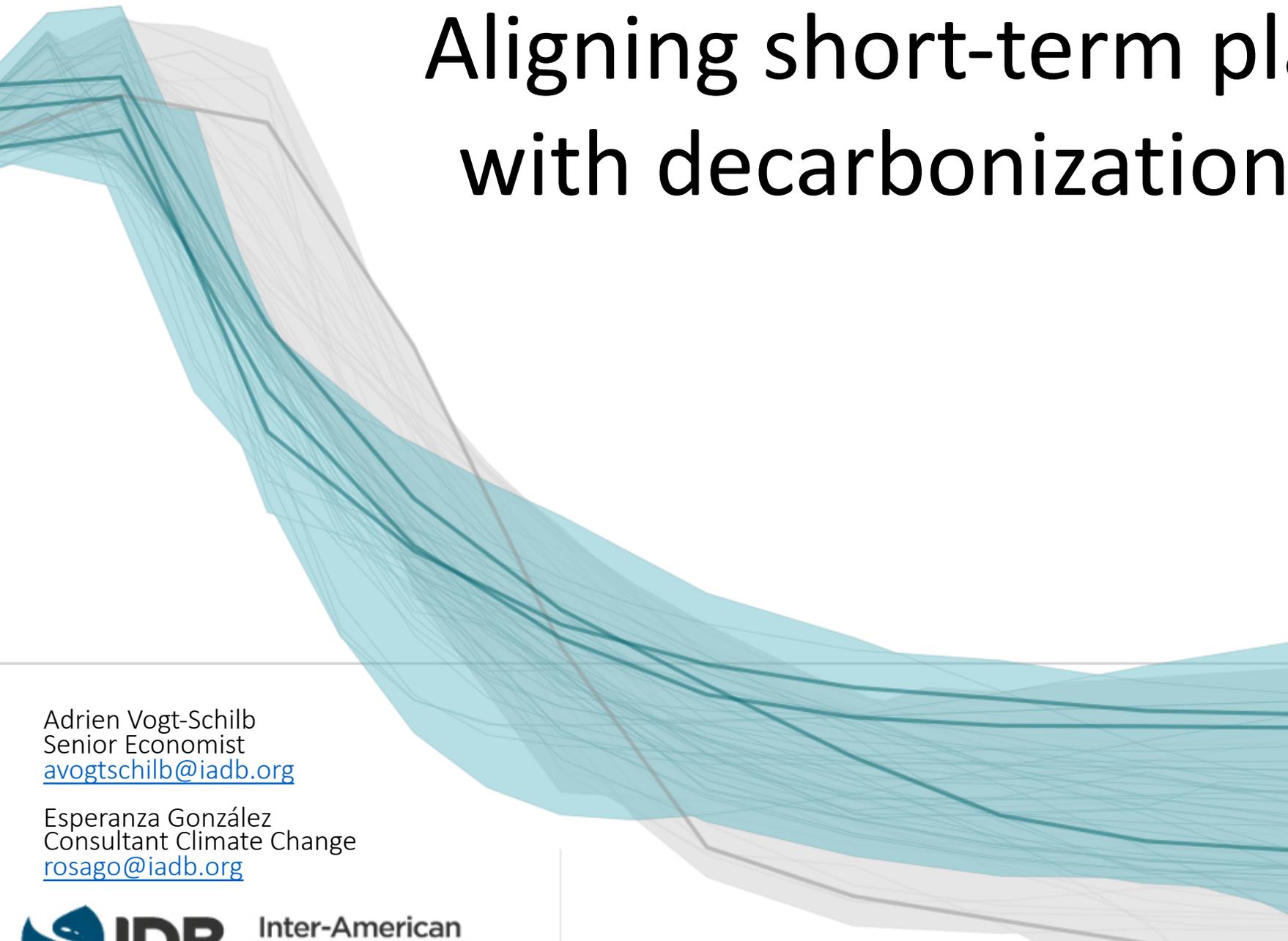
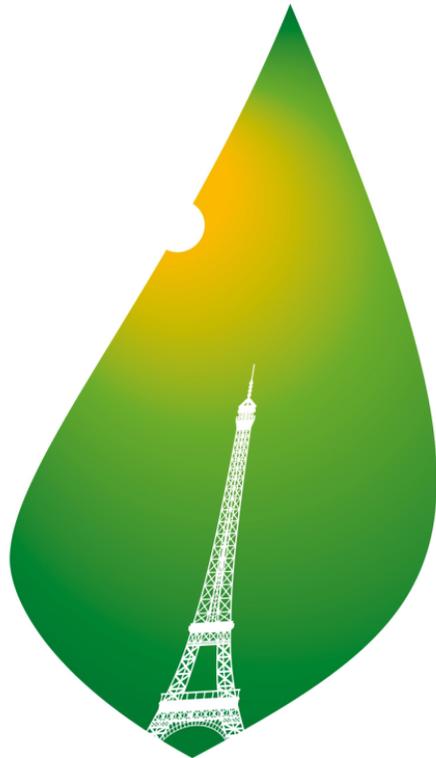


Aligning short-term planning with decarbonization goals



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COP21 • CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

*Holding the increase in the global average temperature to **well below 2 °C** and as close to **1.5 °C** as possible*

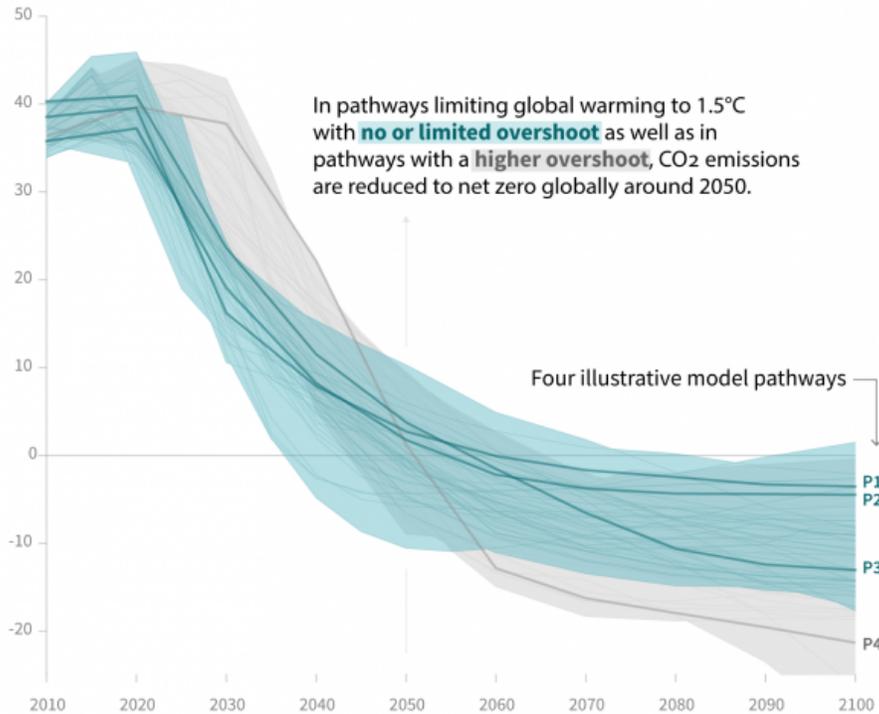
How much do we need to reduce global carbon emissions to implement Paris?

