

# Klimapolitikk: de store tiltakene

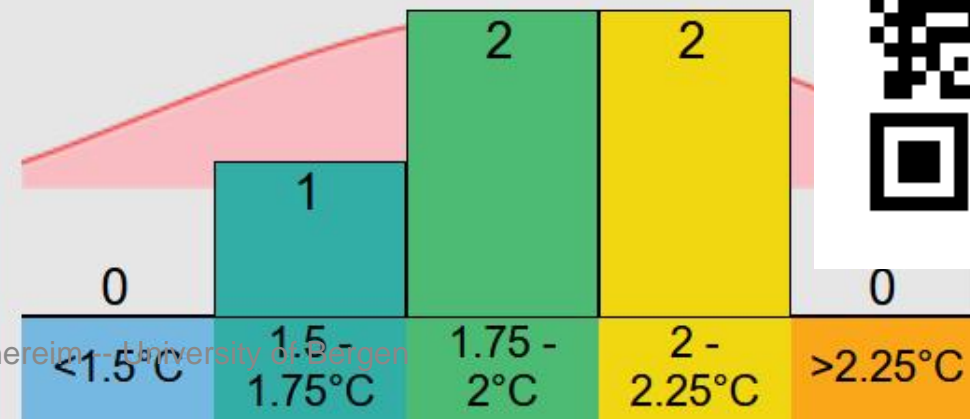
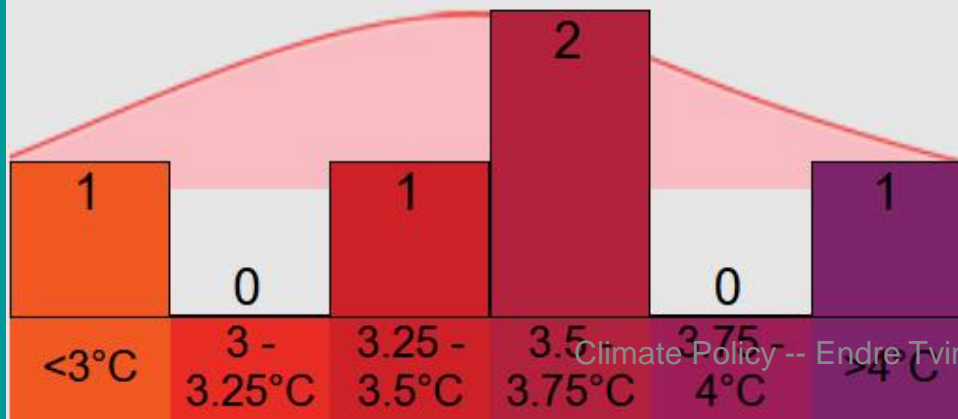
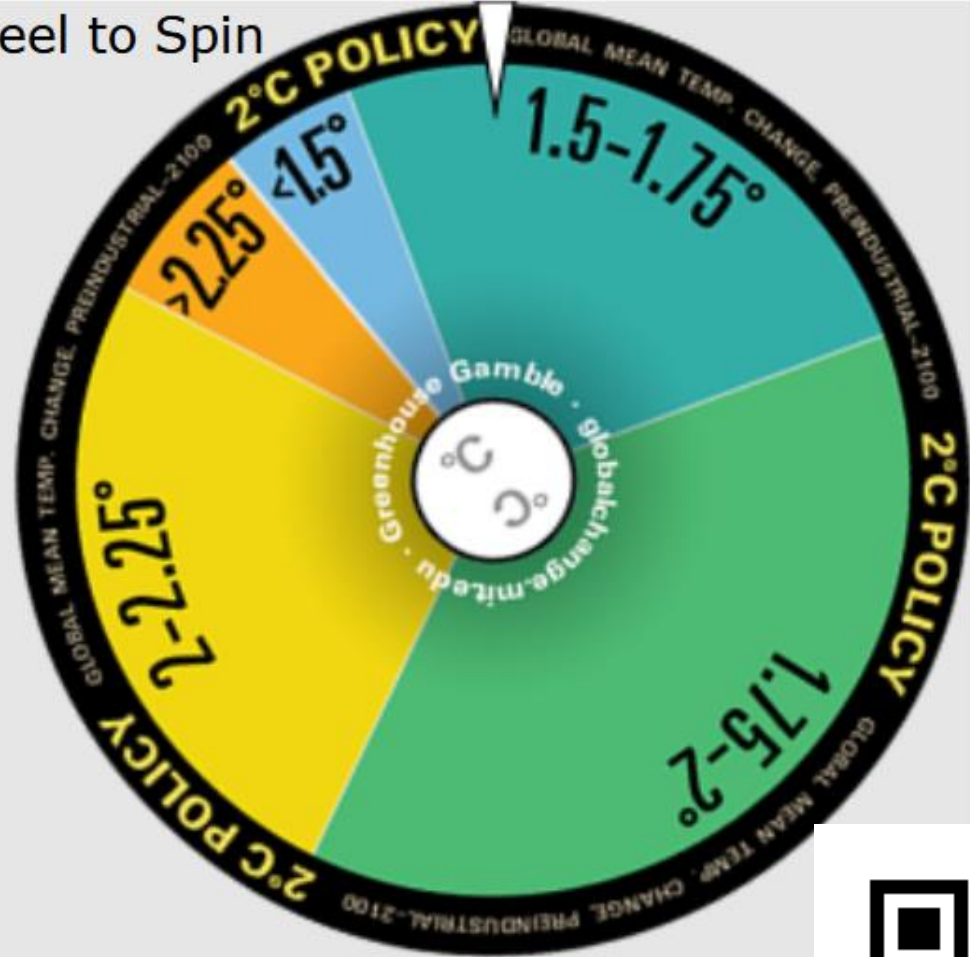
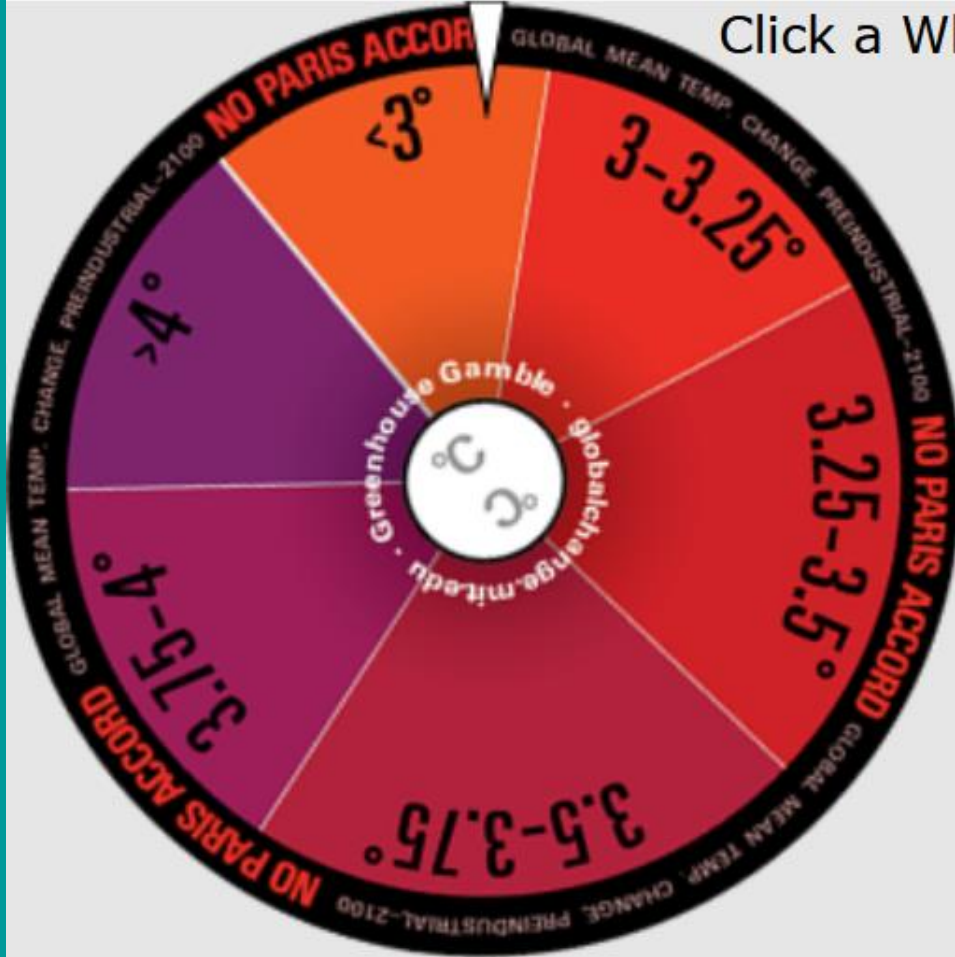
Lærernes dag ved Universitetet i Bergen

Endre Tvinnereim

Institutt for politikk og forvaltning (GOV)

