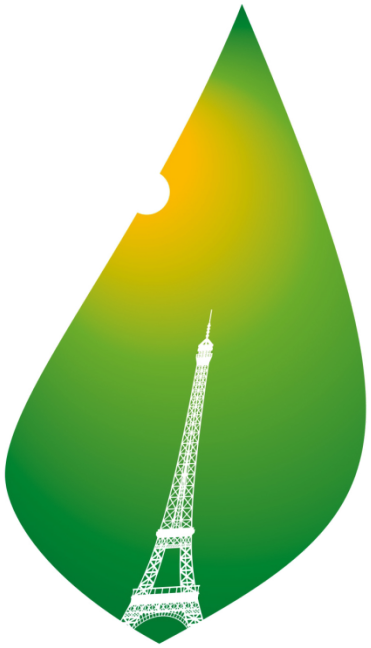
Effective and *politically-feasible* decarbonization pathways

A framework for the climate change knowledge agenda

Adrien Vogt-Schilb
Climate Change Economist
avogtschilb@iadb.org

IDB Inter-American Development Bank

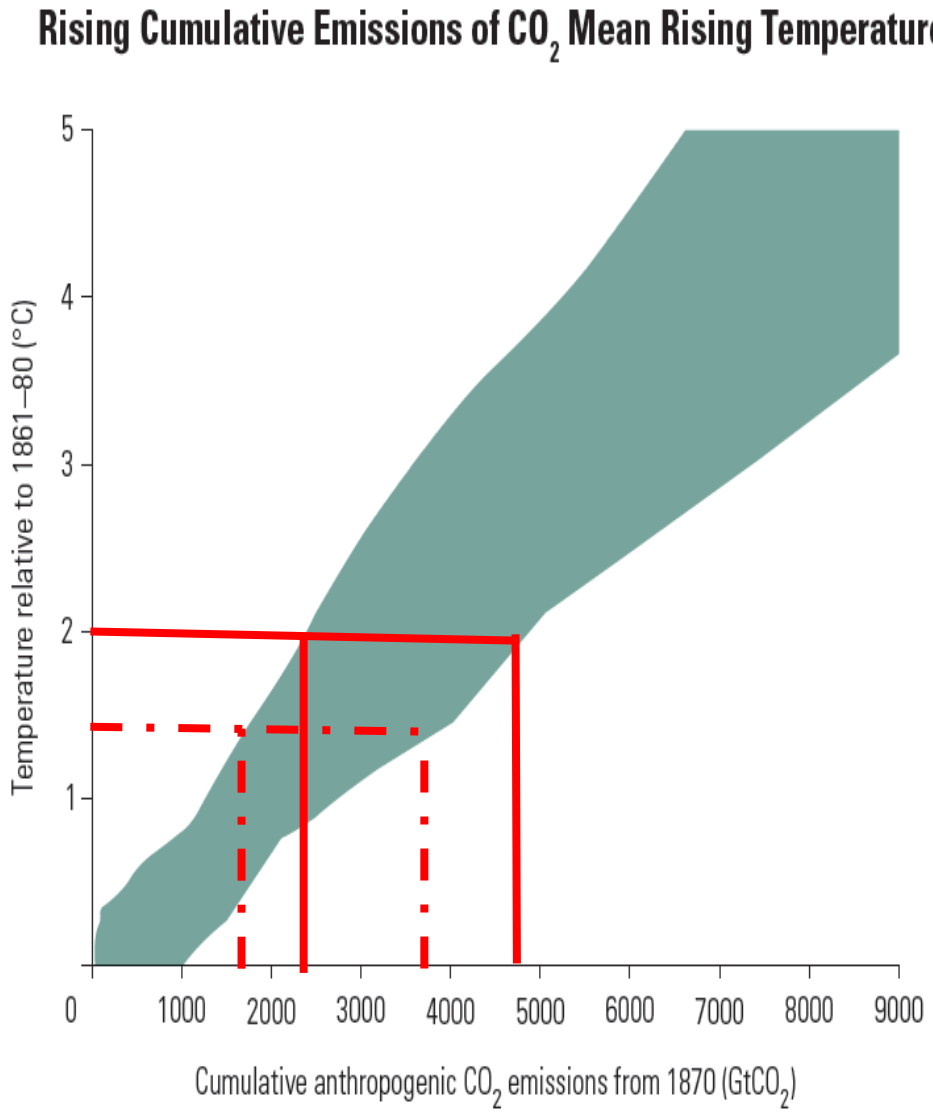


*Holding the increase in the global average temperature to **well below 2 °C** above pre-industrial levels and to pursue efforts to limit the temperature increase to **1.5 °C** above pre-industrial levels*

How much do we need
to reduce global carbon emissions
to implement Paris?