100%

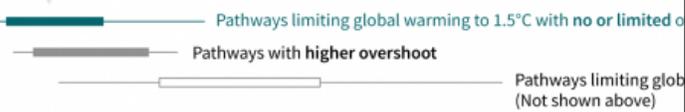
To meet Paris it is necessary to achieve zero net CO₂ emissions between 2050 and 2070

Global total net CO₂ emissions

Billion tonnes of CO₂/yr



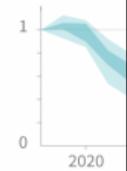
Timing of net zero CO₂
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios



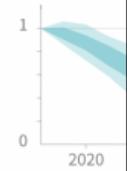
Non-CO₂ emissions relative to 2010

Emissions of non-CO₂ forcers are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

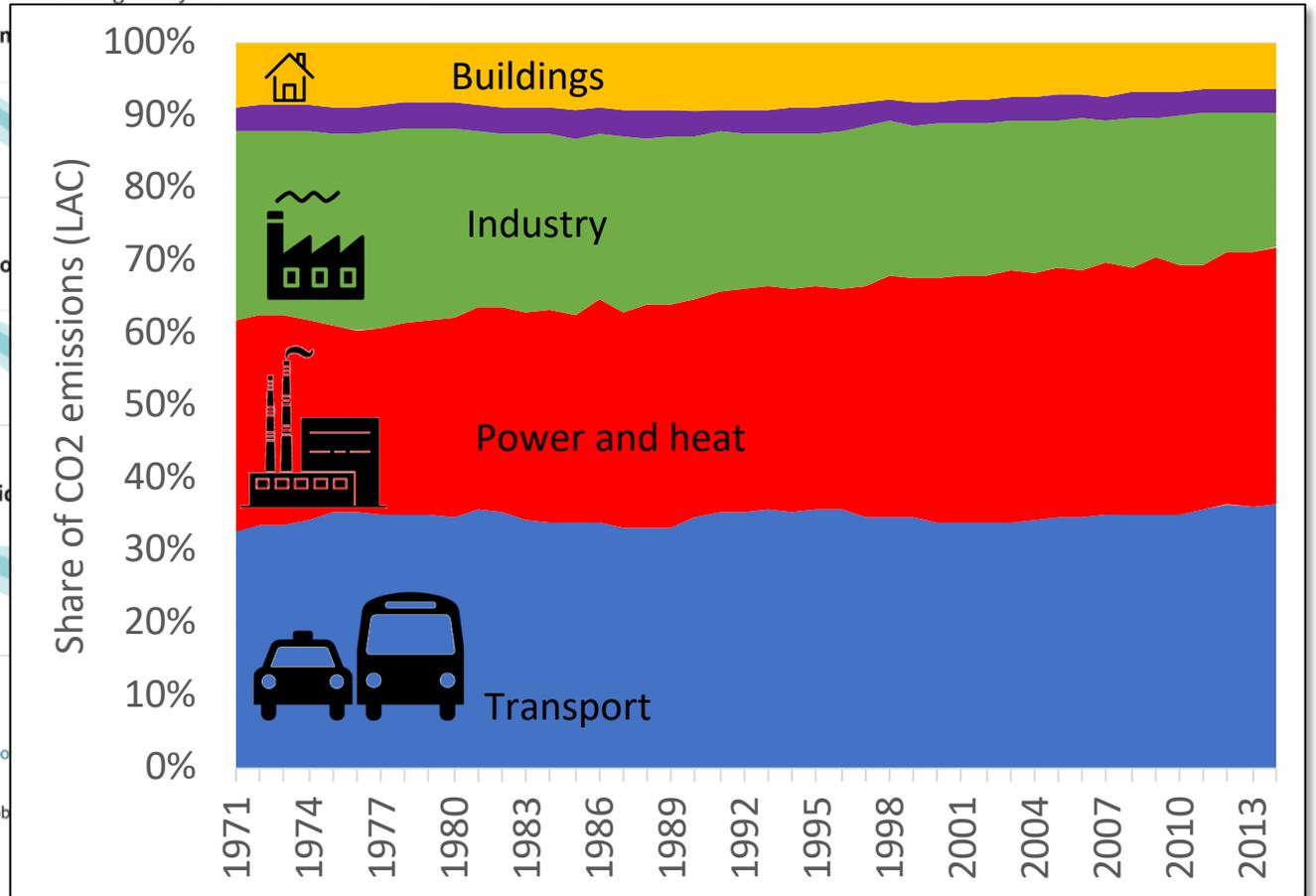
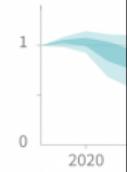
Methane emissions



Black carbon emissions



Nitrous oxide emissions



A world with zero net emissions is technically possible, based on 5 pillars.



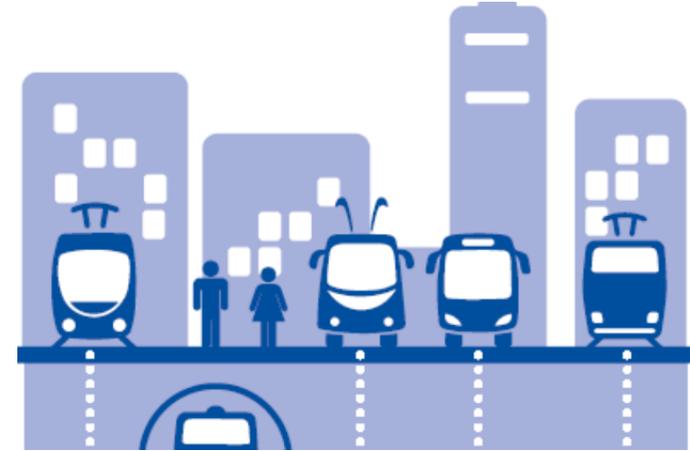
1. Decarbonizing **electricity generation**

2. **Electromobility**, to take advantage of clean electricity (and electrification of industrial processes and residential energy)

3. Increase the share of **public and nonmotorized transport**

4. Stopping deforestation and increasing **reforestation**

5. **Reduce waste** and increase efficiency in the energy and food sectors, and switch to **low-carbon diets and materials**