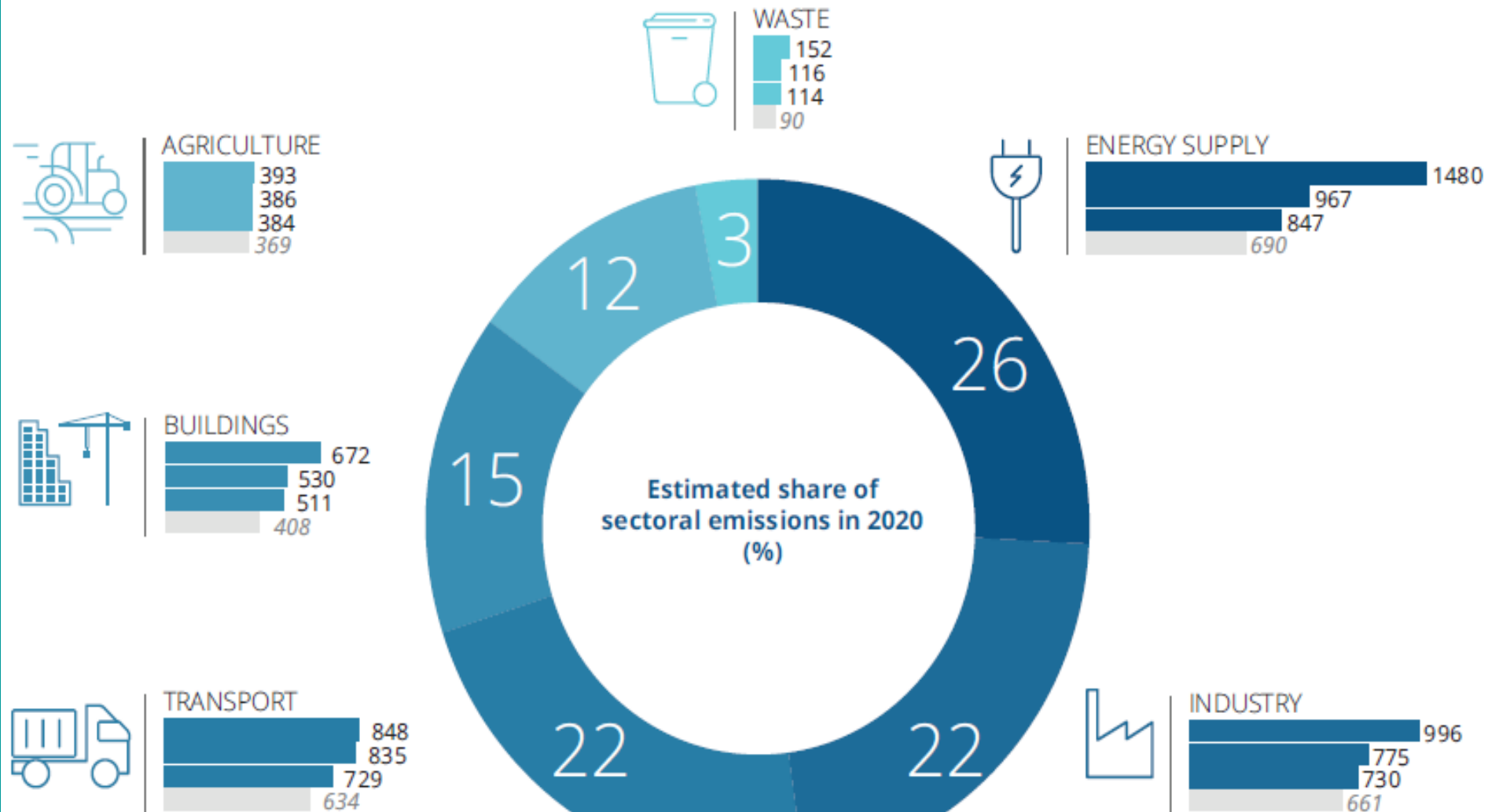
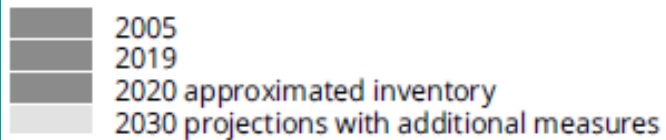
26. januar 2024

Click a Wheel to Spin







**Figure 2.1** Sectoral trends and progress towards achieving the 2020 and 2030 targets in the EU-27

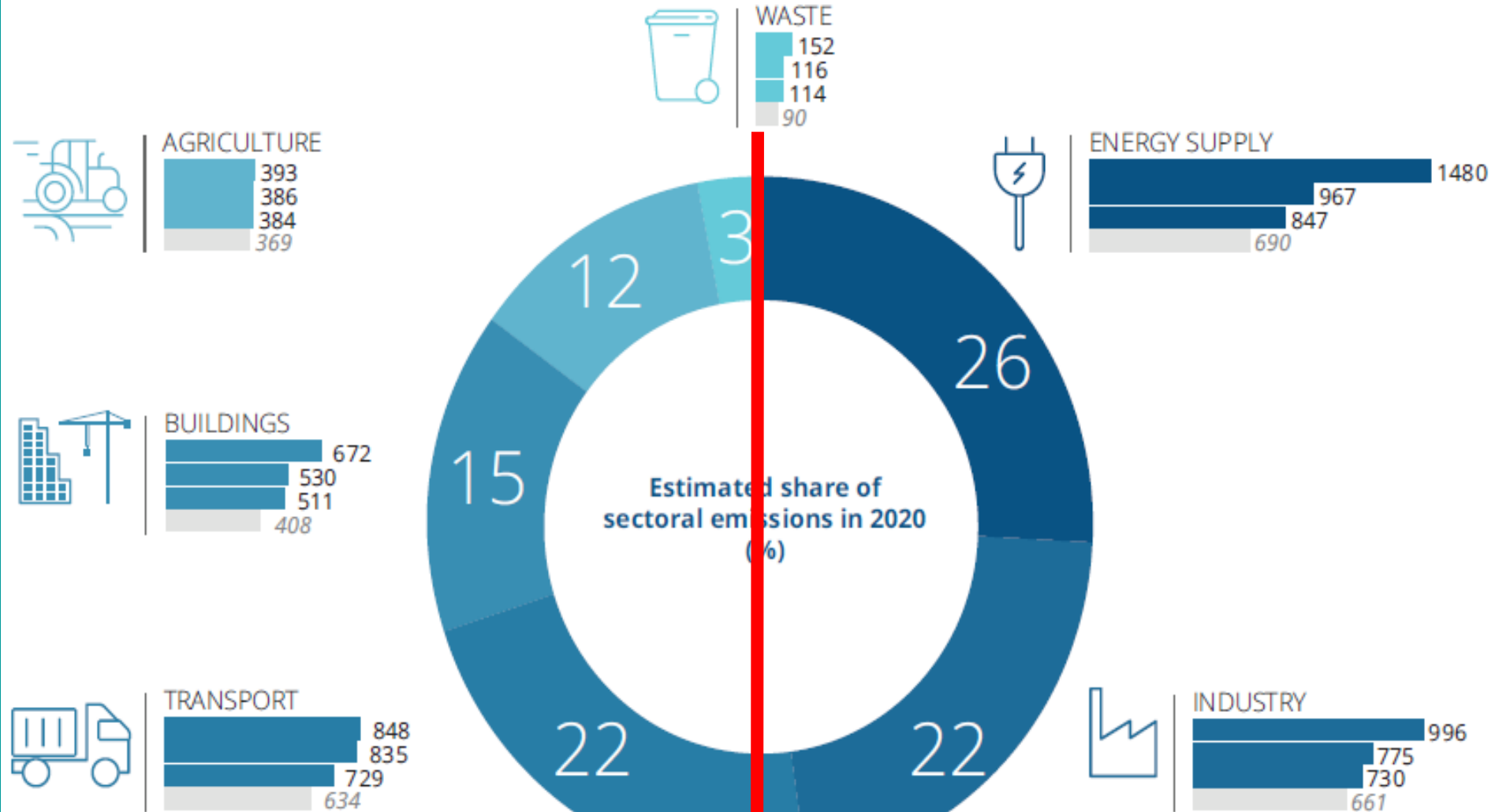
Emissions (Mt CO<sub>2</sub>e)



**Figure 2.1 Sectoral trends and progress towards achieving the 2020 and 2030 targets in the EU-27**

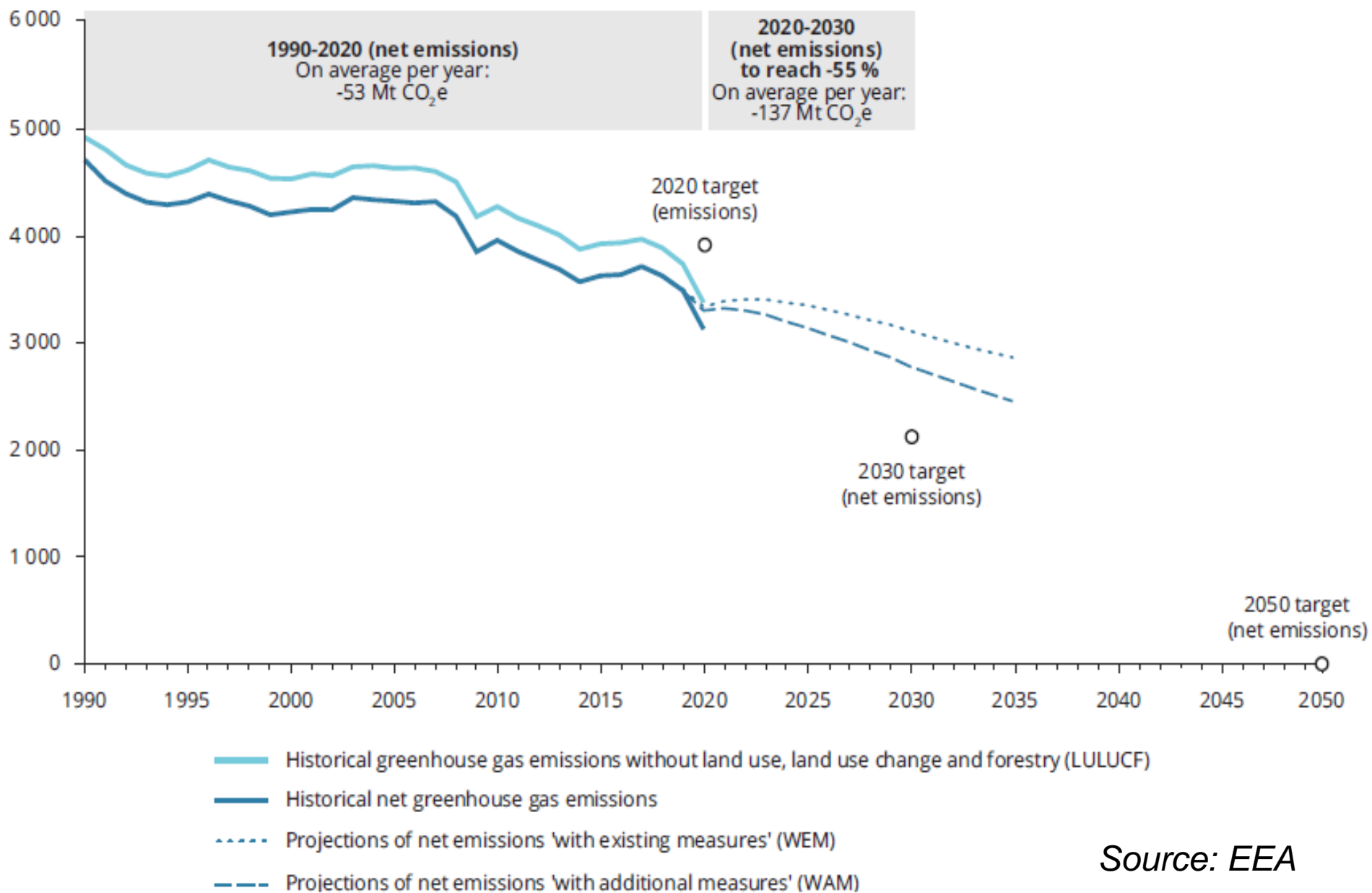
Emissions (Mt CO<sub>2</sub>e)

