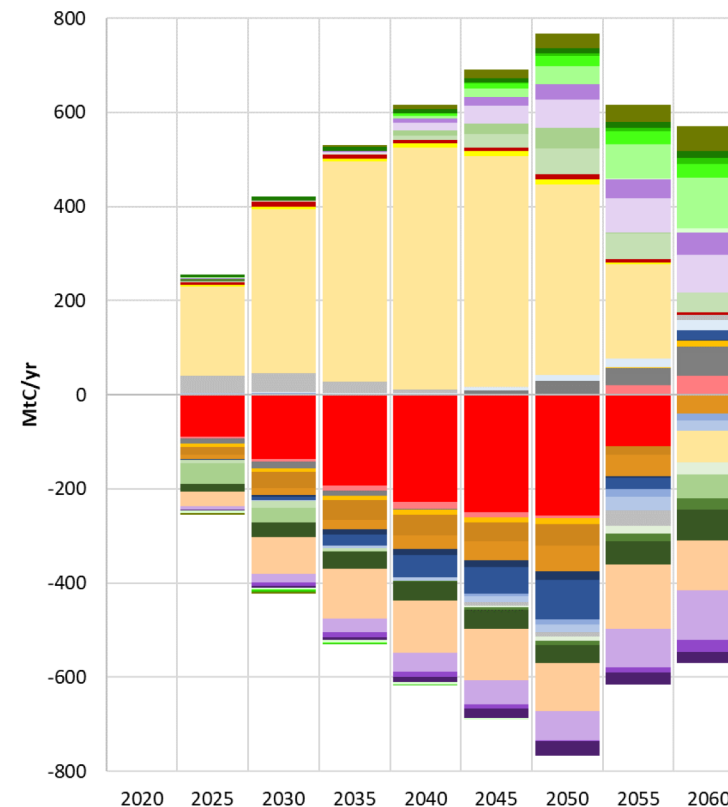


WITH NO NATURE BASED MITIGATION SOLUTIONS

Global NZ in 2050



Timed regional NZ



■ USA
 ■ EU-12
 ■ China
 ■ India
 ■ Africa_Western
 ■ South America_Northern

■ Canada
 ■ EU-15
 ■ Taiwan
 ■ Pakistan
 ■ South Africa
 ■ South America_Southern

■ Mexico
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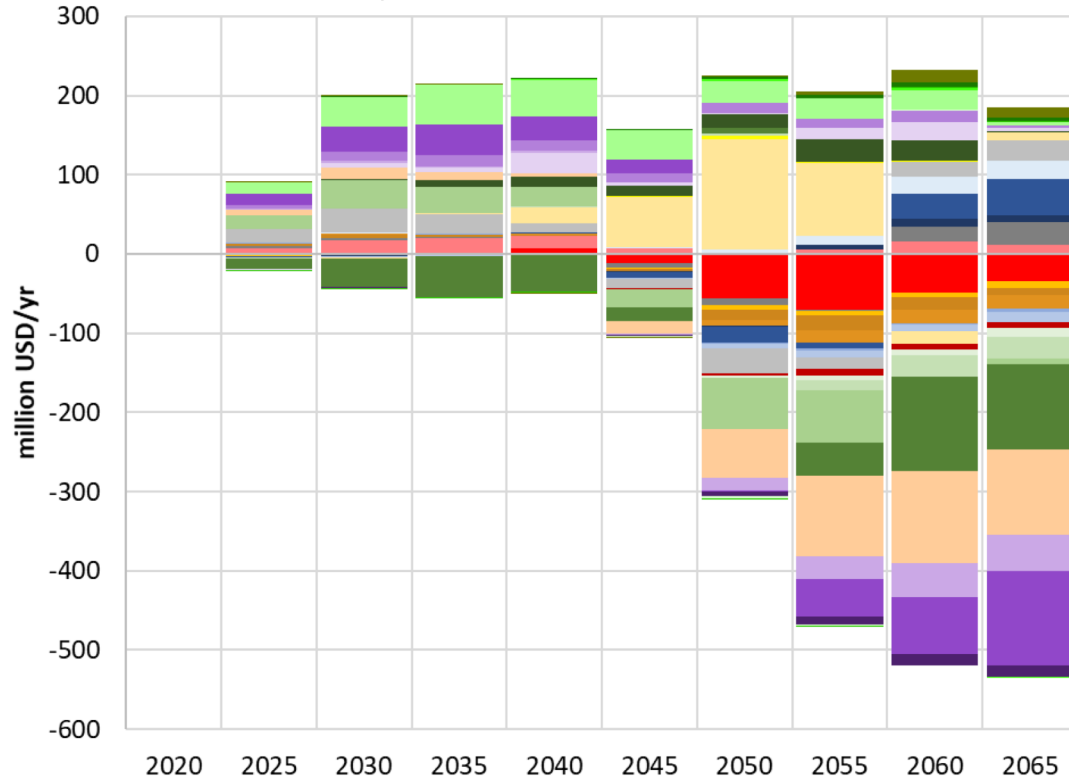
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 ■ Central America and Caribbean