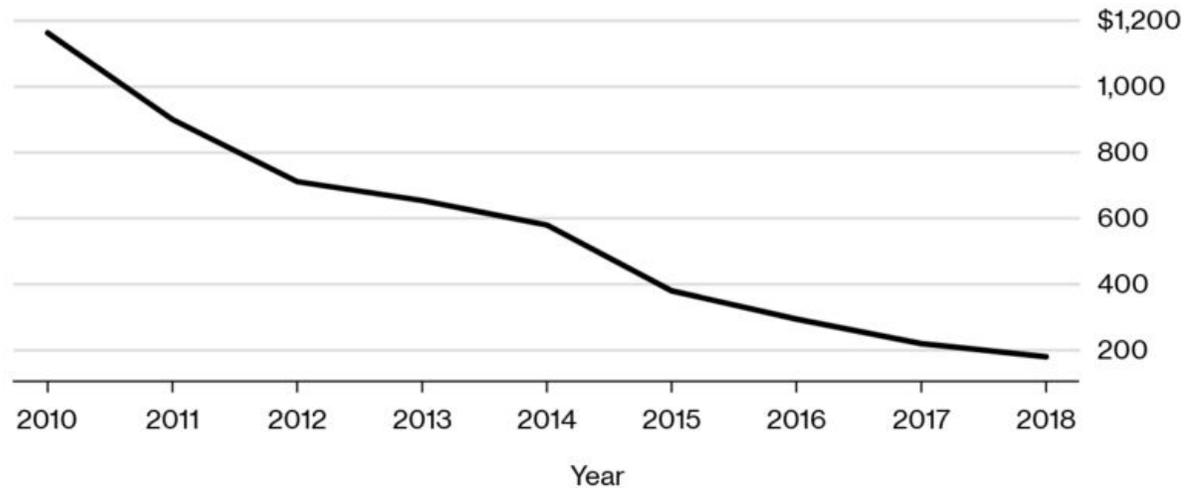
A world with zero net emission is an economic opportunity, not necessarily a cost

The cost of renewable energy and batteries is dropping

Battery Prices Plunge

Rising production of lithium-ion battery packs has slashed prices.

Price (\$/kWh)

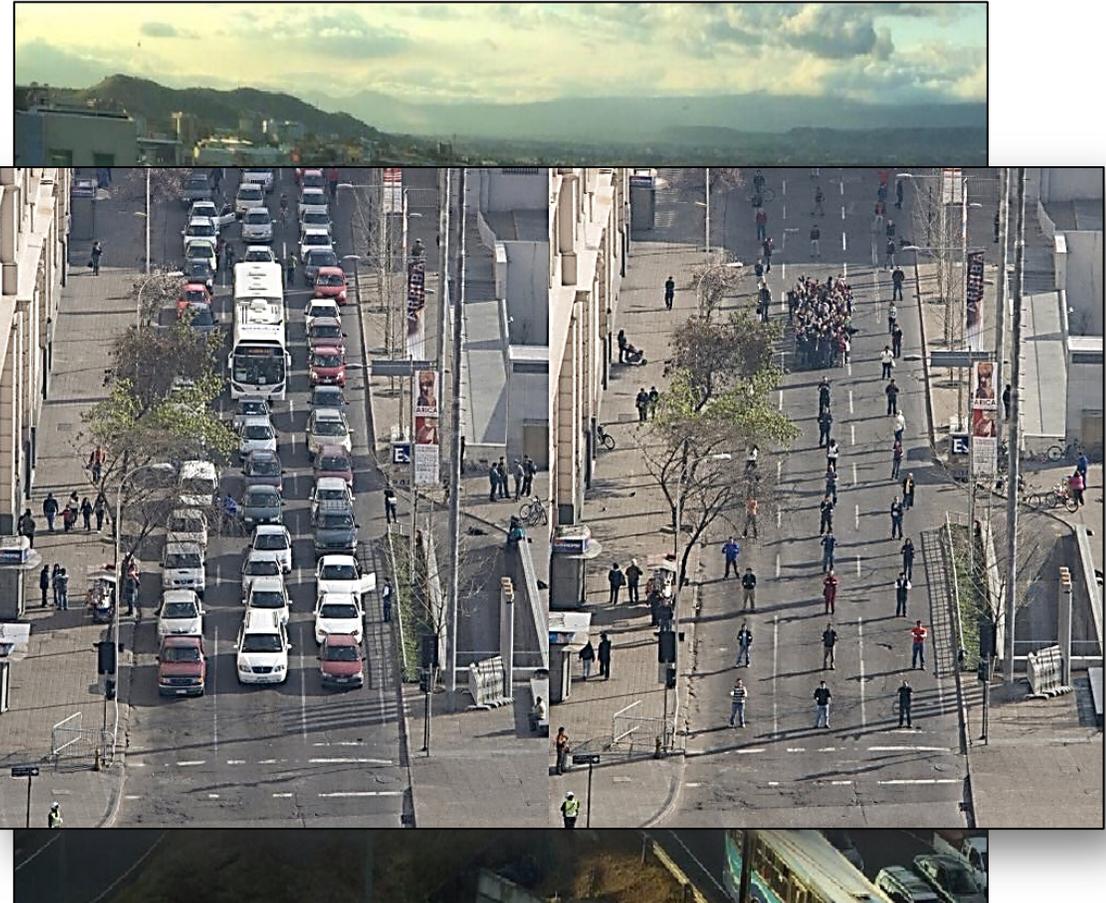


Source: BloombergNEF

Bloomberg



Many decarbonization options come with quality of life and competitiveness benefits



But one challenge is that the transition to zero net emissions can create winners and losers...



... and a second challenge is the implementation of immediate transformational, not incremental, changes



Long-term decarbonization strategies (LTS) recognize the long-term goal, and help navigate the two challenges in the transition



1. LTSs establish a clear **vision of a carbon-free** future that brings prosperity

- Improving public transportation will improve quality of life and business environment (Costa Rica)

2. LTS allow **anticipating costs and manage tradeoffs**

- Workers and communities affected by the closure of coal-fired power plants (Chile)

3. They are the basis for deciding medium-term objectives and **immediate action**

- Costa Rica: 85% electric buses by 2050 -> 30% by 2030
-> update regulations and concessions in 2021





