

# Implementation challenges of 1.5°C pathways

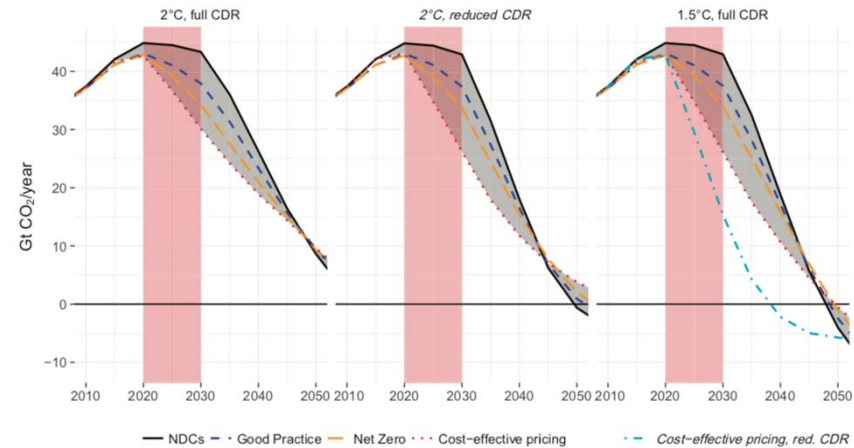
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# Content

- » Global roll-out of currently successful policies would bring us closer to a 2°C/1.5°C pathway
- » Comparison of scenarios on disruption, speed, scale, efficiency and price increase help to assess feasibility, e.g. scenarios based on successful policies are less disruptive



Indicator	Disruption		Speed		Price Impacts		Efficiency	Scale		
	CO <sub>2</sub> trend break	Idle coal	CO <sub>2</sub> reduction	Landbio+aff inc	CO <sub>2</sub> price increase	Foodprice increase	ConsLoss	Cum CCS	Cum neg CO <sub>2</sub>	Land bio+aff
Unit	Maximum annual change in gross CO <sub>2</sub> emissions reduction rate between decades [pp]	Maximum idle capacity of coal power plants in a given year [GW]	Maximum annual average emissions reduction rate per decade [%/yr]	Maximum annual average increase of land for affor. and bioen. crops [mha/yr]	Maximum annual average increase of carbon price per decade [\$tCO <sub>2</sub> -yr]	Maximum annual average increase of food price index per decade [%/yr]	Cumulated discounted consumption loss expressed in % of cumulated baseline consumption	Cumulative CCS deployment over 21st century (GtCO <sub>2</sub> )	Cumulative net negative emissions over 21st century (GtCO <sub>2</sub> )	Global area for affor. and bioenergy crops (in 2050) [mha]
NDCs	4.6	985	5.6	43	20.0	6.1	3.4	878	825	909
Good Practice	3.2	820	5.1	38	17.3	5.3	3.2	864	745	839
Net Zero	3.3	814	4.6	34	15.0	4.9	3.3	861	698	775
Cost-effective	4.7	1051	4.0	23	8.2	3.8	3.0	826	557	661

# Entry points to 1.5-2°C pathways

## Good practice policies

### Electricity

- » Renewable energy 1.3-1.5%/y
- » No new coal plants after 2023 / 2018

### Industry

- » 0.5% additional energy efficiency improvements in industry
- » 200 to 500 MtCO<sub>2</sub>/y CCS

### Buildings

- » 1% to 3% retrofit of buildings
- » 0.5% additional efficiency improvements in appliances