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 ■ Africa_Southern
 ■ Colombia

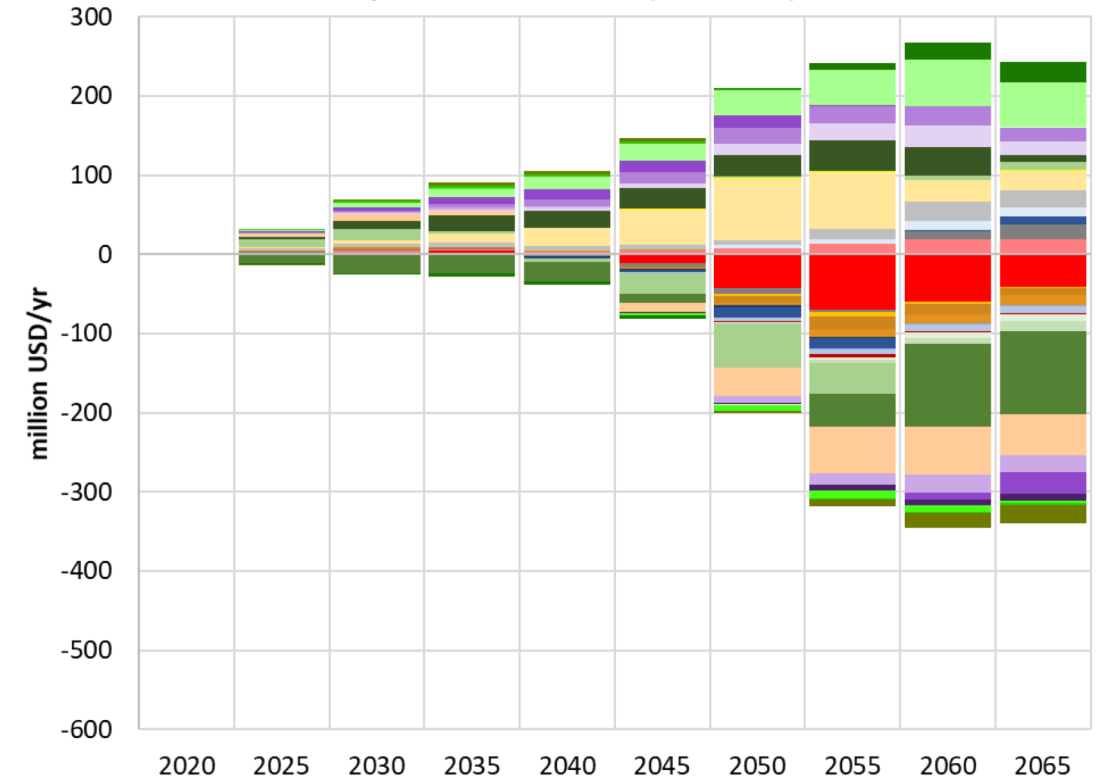


MARKET EFFICIENCY GAINS: FOR WHOM?