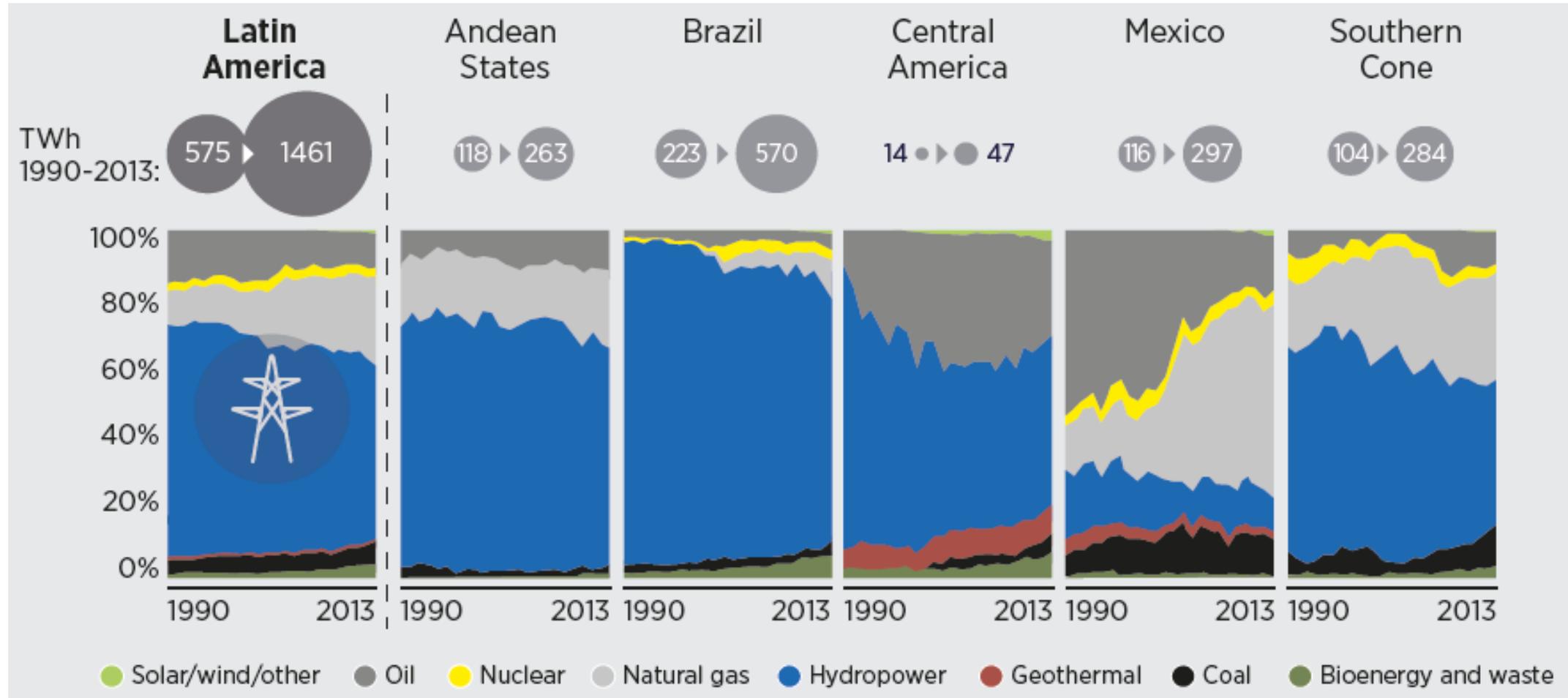
The long-term view allows anticipating stranded assets and manage them

1. **Carbon lock-in:** half of existing and planned power plants need to be canceled or stranded for the region to meet Paris
2. **Current NDCs** are not the solution: improving the NDCs could reduce stranding costs by 27-40% in the power sector

Committed emissions and the risk of stranded assets from power plants in Latin America and the Caribbean



Context: Hydropower in LAC is giving room to natural gas



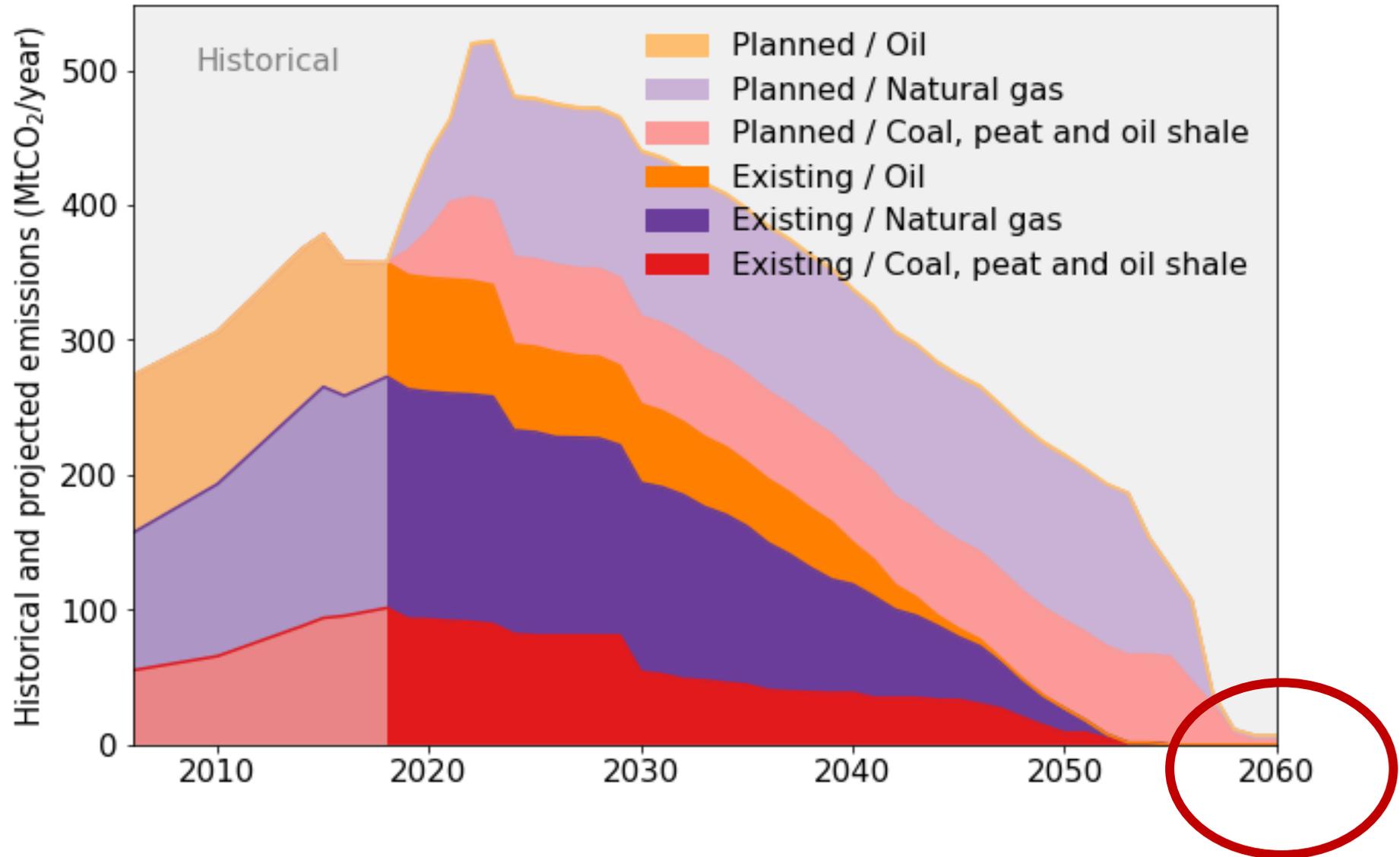
Source: IEA, 2015

Absent policies, natural gas and coal could play an increasingly important role in the electricity mix.
(Lucena et al 2016).