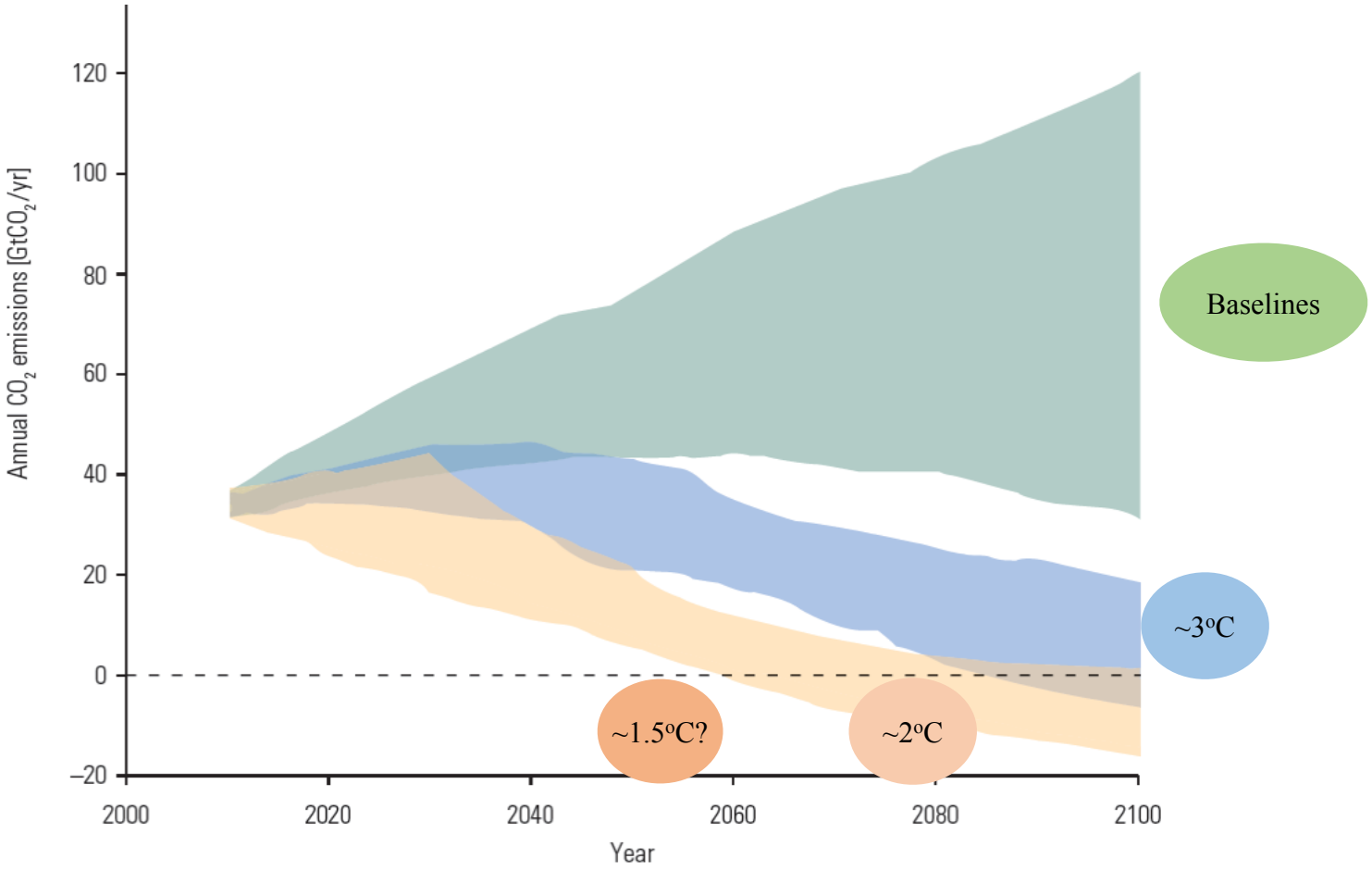
100%

Temperature targets imply a **carbon budget**



Fay, M., Hallegatte, S., Vogt-Schilb, A., Rozenberg, J., Narloch, U., Kerr, T., 2015. Decarbonizing Development: Three Steps to a Zero-Carbon Future. World Bank Publications.

We need zero net emissions to stabilize climate, the question is how to reduce emissions



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A world with zero net emissions is possible, building on 4 pillars