Policy cost incl transfers (LUC=1)



Policy cost incl transfers (LUC=0.25)



USA
EU-12
China
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Africa_Western
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Taiwan
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South Africa
South America_Southern

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Central Asia
Middle East
Argentina

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Africa_Eastern
Brazil

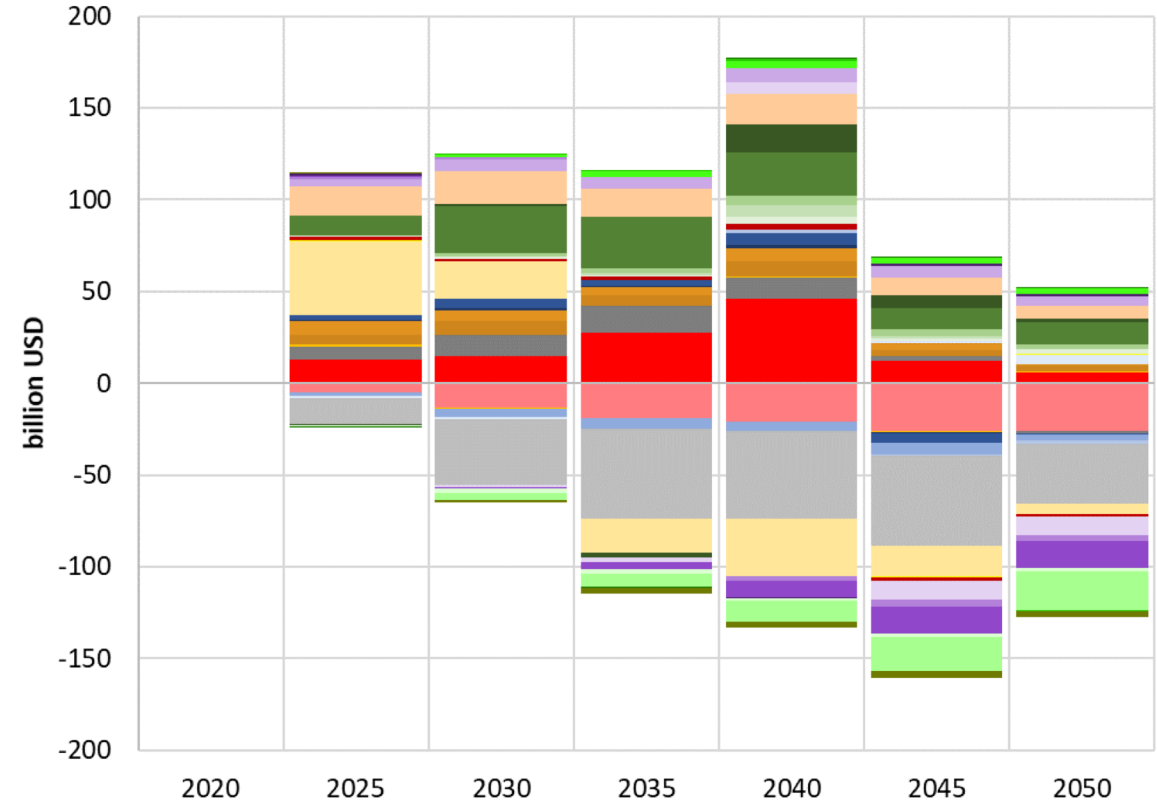
Japan
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Africa_Southern
Colombia