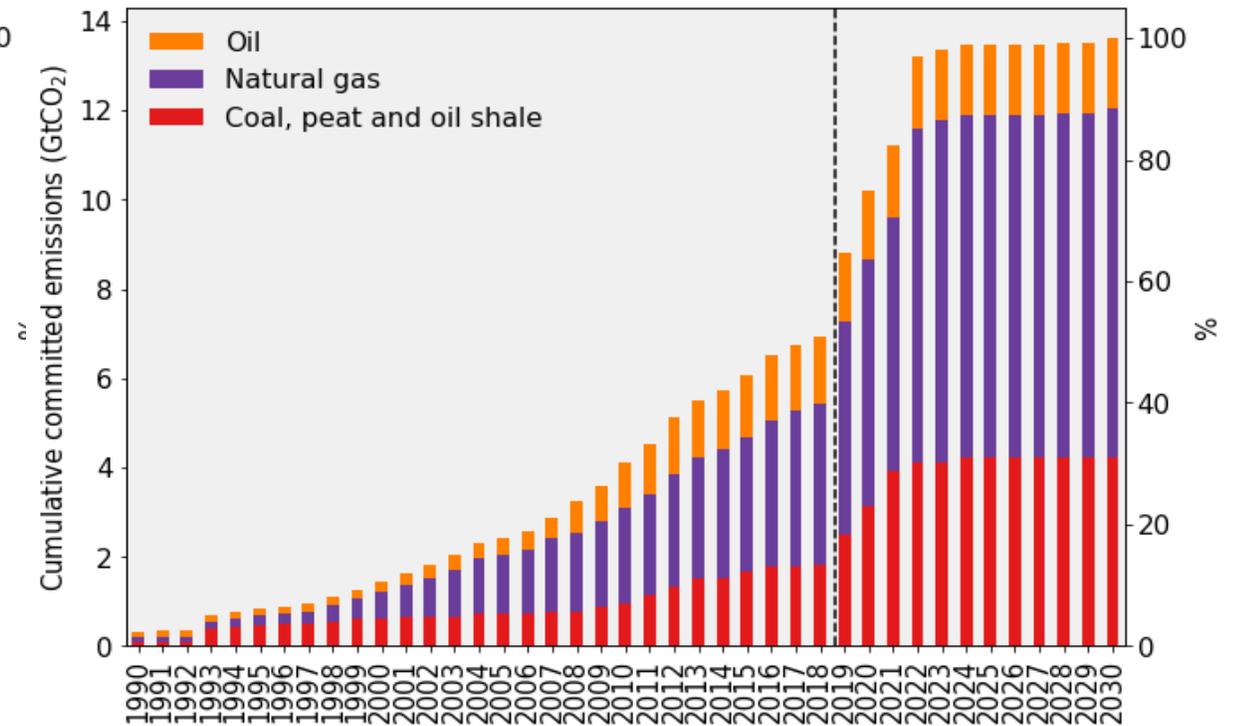
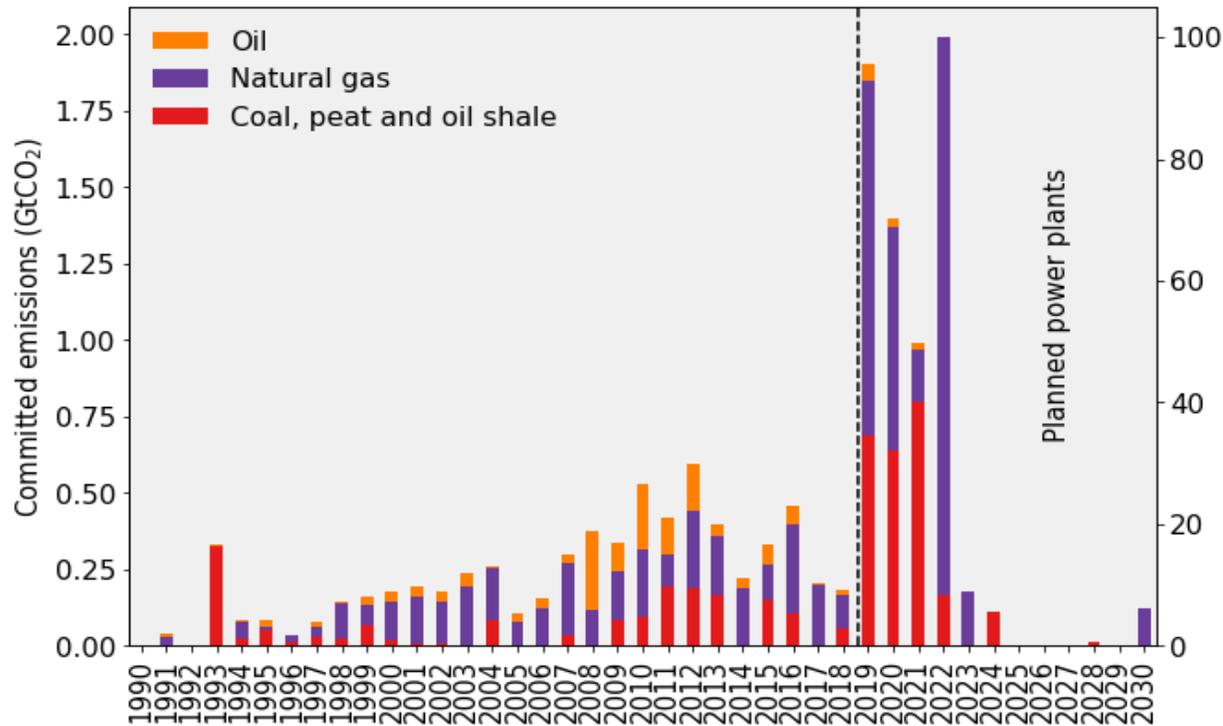
We compared committed emissions from power plants and carbon budgets consistent with 1.5 to 2C

- **Committed emissions:** Carbon emissions that would result from the operation of fossil-fueled power plants during their typical lifetime.
- **Carbon budget:** Cumulative emissions from the power generation sector extracted from global pathways that keep global warming in the 1.5–2°C range.