Decarbonization of electricity generation, i.e. renewable and/or Carbon Capture and Sequestration	Fuel shifting (especially to electricity) in transport, heating, and industries	Efficiency in all sectors, including building, transport, and agriculture	Preservation and increase of natural carbon sinks

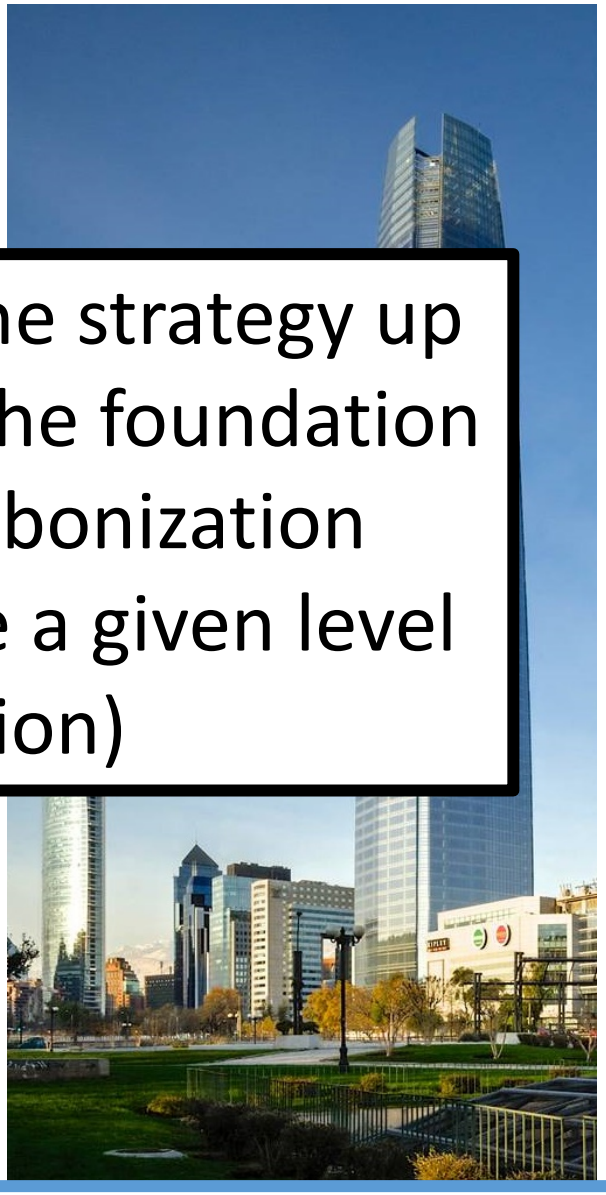
The two main challenges of NDC implementation