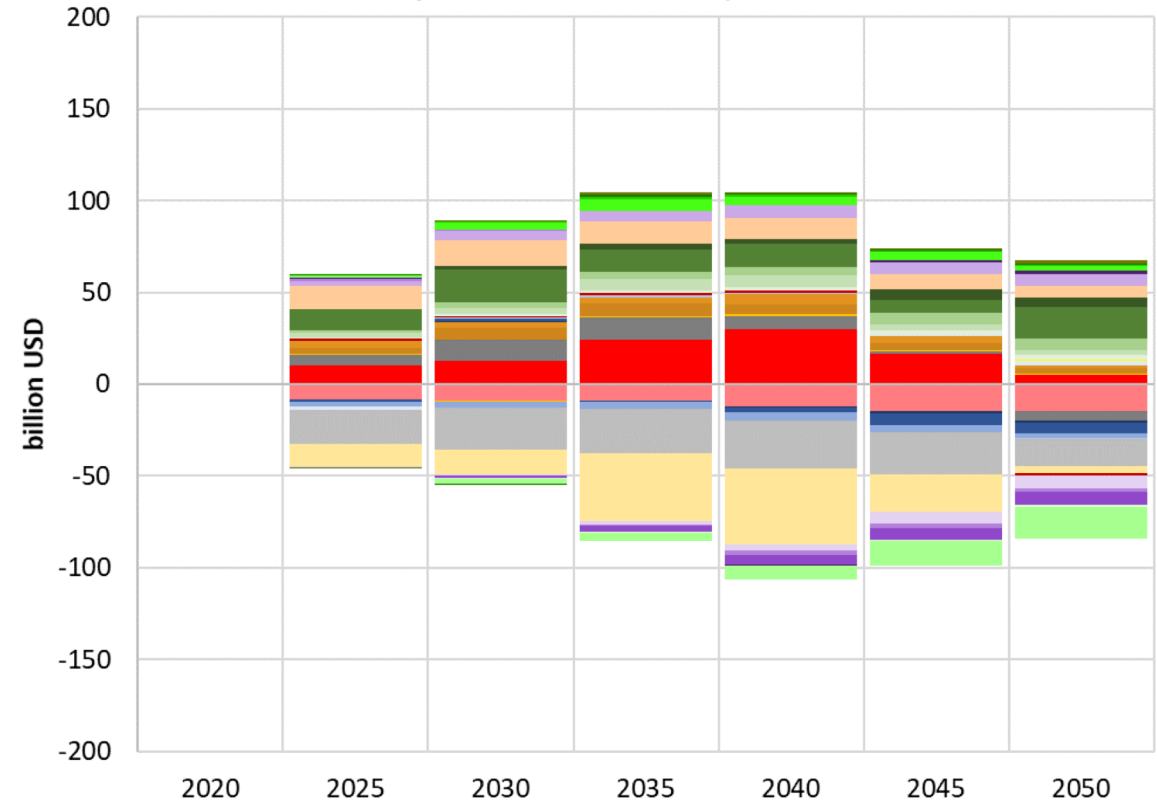


EFFECT ON ELECTRICITY SECTOR INVESTMENTS

Electricity sector investments (LUC=1)



Electricity sector investments (LUC=0.25)