Existing and planned power plants in LAC commit emissions far in the future

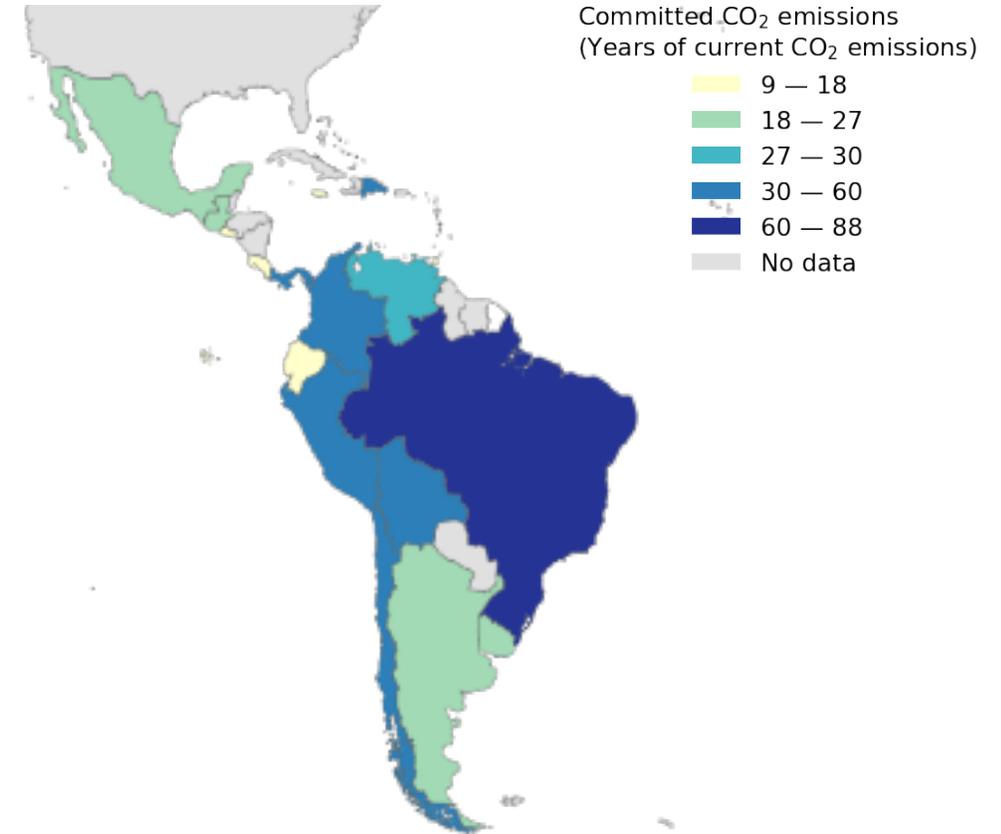
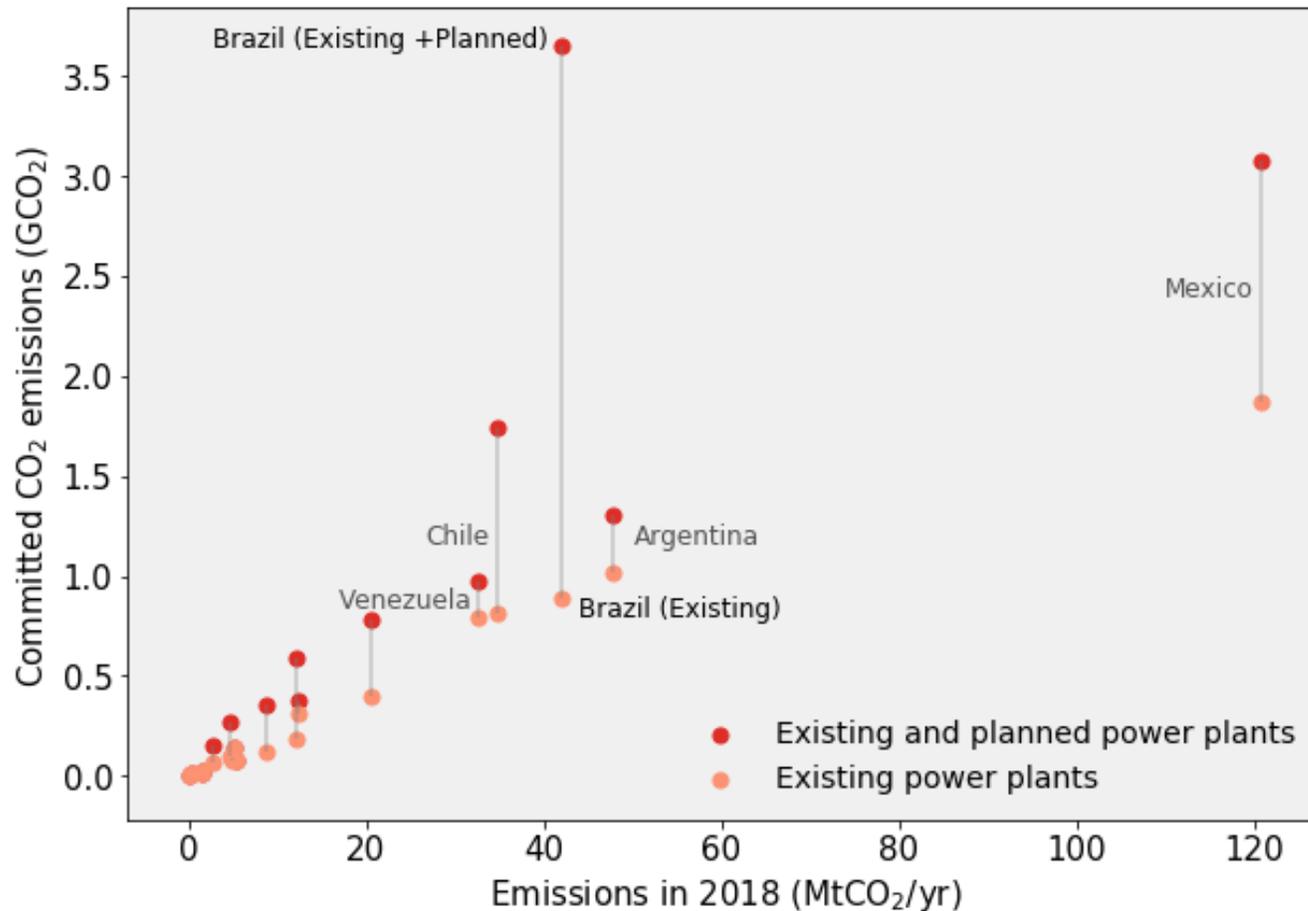


Planned gas power plants represent more than 50% of carbon commitments



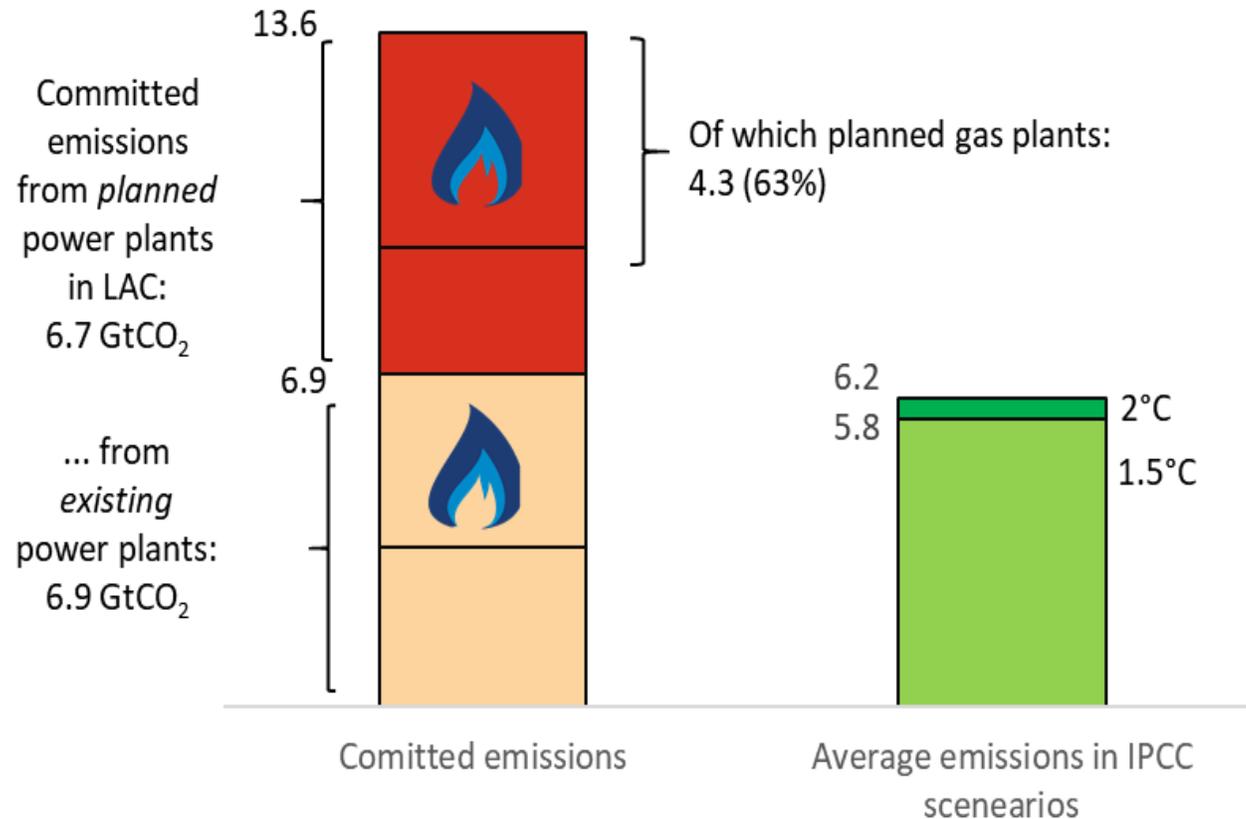
González-Mahecha, Rosa Esperanza, Oskar Lecuyer, Michelle Hallack, Morgan Bazilian, and Adrien Vogt-Schilb.
“Committed Emissions and Risk of Stranded Assets from Existing and Planned Power Plants in Latin America.” *IDB Discussion Paper 708*, 2019. <http://dx.doi.org/10.18235/0001827>.