-  2005
-  2019
-  2020 approximated inventory
-  2030 projections with additional measures



**Figure ES.1 Historical trends and projections of greenhouse gas emissions**

Million tonnes of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e)



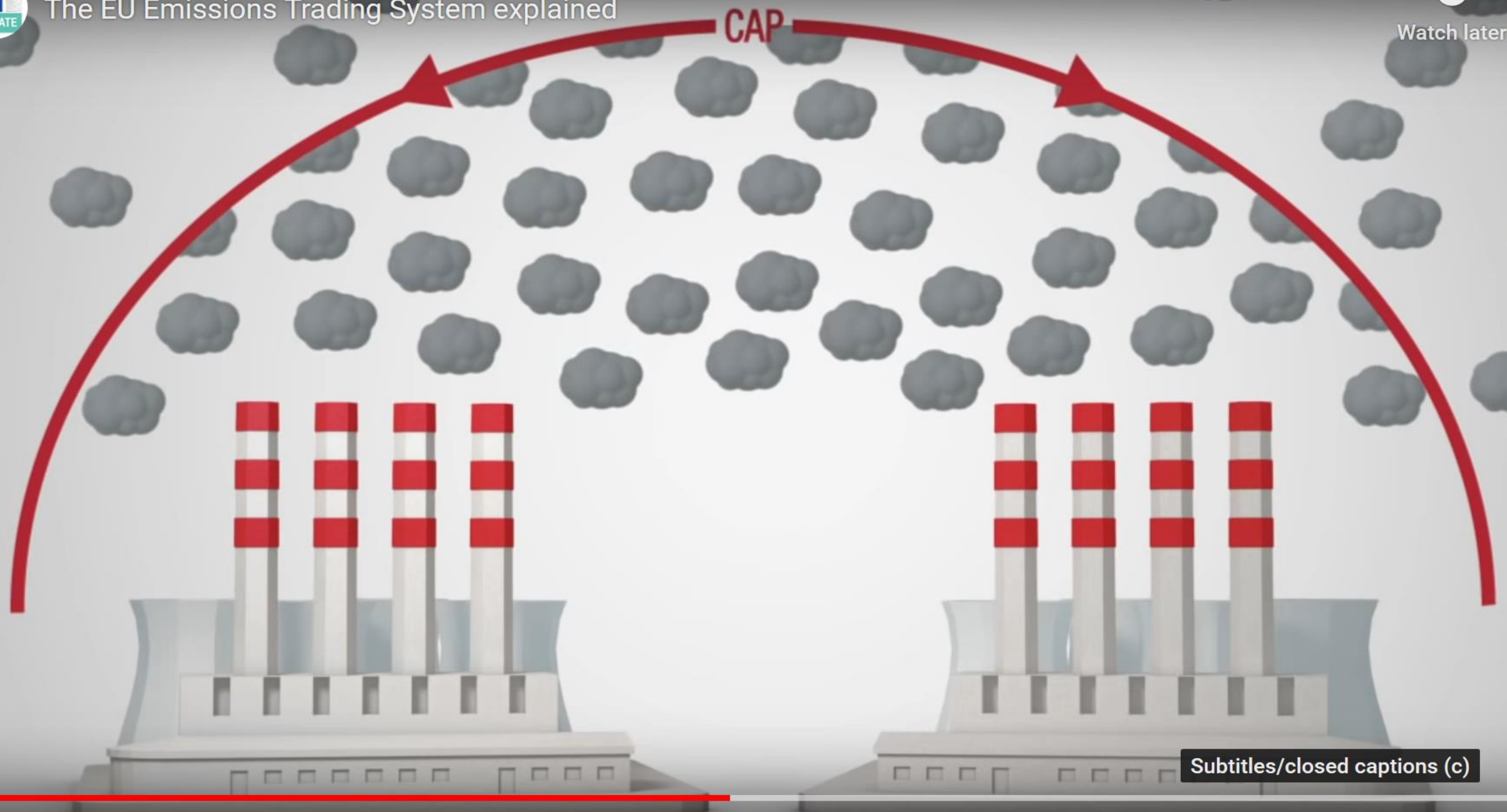
Source: EEA



# The EU Emissions Trading System explained



Watch later



Subtitles/closed captions (c)

# EU ETS: sektorer

- Elektrisitet > 20 MW
- Metaller
- Raffinerier (olje)
- Sement, glass
- Papir
- Luftfart 2012-
- + ETS 2



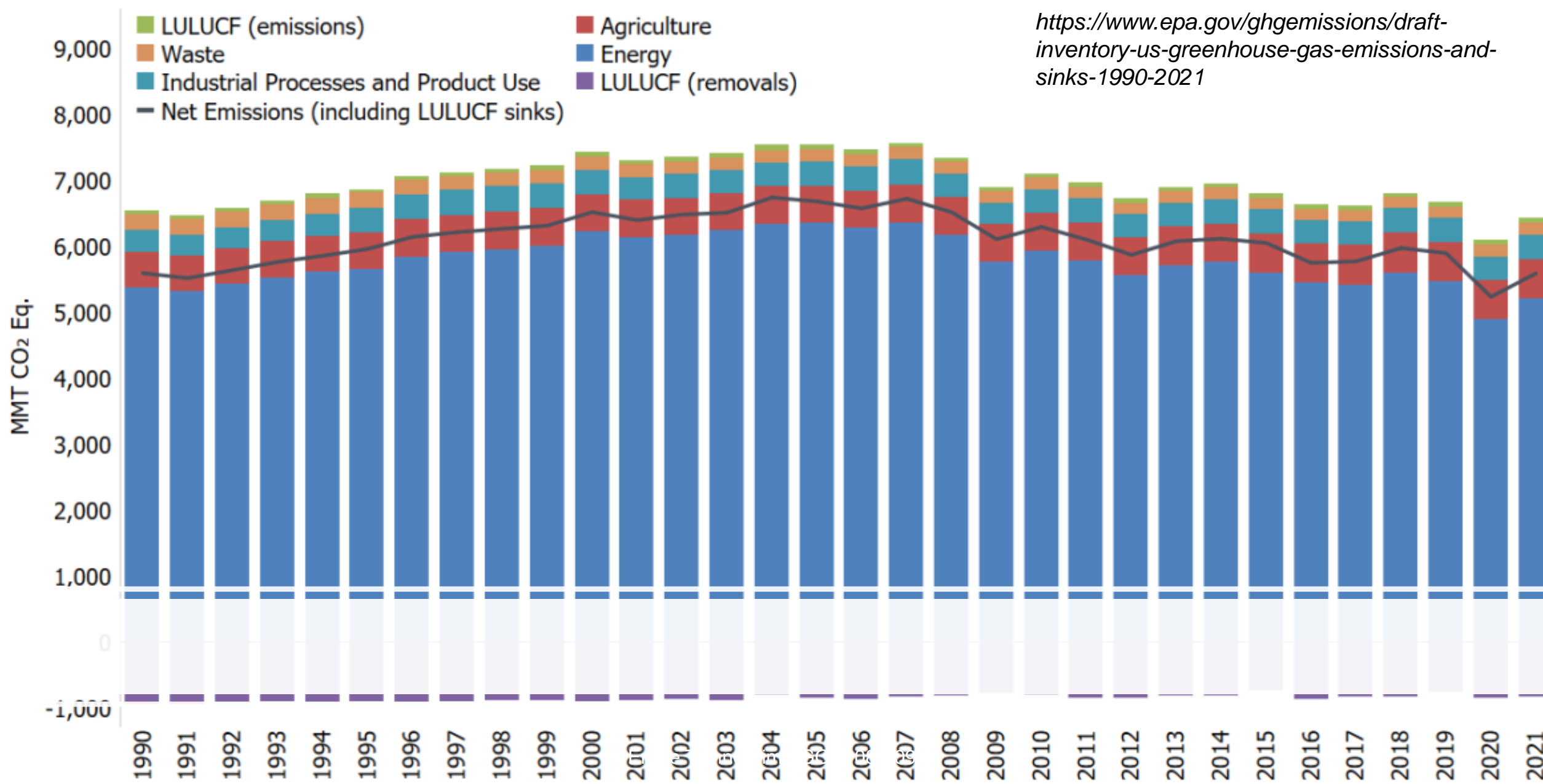
# EUA-kvotepriser, 2005-2022



Source: Refinitiv Carbon



**Figure ES-11: U.S. Greenhouse Gas Emissions and Sinks by IPCC Sector/Category**



*<https://www.epa.gov/ghgemissions/draft-inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021>*