1. Aligning short-term NDCs with the need for long-term decarbonization

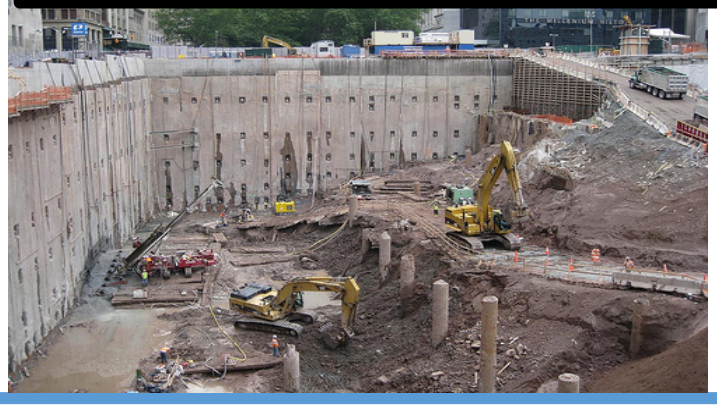
2. Dealing with the political economy of emission reduction policies

Emission reduction

-90%

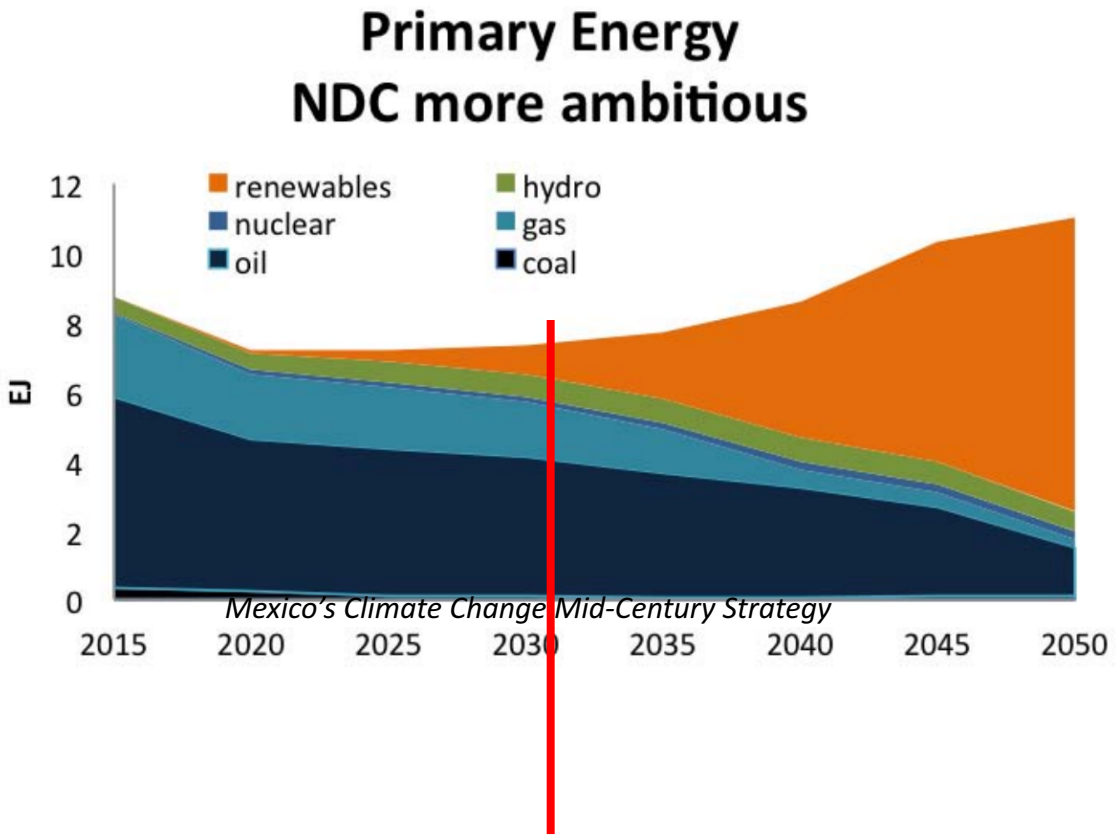


The objective for the strategy up to 2025 is to build the foundation for a deep decarbonization (not just to achieve a given level of reduction)