Low emissions today can mask substantial committed emissions (e.g. Brazil)



González-Mahecha, Rosa Esperanza, Oskar Lecuyer, Michelle Hallack, Morgan Bazilian, and Adrien Vogt-Schilb. "Committed Emissions and Risk of Stranded Assets from Existing and Planned Power Plants in Latin America." *IDB Discussion Paper 708*, 2019. <http://dx.doi.org/10.18235/0001827>.

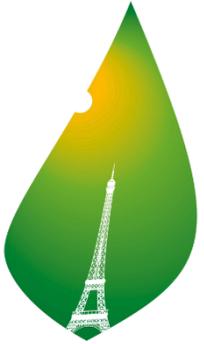
Existing and planned power plants in the region would emit twice as much as what is consistent with the Paris Agreement goals



- 10% to 16% of **existing fossil-fueled** power plants **need to be “stranded”** to meet average carbon budgets from IPCC
- If **planned power plants are built**, meeting Paris requires stranding 52%-55% of fossil fuel power plants.
- Planned **natural gas represents most of committed emissions**, suggesting that natural gas **is not a good bridge** in the transition to zero net emissions

González-Mahecha, Rosa Esperanza, Oskar Lecuyer, Michelle Hallack, Morgan Bazilian, and Adrien Vogt-Schilb. “Committed Emissions and Risk of Stranded Assets from Existing and Planned Power Plants in Latin America.” *IDB Discussion Paper 708*, 2019. <http://dx.doi.org/10.18235/0001827>.

Main messages



Even though LAC power sector emits less than 3% of global power generation emissions, the Paris agreement matters to energy planners in LAC.

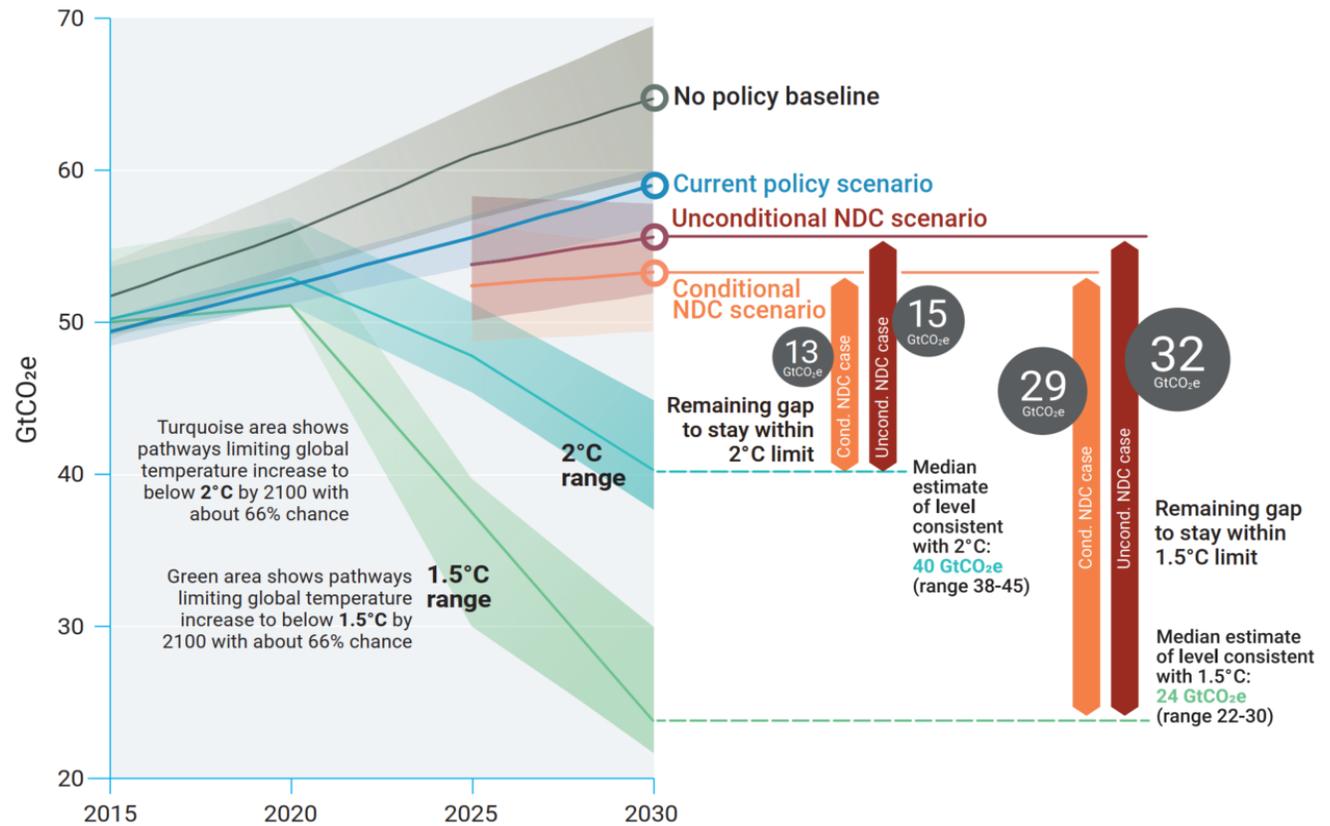


Building all planned plants then meeting the Paris temperature targets would require stranding of 52% of power plants.



Almost no room for gas power as a bridge in the decarbonization.