**House of  
Representatives**  
- Majority of 435

**Senate**  
- Majority 50+1  
- or 60/100

+ 50 states

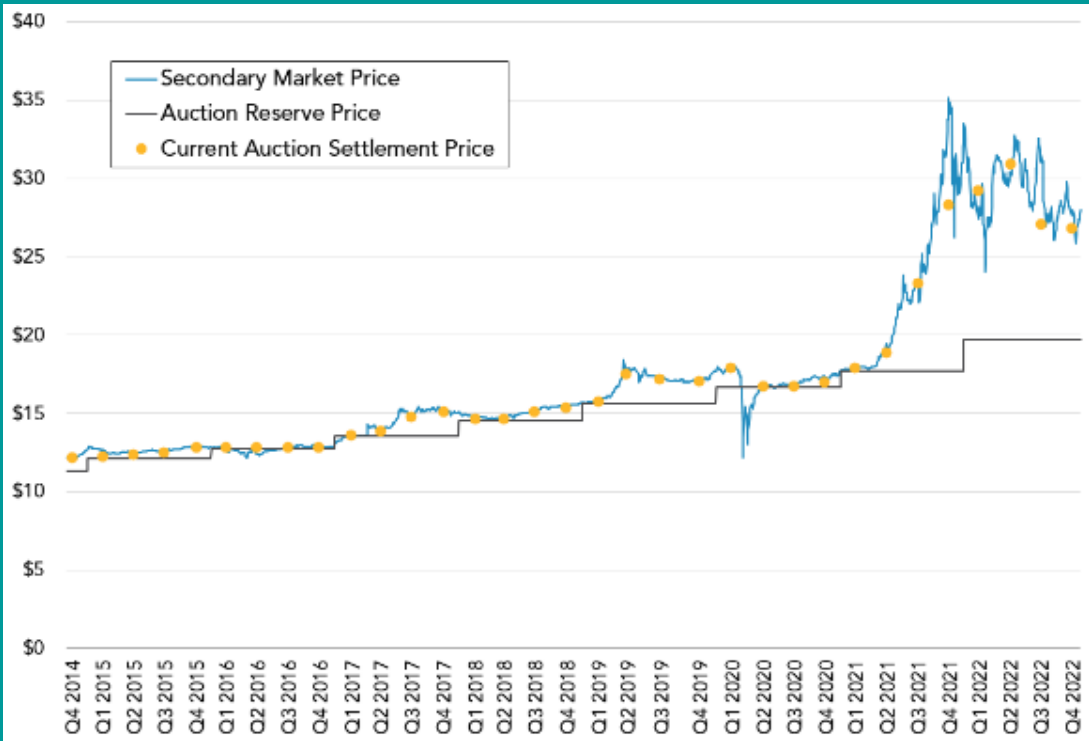
+ Presidential  
signature/veto

+ Supreme  
Court

# Utvalg av føderale lovforslag, 1996-2022

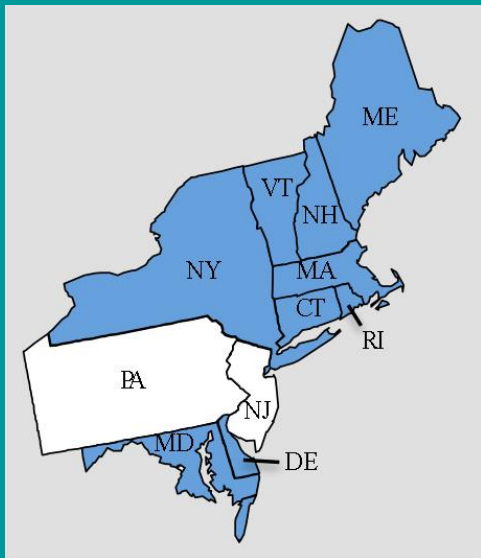
- BTU Tax bill
- McCain-Lieberman (Senate)
- **Waxman-Markey (House):  
American Clean Energy and  
Security Act of 2009**
- Kerry-Boxer; Kerry-Graham-Lieberman (Senate)

111 <sup>TH</sup> CONGRESS 1 <sup>ST</sup> SESSION	<b>H. R. 2454</b>
<b>AN ACT</b>	
To create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy.	
<i>Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,</i>	
<b>SECTION 1. SHORT TITLE; TABLE OF CONTENTS.</b>	
(a) <b>SHORT TITLE.</b> —This Act may be cited as the “American Clean Energy and Security Act of 2009”.	
(b) <b>TABLE OF CONTENTS.</b> —The table of contents for this Act is as follows:	
<a href="#">Sec. 1. Short title; table of contents.</a>	
<a href="#">Sec. 2. Definitions.</a>	
<a href="#">Sec. 3. International participation.</a>	
	<b>TITLE I—CLEAN ENERGY</b>
	<b>Subtitle A—Combined Efficiency And Renewable Electricity Standard</b>
<a href="#">Sec. 101. Combined efficiency and renewable electricity standard.</a>	
<a href="#">“Sec. 610. Combined efficiency and renewable electricity standard.</a>	
<a href="#">Sec. 102. Clarifying State authority to adopt renewable energy incentives.</a>	
<a href="#">Sec. 103. Federal renewable energy purchases.</a>	
	<b>Subtitle B—Carbon Capture And Sequestration</b>



<https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-data/cap-and-trade-program-data-dashboard>

# Nordøst



e Tvinne

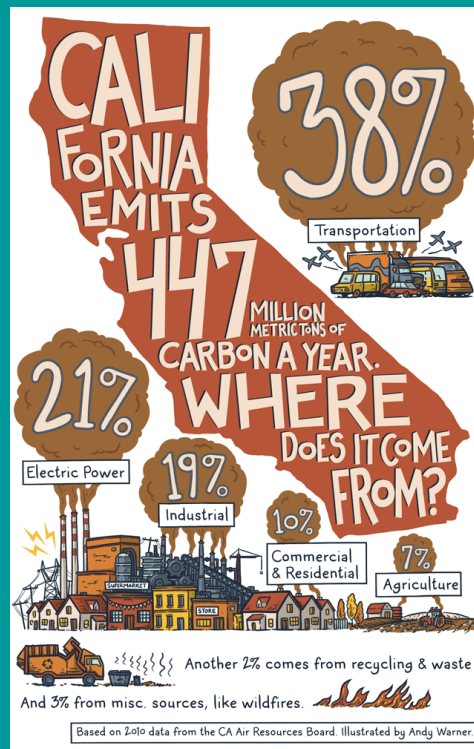
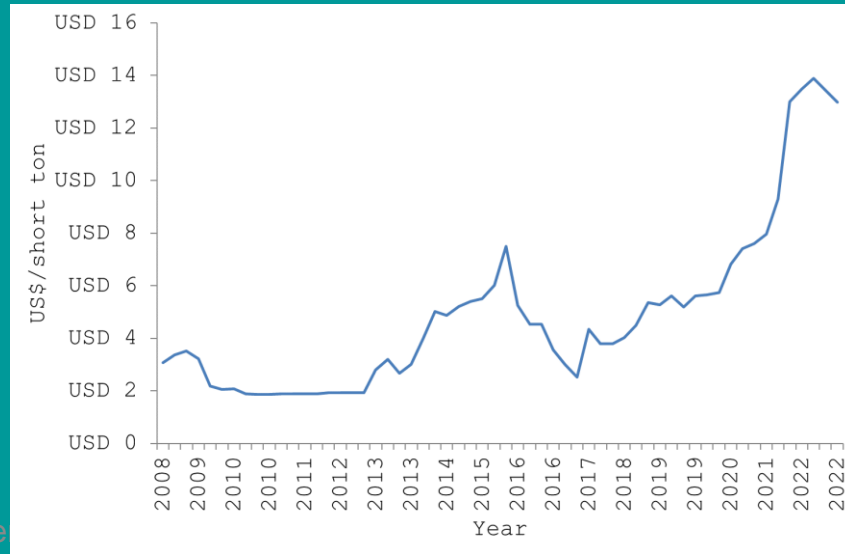


Image source: KQED

# California



# Inflation Reduction Act



- August 2022
- Senatet: 51 – 50
- Huset: 220 – 207
- Støtter:
  - Fornybar energi
  - CCS
  - Elektriske kjøretøy
  - Eksisterende kjernekraft
  - Varmepumper
- + Skatt på metanutslipp