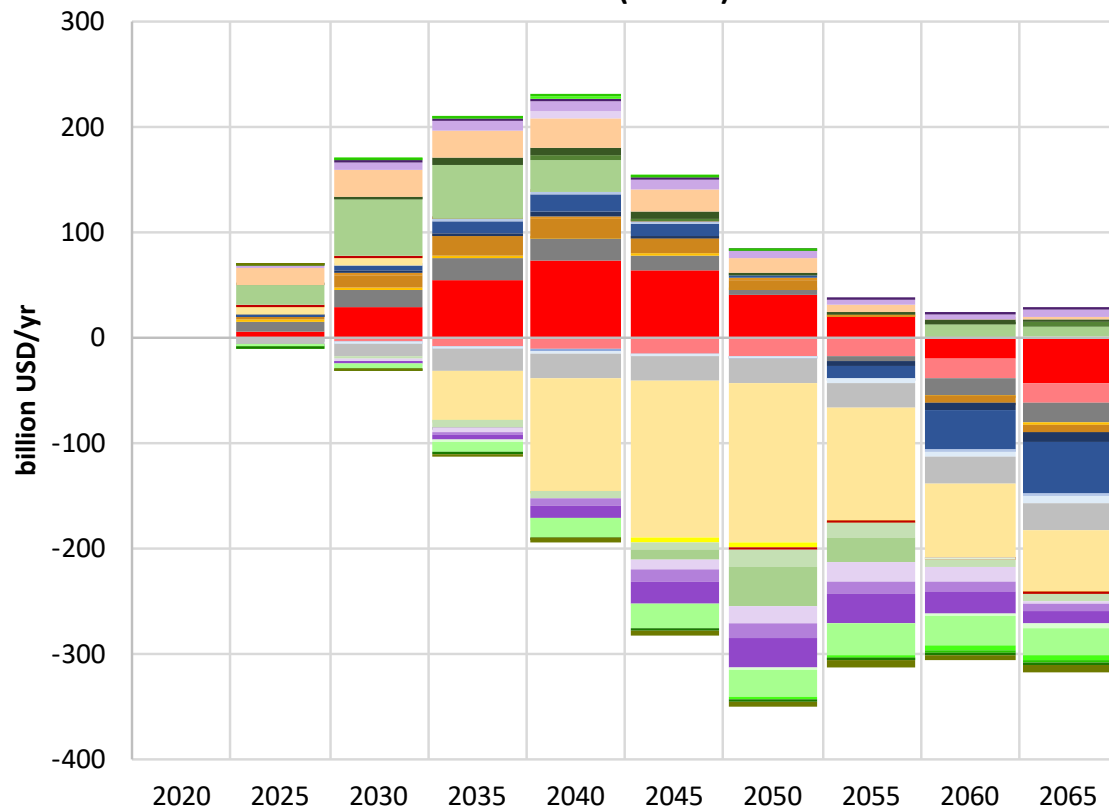
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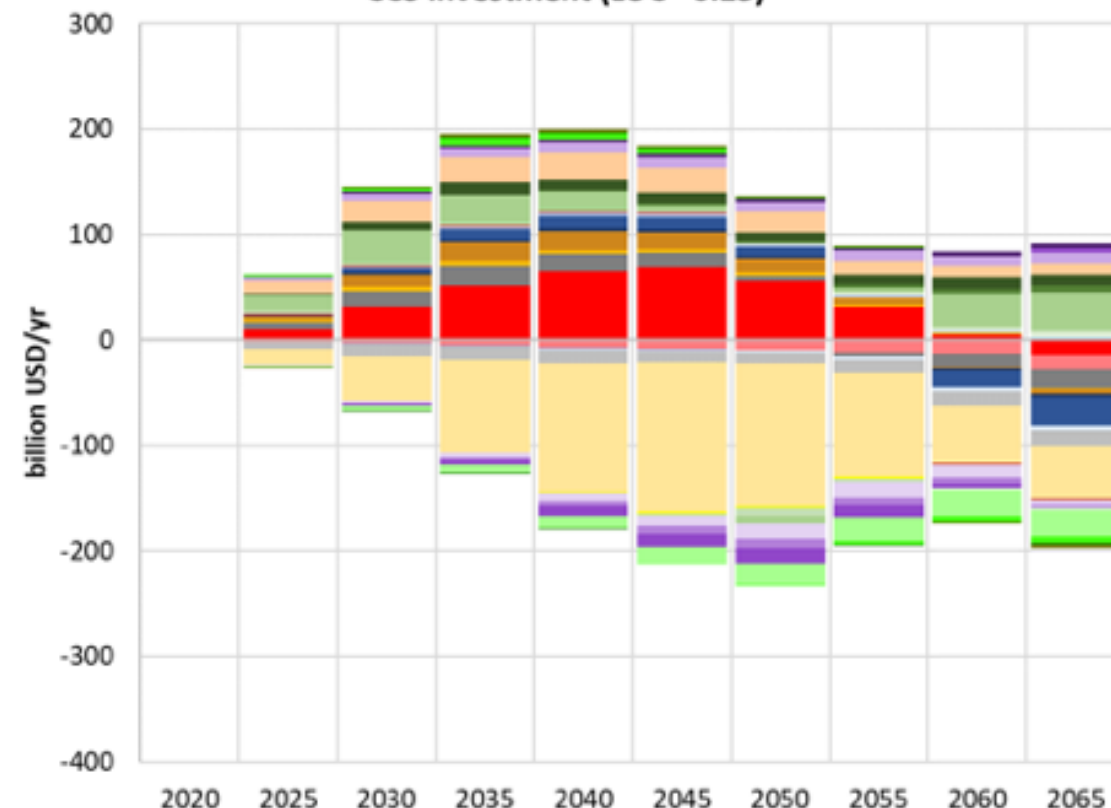