2- Current NDCs are not the solution: strengthening the NDCs could reduce stranding costs by 27-40% in the power sector



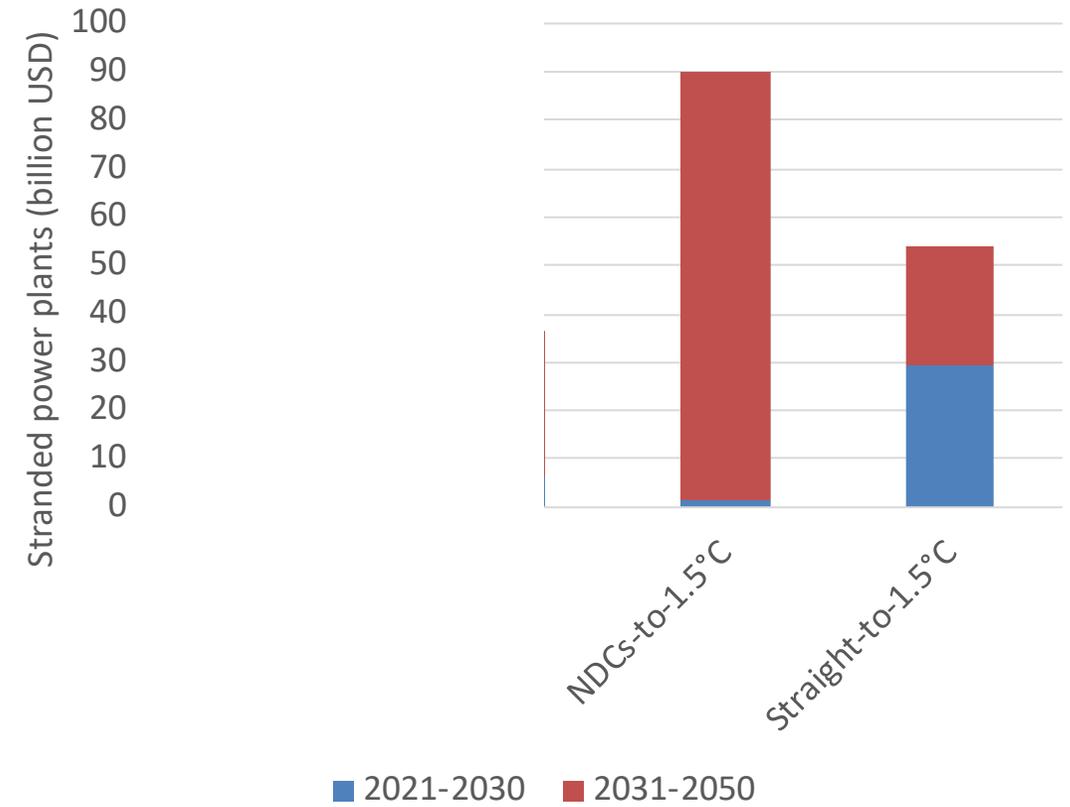
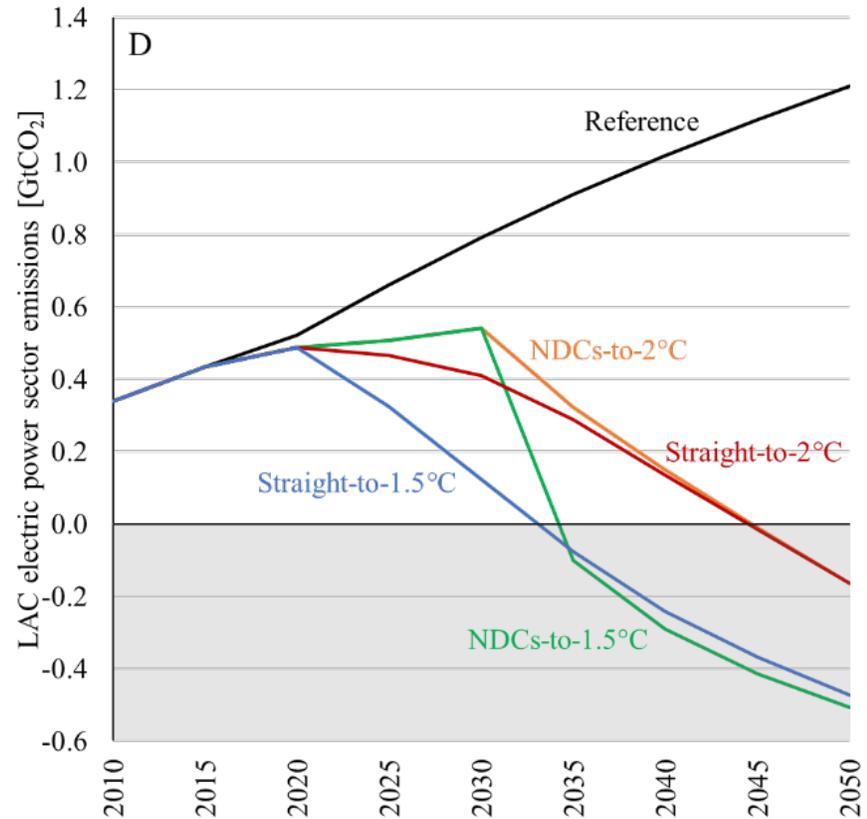
UNEP (2018). The Emissions Gap Report 2018. United Nations Environment Programme, Nairobi.



Short-term planning and alignment with decarbonization strategies are key to reduce long-term costs.

NDCs in LAC are not quite aligned with 2°C and they virtually close the door to 1.5°C

Stronger NDCs would reduce the need for stranded assets down the road

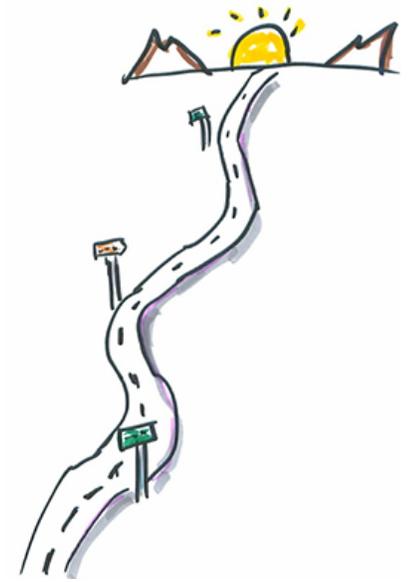


Binsted, Matthew, Gokul Iyer, James A. Edmonds, Adrien Vogt-Schilb, Ricardo Arguello, Angela Cadena, Ricardo Delgado, et al. "Stranded Asset Implications of the Paris Agreement in Latin America and the Caribbean." Inter-American Development Bank, August 2019. <https://doi.org/10.18235/0001803>.

Thank you for your attention



1. **Long-term decarbonization strategies** allow anticipating and managing costs in the transition to zero emissions
2. **Carbon lock-in:** half of existing and planned power plants need to be canceled or stranded for the region to meet Paris
3. **Current NDCs** are not the solution: strengthening the NDCs could reduce stranding costs by 27-40% in the power sector



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