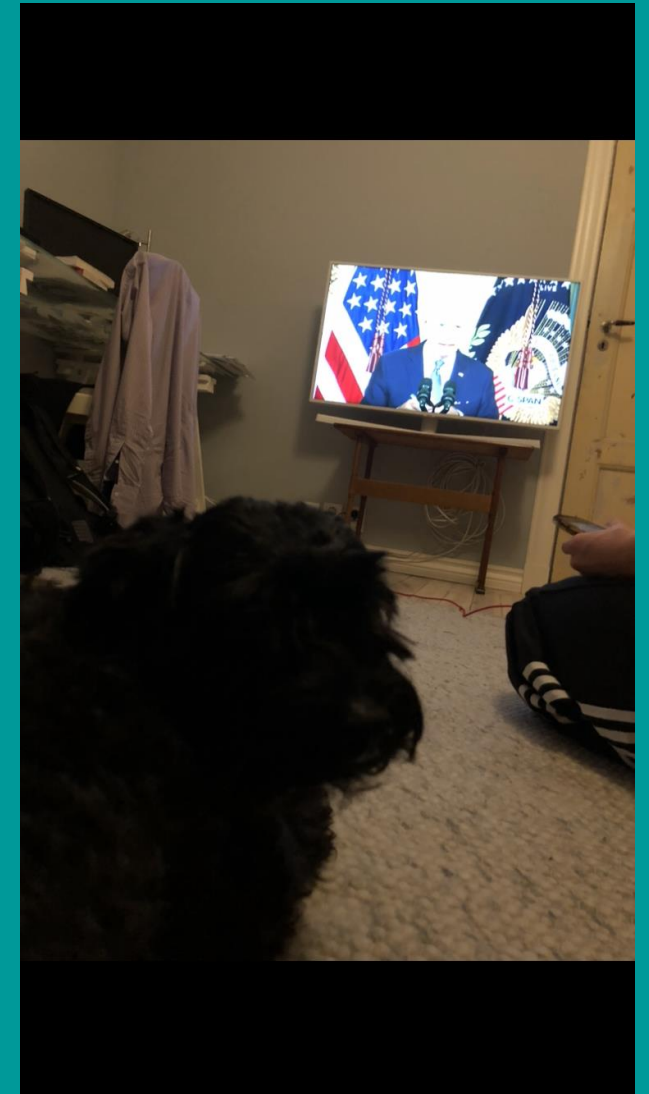
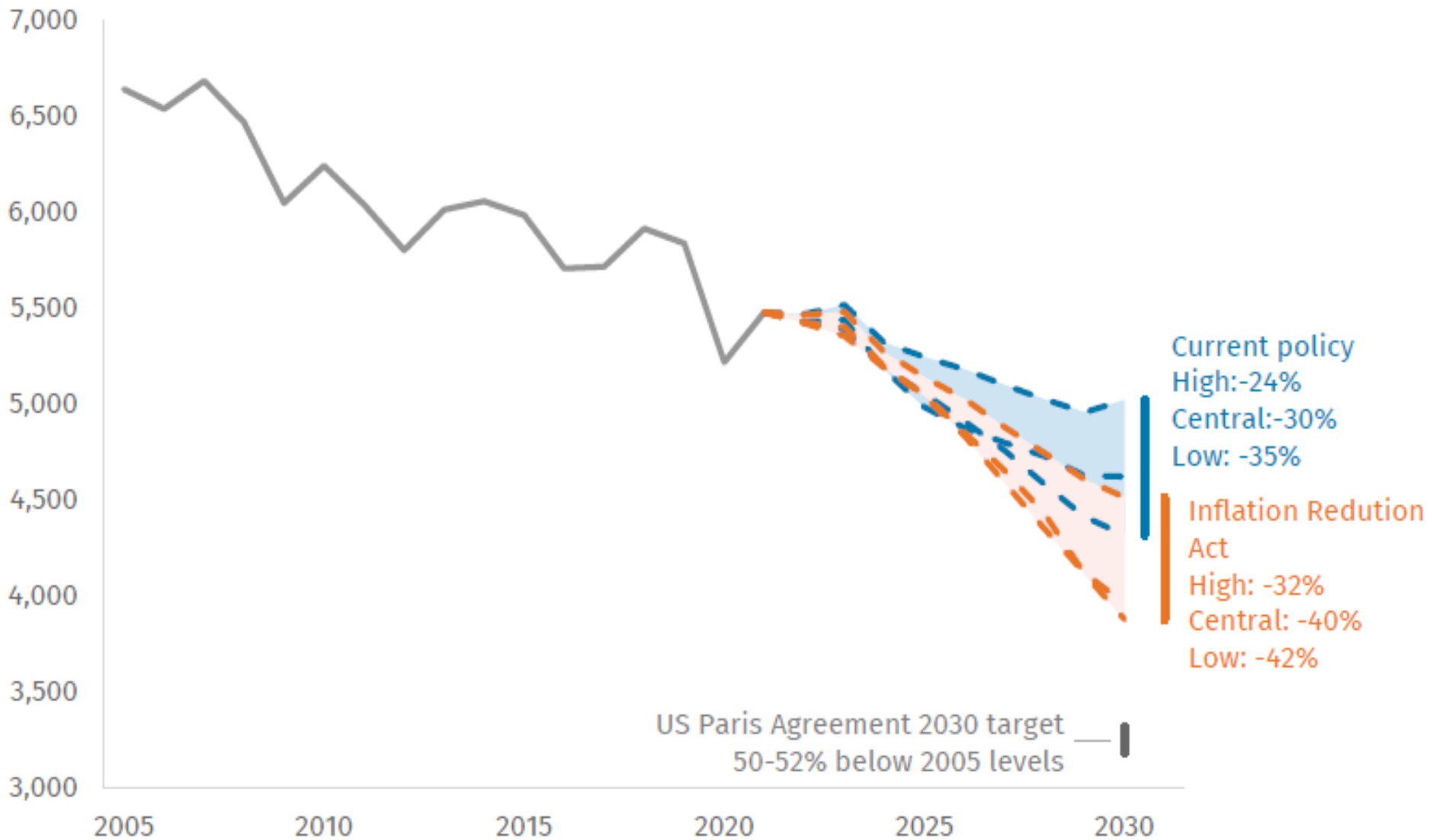


FIGURE 1  
US greenhouse gas emissions  
Net million metric tons (mmt) of CO<sub>2</sub>-e

## IRA projections – Rhodium Group



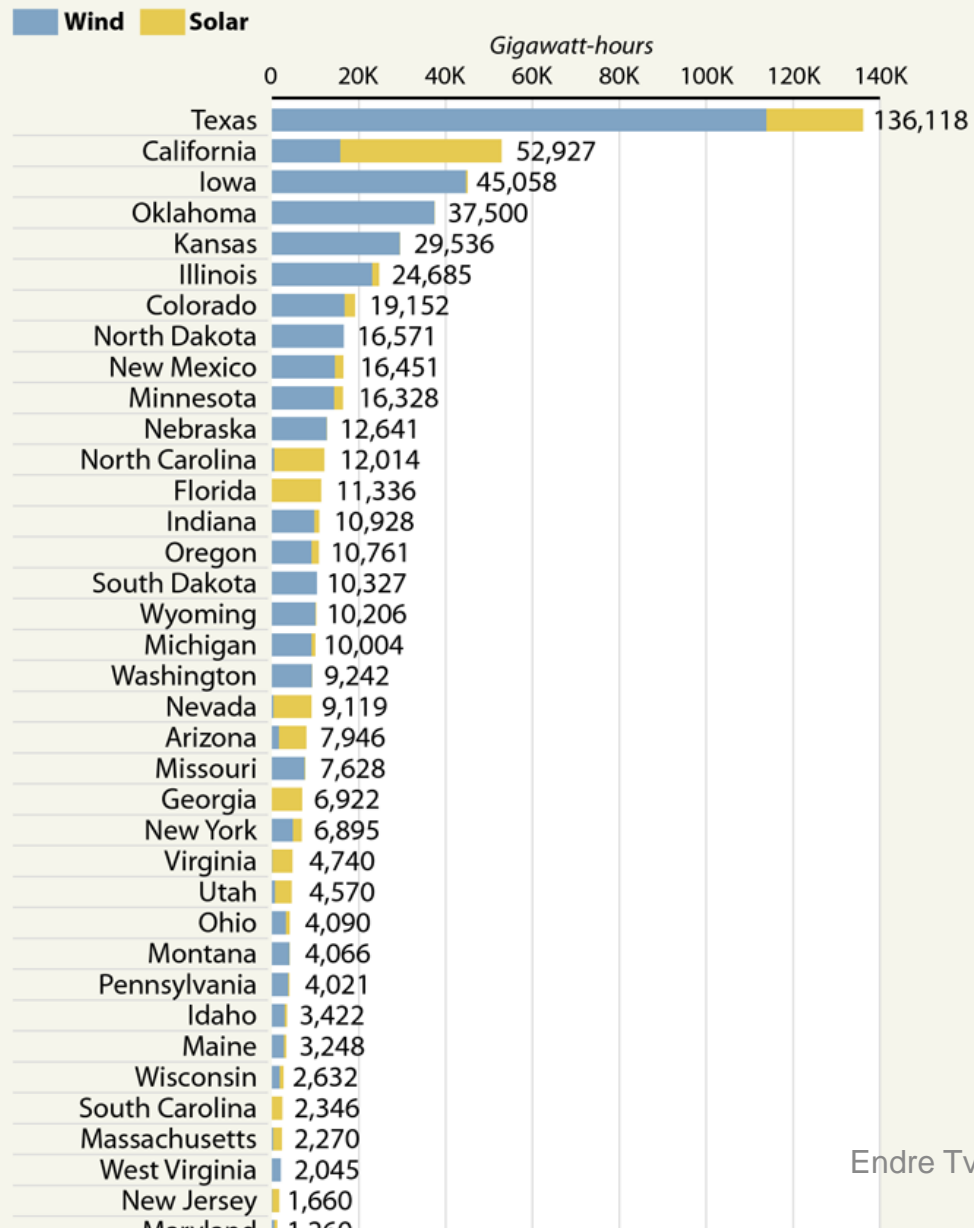
Source: Rhodium Group. The range reflects uncertainty around future fossil fuel prices, economic growth, and clean technology costs. It corresponds with high, central, or scenarios detailed in [Taking Stock 2022](#).

# State Wind and Solar Leaders

Texas generated more electricity from wind and utility-scale solar than any other state, largely due to dominance in wind.