DISTRIBUTIONAL QUESTION – INVESTING IN CCS

CCS investment (LUC=1)



CCS investment (LUC= 0.25)



■ USA
 ■ EU-12
 ■ China
 ■ India
 ■ Africa_Western
 ■ South America_Northern

■ Canada
 ■ EU-15
 ■ Taiwan
 ■ Pakistan
 ■ South Africa
 ■ South America_Southern

■ Mexico
 ■ Europe_Eastern
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 ■ Europe_Non_EU
 ■ South Asia
 ■ Africa_Eastern
 ■ Brazil

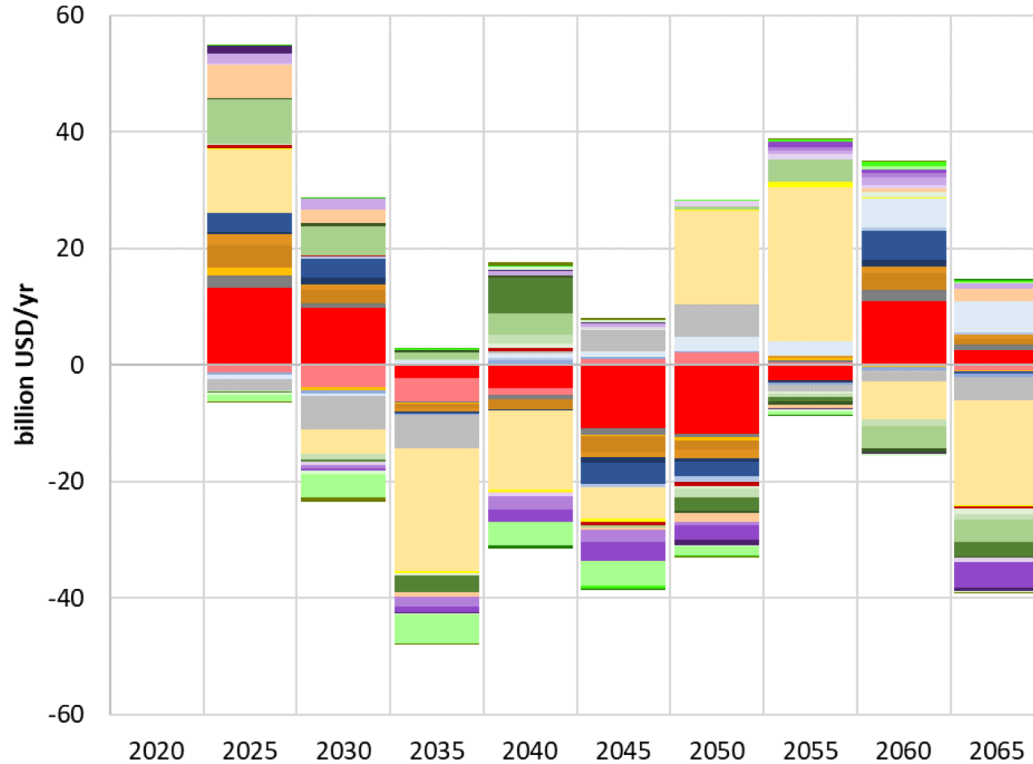
■ Japan
 ■ European Free Trade Association
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 ■ Africa_Northern
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■ South Korea
 ■ Russia
 ■ Indonesia
 ■ Africa_Southern
 ■ Colombia