### Transport

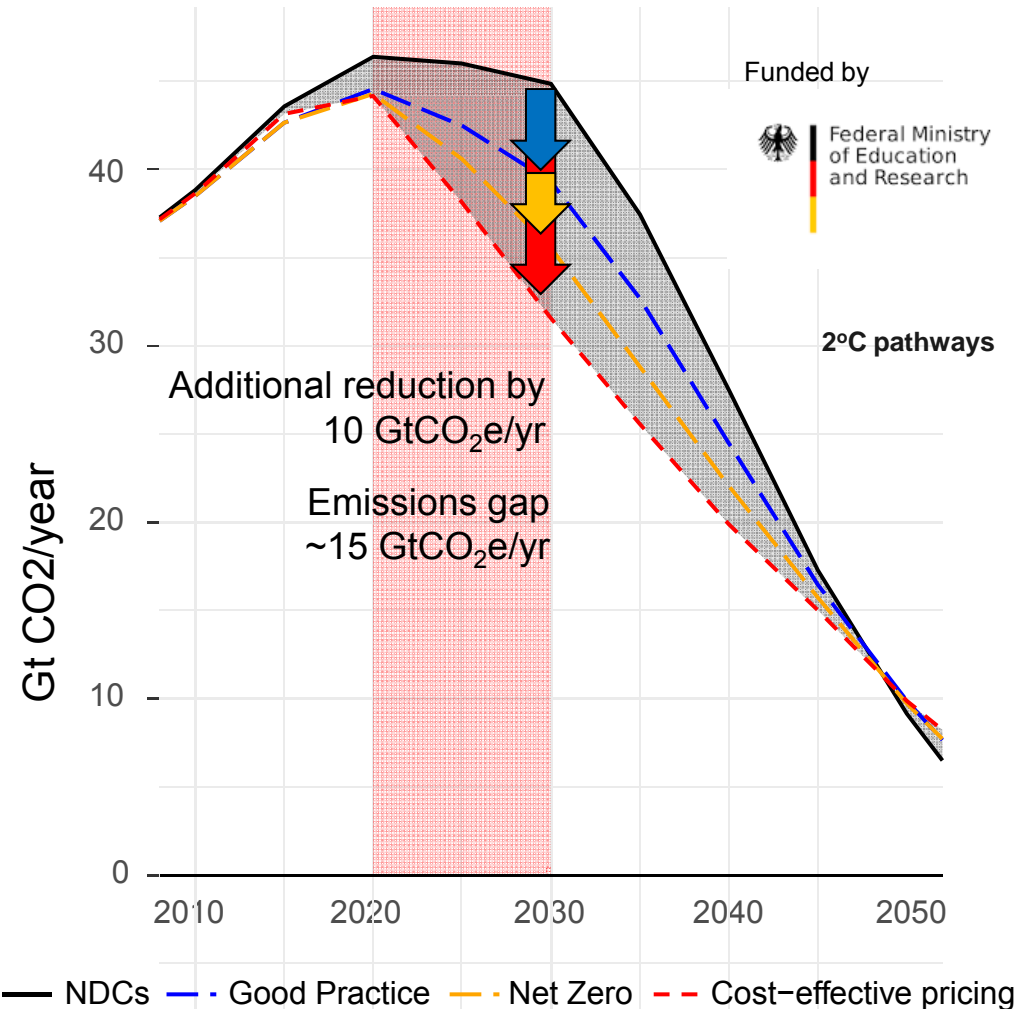
- » 25 and 70% share of electric cars in new vehicle sales
- » Fuel efficiency of 38 km/l for cars
- » Freight vehicle fuel efficiency
- » Aviation stable emissions after 2020 or more

### Agriculture and forestry

- » More efficient use of nitrogen in agriculture
- » Eliminating deforestation and 10 mio ha/yr afforestation