Time

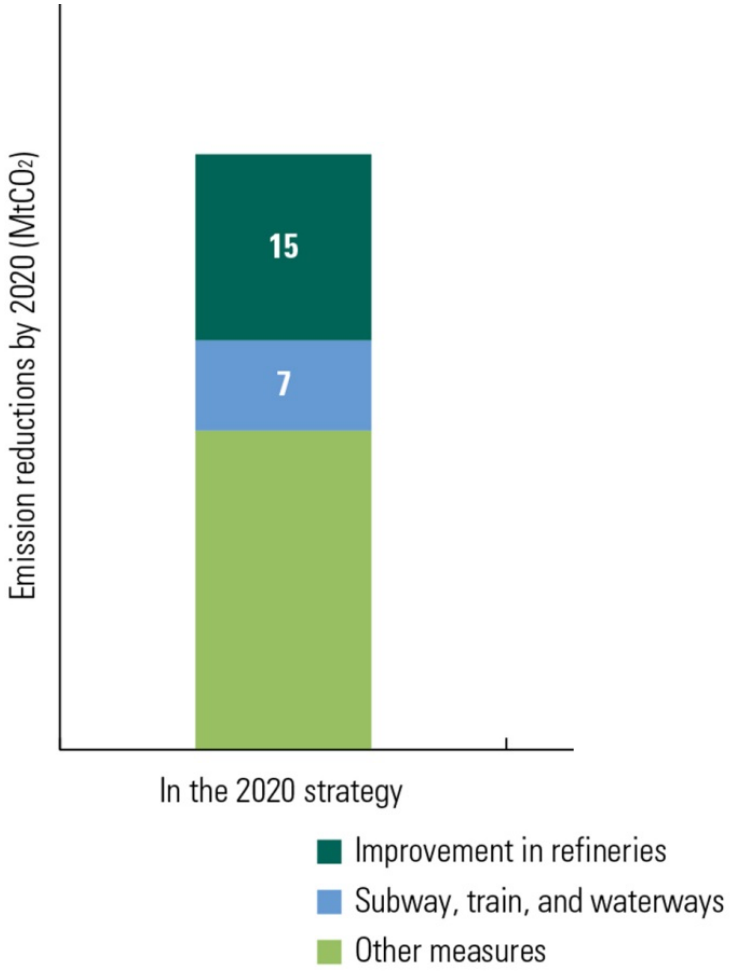
The key is to think of **short-term targets** within **long-term decarbonization pathways**



Example of 2025 targets consistent with decarbonization before 2100

Decarbonization of electricity generation, i.e. renewable and/or Carbon Capture and Sequestration	Fuel shifting (especially to electricity) in transport, heating, and industries	Efficiency in all sectors, including building, transport, and agriculture	Preservation and increase of natural carbon sinks
40% of electricity is renewable	100% buses in key cities are electric	50% of new buildings are energy efficient	0% deforestation

Short-term emission reductions should be consistent with long-term decarbonization : the Brazilian example



Example of needed short-term targets:

- Get to 40% of renewable power by 2025
- Get all urban buses to be electric by 2030
- Have most new buildings in city be less than 1km away from metro by 2025
- Stop and reverse deforestation by 2020

Vogt-Schilb, A., Hallegatte, S., de Gouvello, C., 2015. Marginal abatement cost curves and the quality of emission reductions: a case study on Brazil. Climate Policy 15, 703–723.

What policies could deliver those targets ?