## U.S. WIND AND SOLAR ELECTRICITY GENERATION

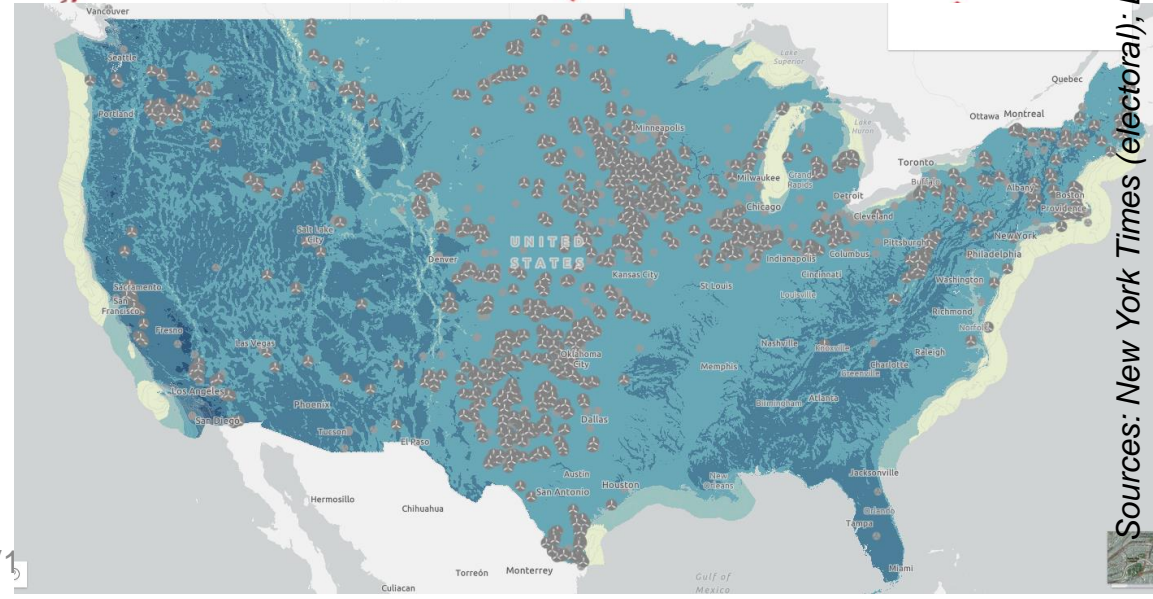
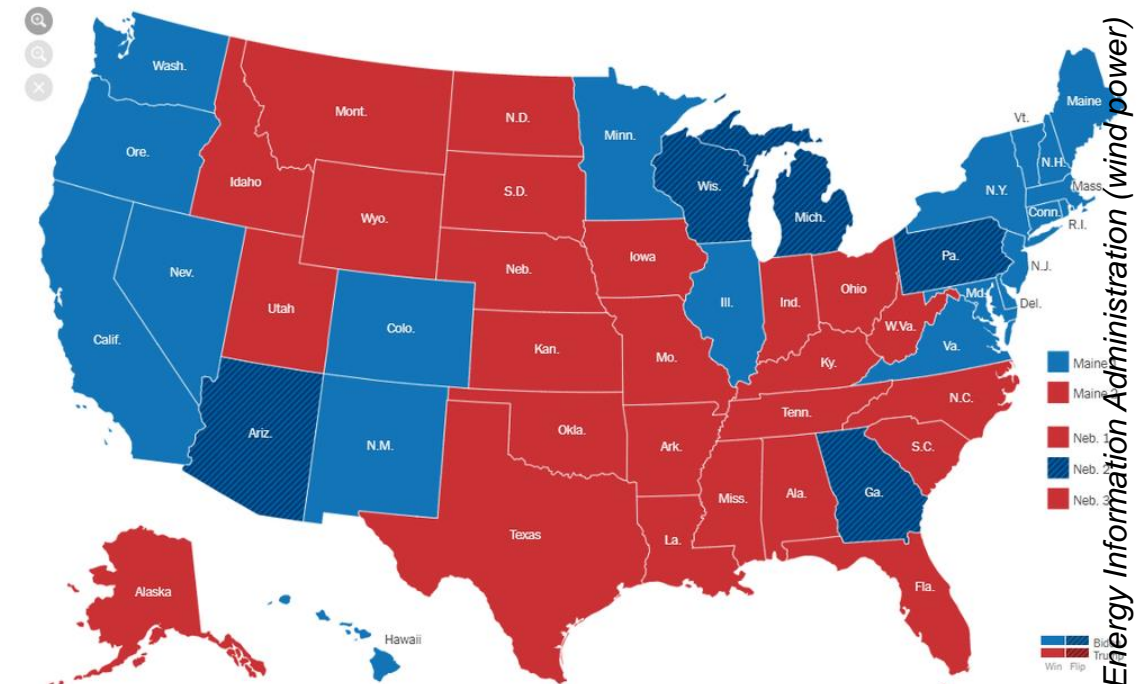
In gigawatt-hours, ranked by combined totals, 2022



306  
Joseph R. Biden Jr. ✓

232  
Donald J. Trump

79,554,222 votes (51.0%) 270 TO WIN 73,611,220 votes (47.2%)

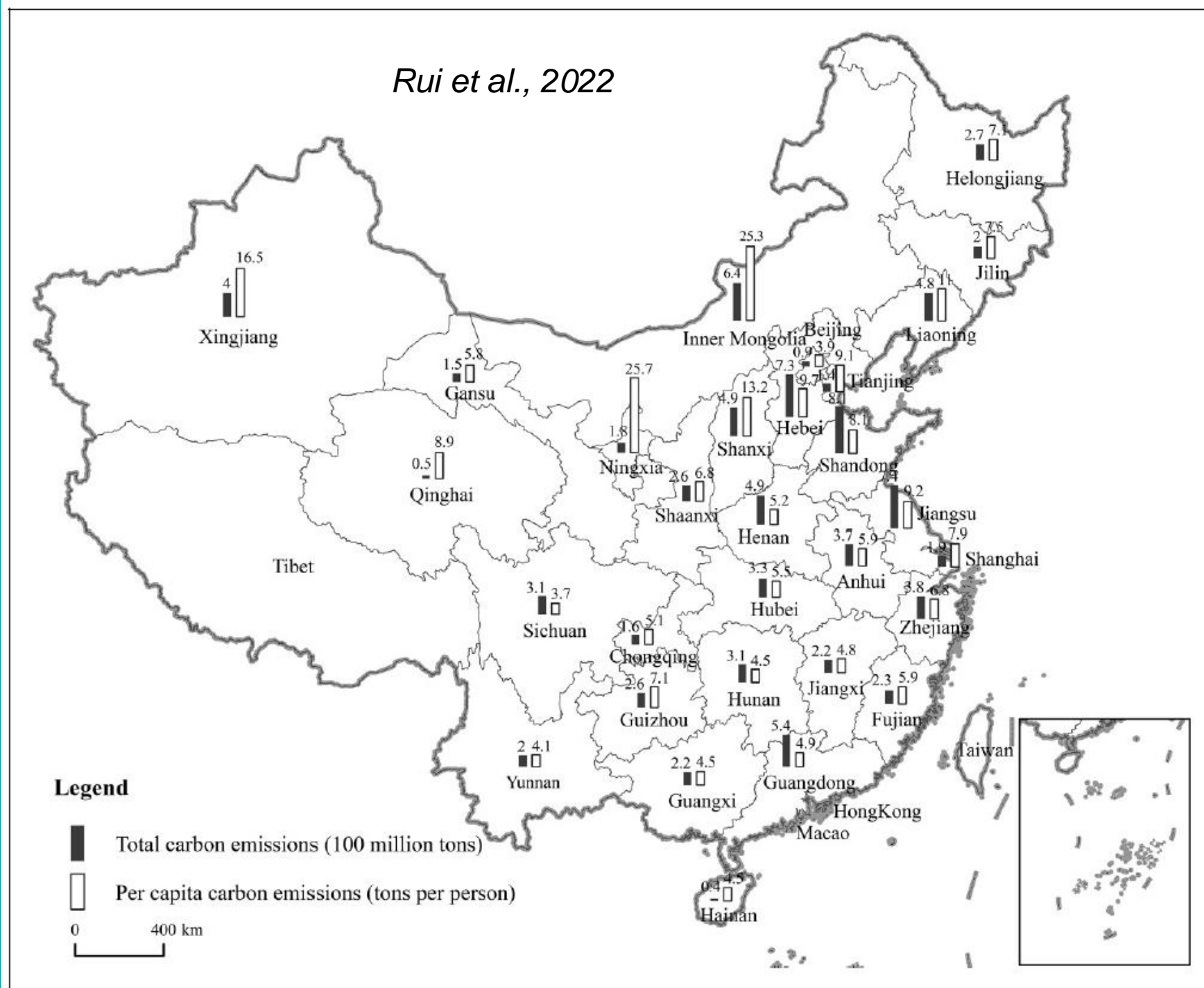


Endre Tvinnereim - GOV1

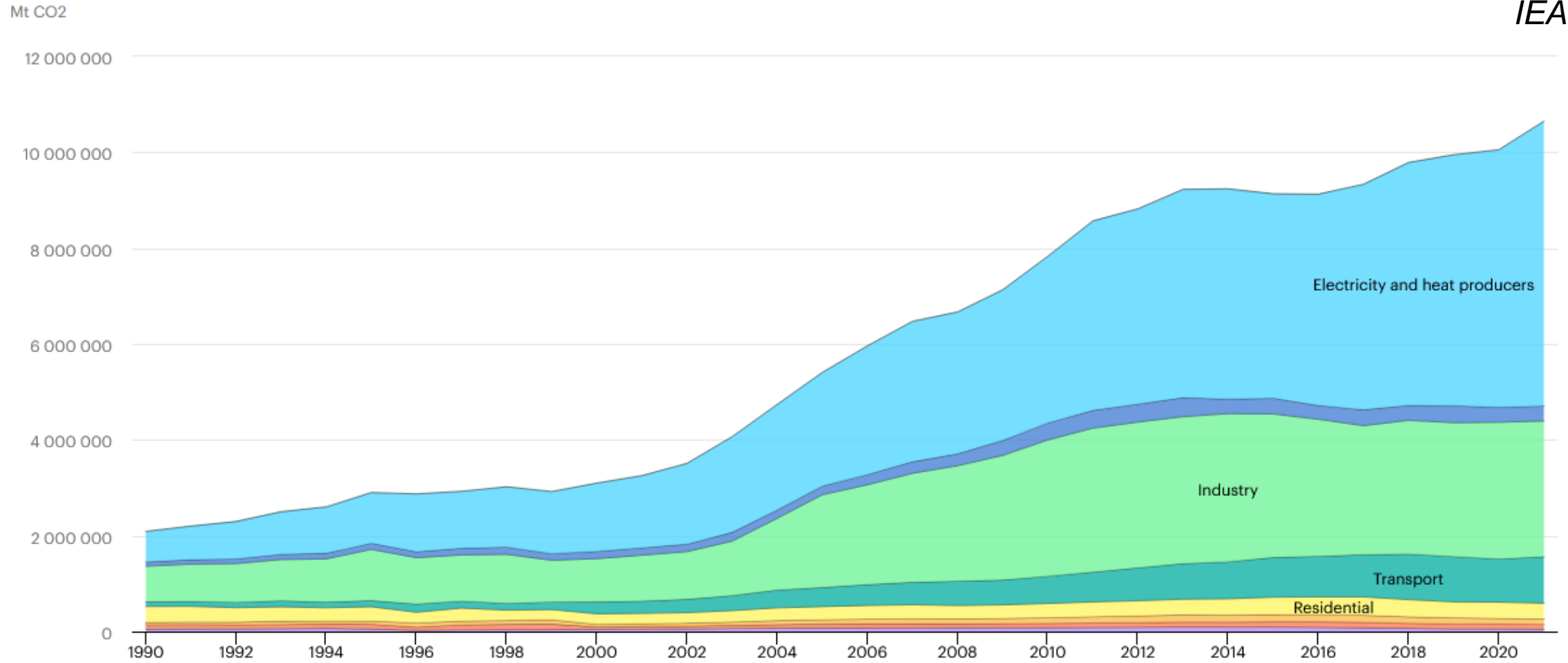
Sources: New York Times (electoral); Energy Information Administration (wind power)