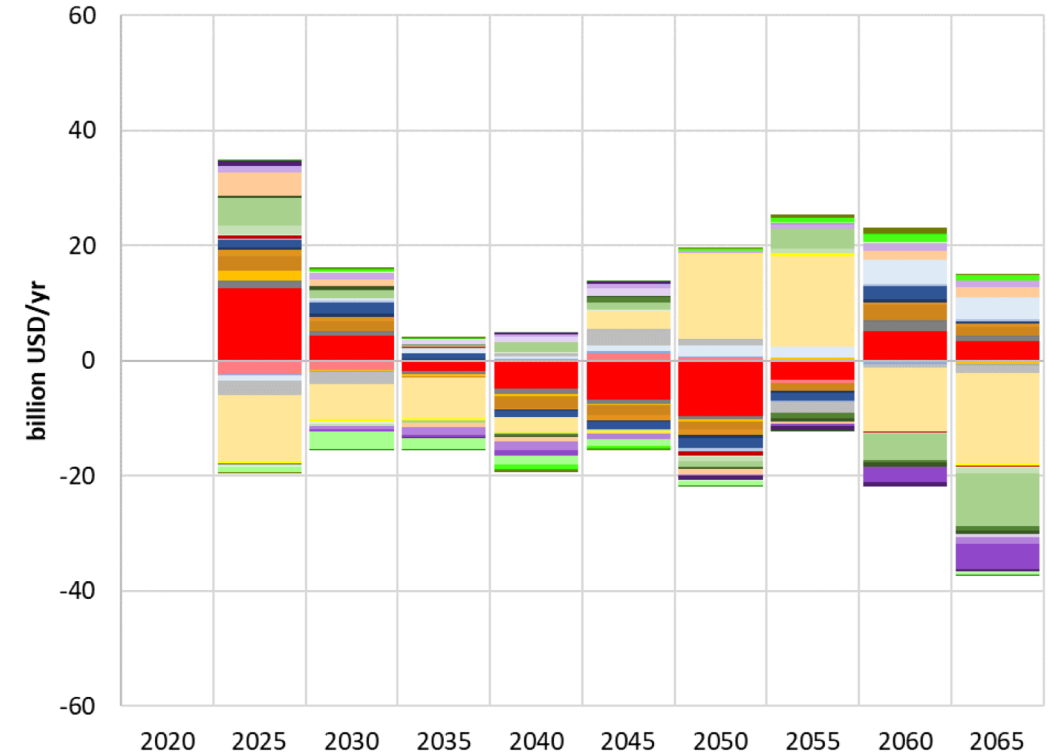


DISTRIBUTIONAL QUESTION – INVESTING IN WIND & SOLAR

Wind & solar investment (LUC=1)



Wind & solar investment (LUC=0.25)



USA
EU-12
China
India
Africa_Western
South America_Northern

Canada
EU-15
Taiwan
Pakistan
South Africa
South America_Southern

Mexico
Europe_Eastern
Central Asia
Middle East
Argentina

Australia_NZ
Europe_Non_EU
South Asia
Africa_Eastern
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Russia
Indonesia
Africa_Southern
Colombia



KEY RESULTS & IMPLICATIONS

- Market efficiency gains
- .. but not for everyone
- Nuanced story beyond conventional understanding of beneficiaries of carbon trade
- Market design matters
- Choice between investing versus buying mitigation
- Investing in CCS & RE for higher near-term ambition & longer-term trade advantages
- There are no losers - Need to consider other benefits beyond mitigation costs; need to innovate according to market design

THANK YOU

Closing sentence or contact information
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