### Moderate carbon pricing

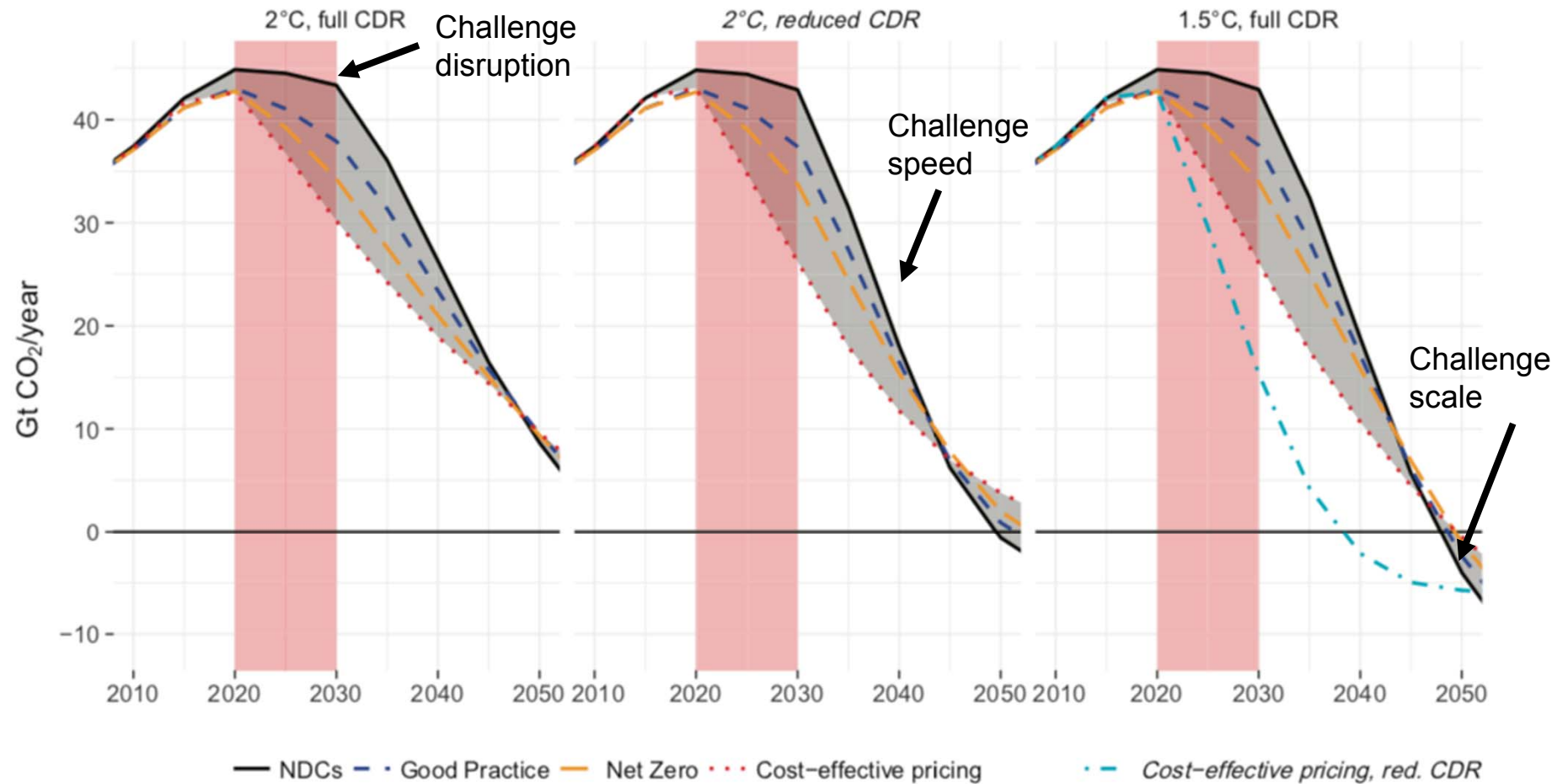
- » At least 5 USD/tCO<sub>2</sub>



Kriegler et al. (2018) *Short term policies to keep the door open for Paris climate goals*. *Env. Res. Lett.* 13, 2018

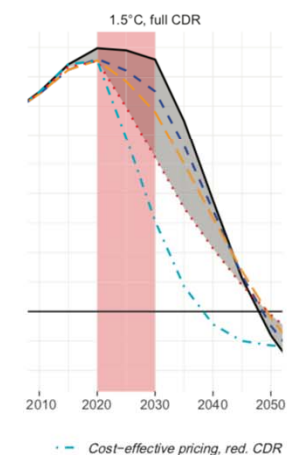
<https://newclimate.org/2018/07/10/short-term-policies-to-keep-the-door-open-for-paris-climate-goals/>

# 2 and 1.5°C pathways



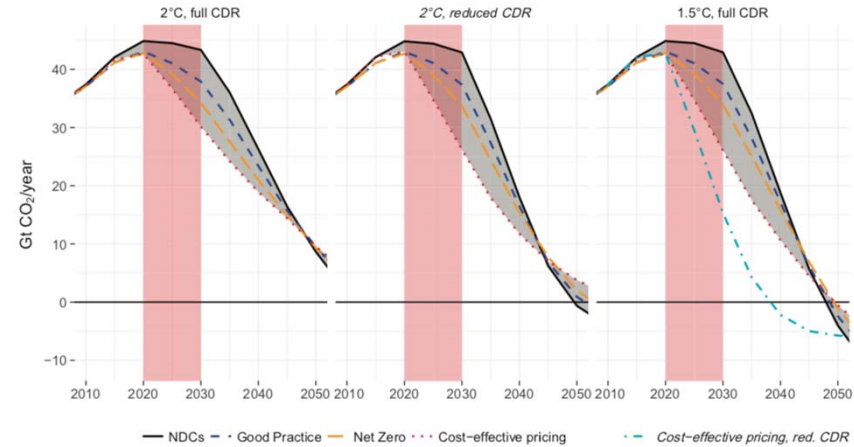
# Assessing feasibility of pathways

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<b>NDCs</b>	1.5°C Full CDR	4.6	985	5.6	43	20.0	6.1	3.4	878	825	909
<b>Good Practice</b>		3.2	820	5.1	38	17.3	5.3	3.2	864	745	839
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# Conclusions

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