# Kina

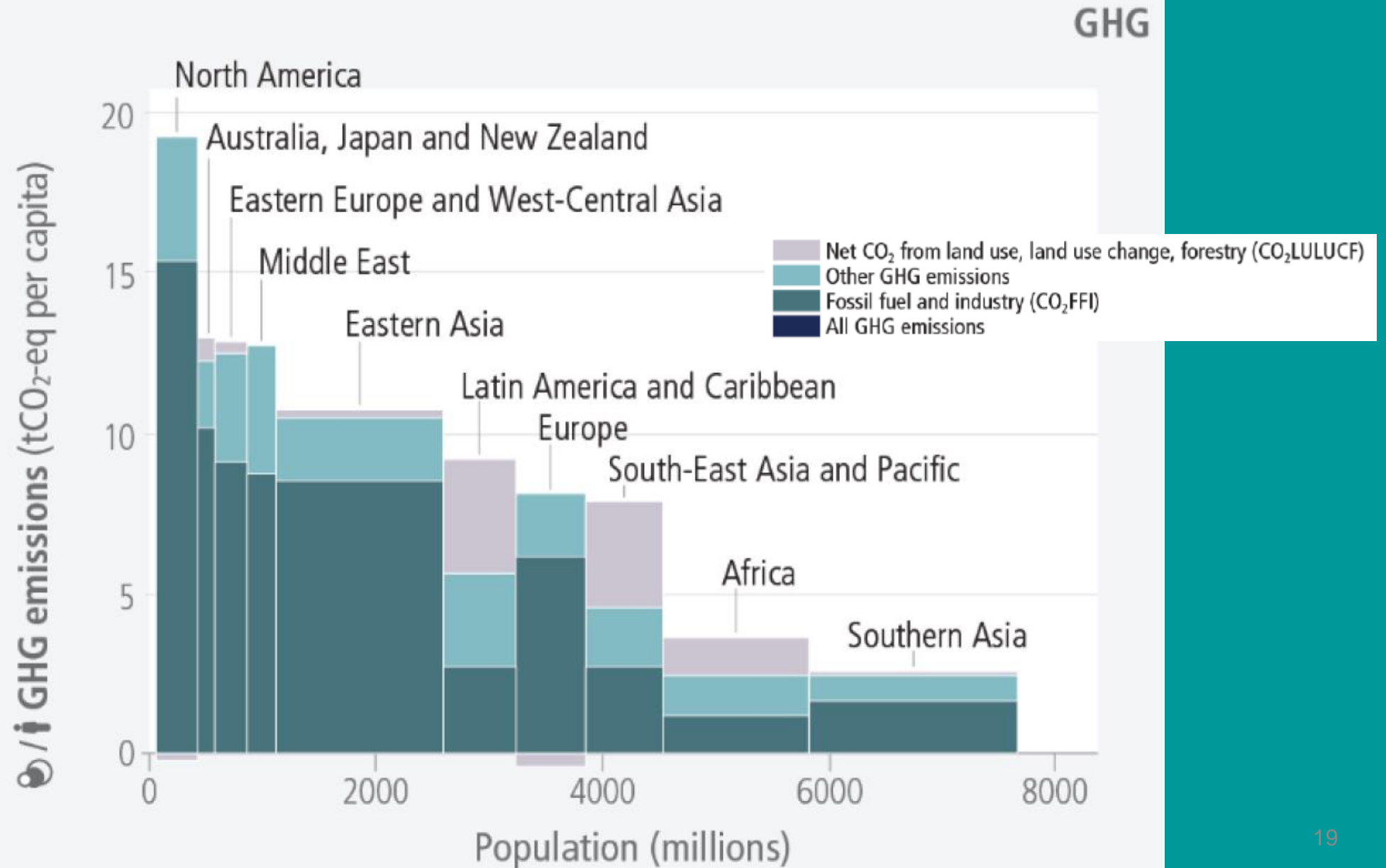
- Geografisk ulikhet
- Doble mål
- Provins-/by-ETS
- Nasjonalt ETS
- Fornybar energi



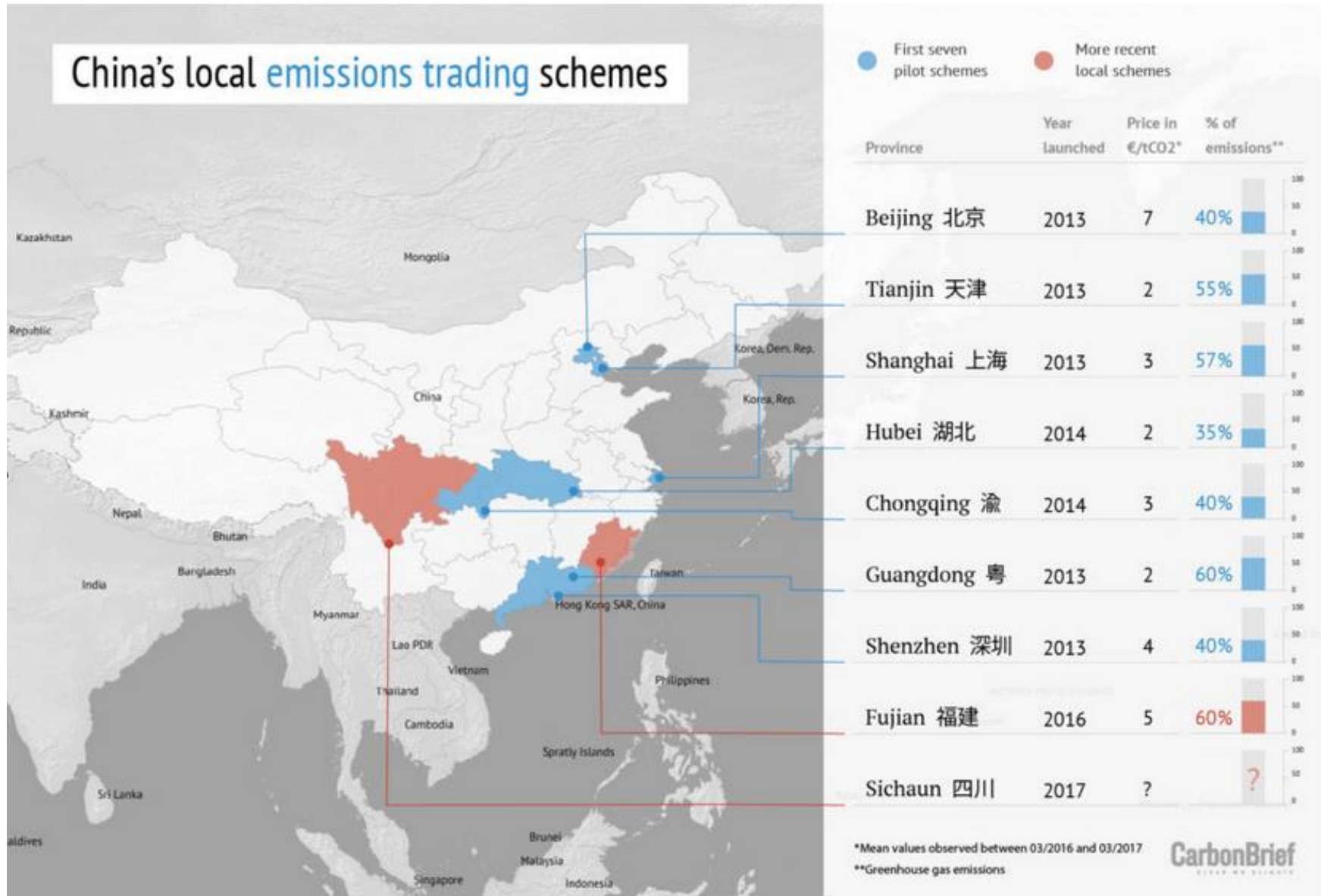




## b) Net anthropogenic GHG emissions per capita and for total population, per region (2019)



# China's local emissions trading schemes



Carbon Brief

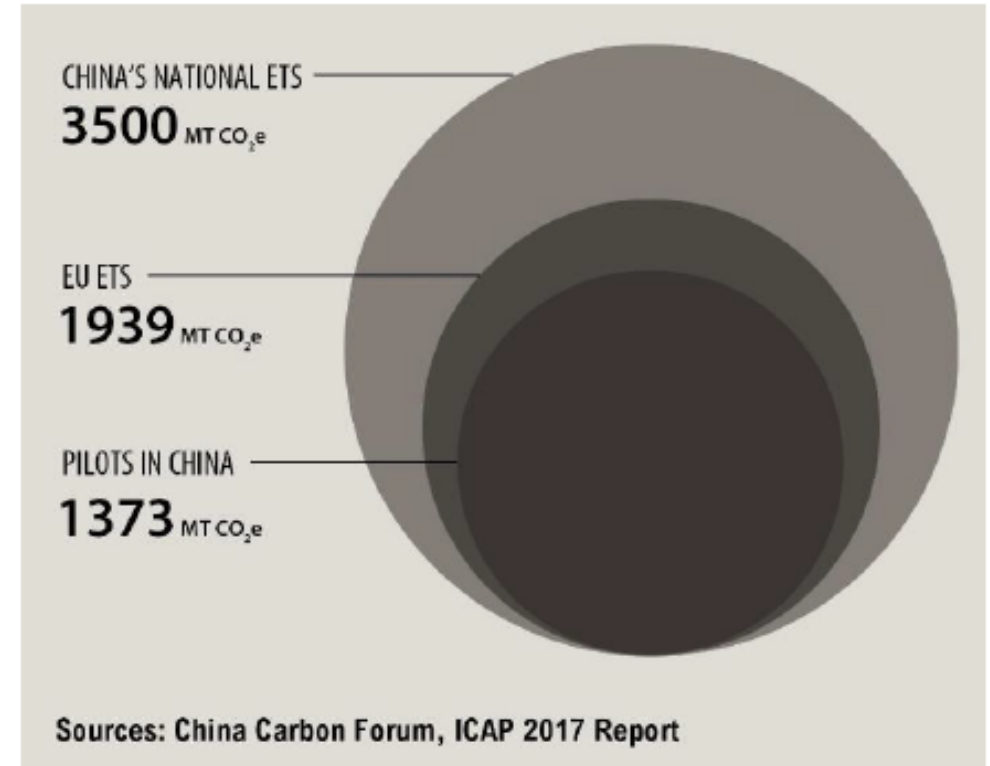
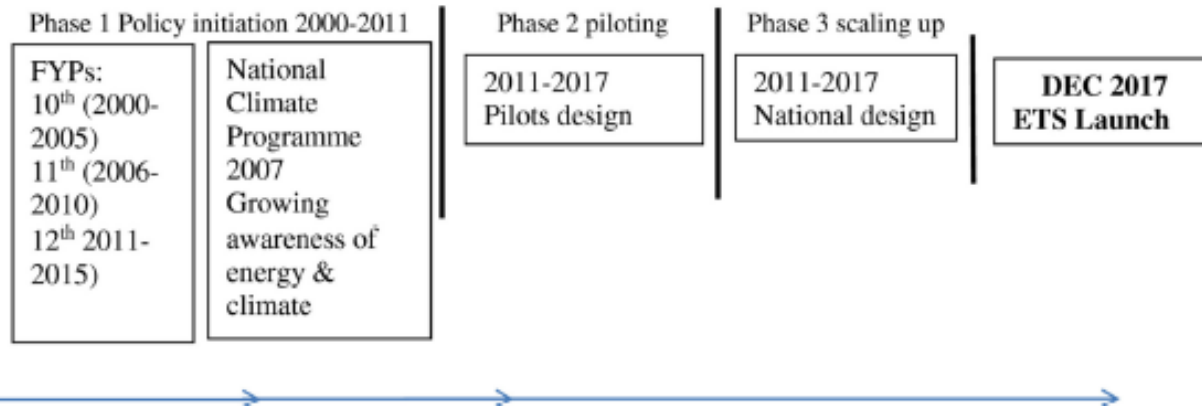
Location of China's seven pilot local emissions trading projects, set up in 2013 and 2014, and two more recent local schemes, set up in 2016 and 2017. ETS prices are mean values observed between March 2016 and March 2017. Percentages are of total greenhouse gas emissions for the region. Infographic by [Rosamund Pearce](#) for Carbon Brief. Data source: I4CE [Global panorama of carbon prices in 2017](#)