Politically-feasible carbon tax

Gas power plant

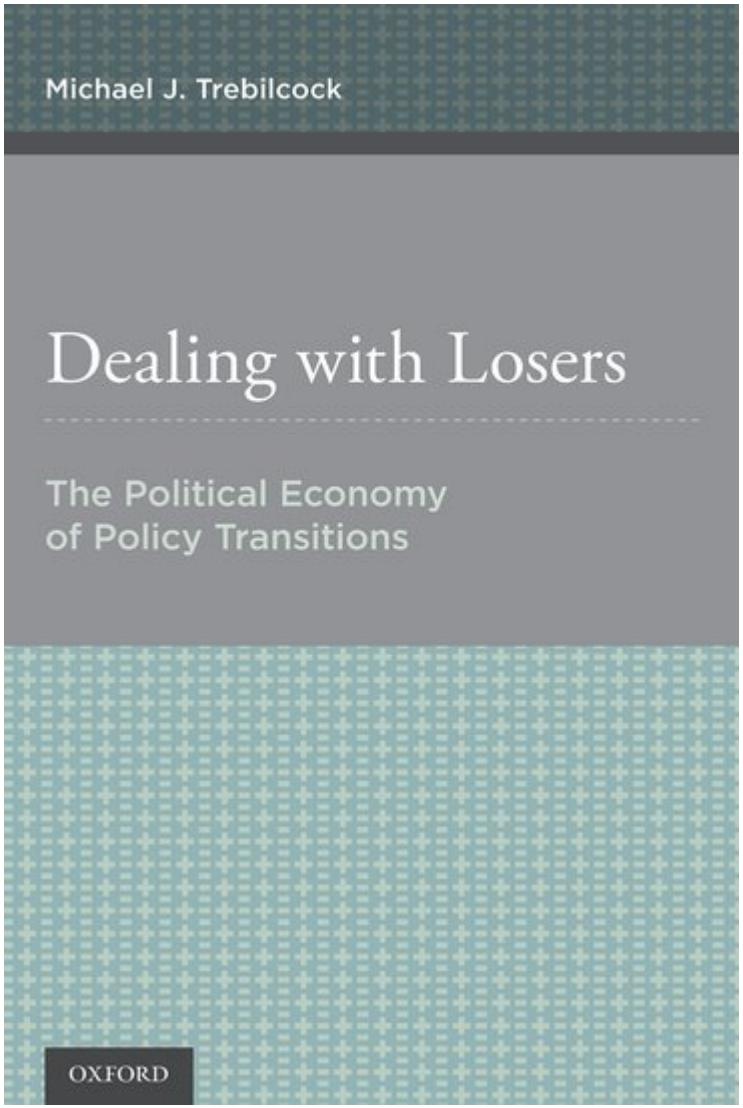
Public renewable power auctions

The two main challenges of NDC implementation

1. Aligning short-term NDCs with the need for long-term decarbonization

2. Dealing with the political economy of emission reduction policies

Ambitious policy reform requires taking care of the **political economy**



The UK Slavery Abolition Act of 1833 paid 20 million pounds in compensation to plantation owners in British Colonies

about $21 billion in present day value and almost 40 percent of the British budget at the time

One particular political economy issue is **stranded assets**

Managing stranded assets and stranded jobs

- Transform losers into winners
  - Worker retraining
  - Green pilot projects in negatively affected areas
  - Automakers and electric cars
- Avoid stranded assets in the first place

Rozenberg, Julie, Adrien Vogt-Schilb, and Stephane Hallegatte. "Instrument Choice and Stranded Assets in the Transition to Clean Capital" IDB WP 2017.

Assessing **effective** and **politically-feasible** decarbonization pathways: a framework

1 – Start from nationally determined **short-term targets consistent with long-term decarbonization**

e.g. - 20% renewable in 2025
- 15% plug in hybrid in 2020
- no deforestation by 2022

2 – Design policies that achieve those targets and **minimize disruption** (including stranded assets and distributional impacts)

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