# Emission Trading System

Verdens største

Lang inkubasjonstid

Intensitetsmål



Source: Lili Pike & Yao Zhe, drawn from <https://chinadialogue.net/en/business/10303-five-things-to-know-about-china-s-national-carbon-market/>

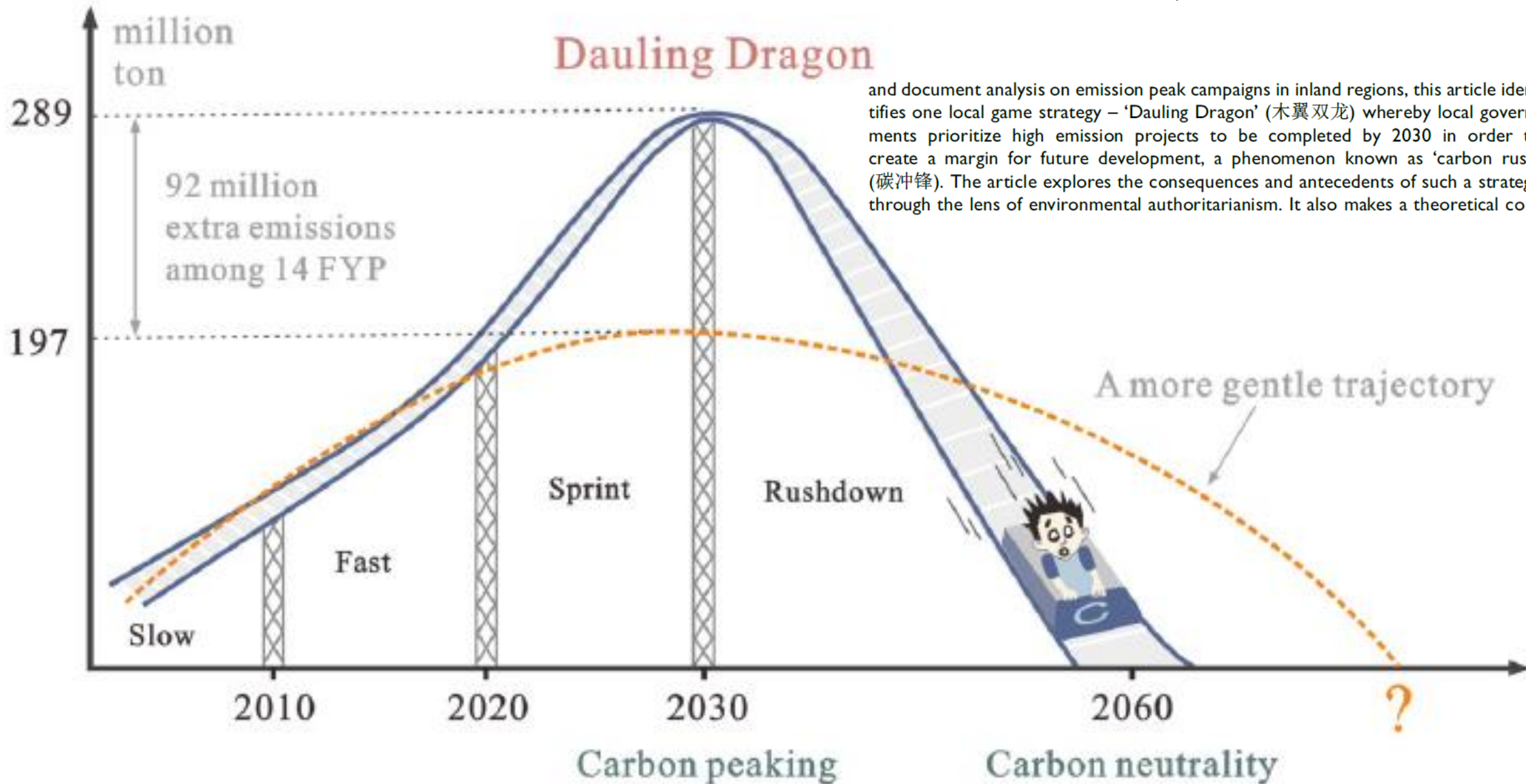
Source: Heggelund et al. 2019.

# Carbon Emission

Rui et al., 2022

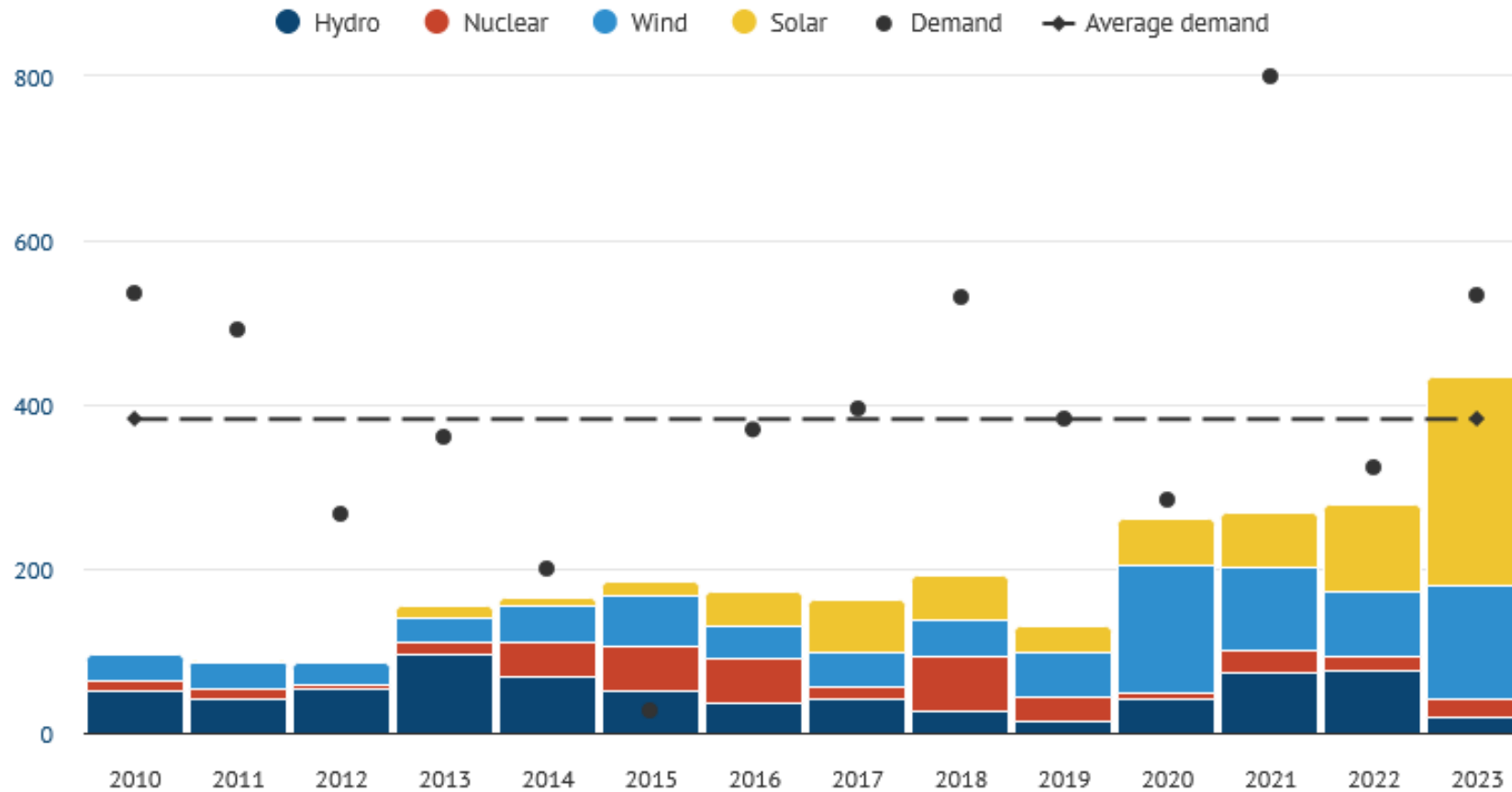
## Dauling Dragon

and document analysis on emission peak campaigns in inland regions, this article identifies one local game strategy – ‘Dauling Dragon’ (木翼双龙) whereby local governments prioritize high emission projects to be completed by 2030 in order to create a margin for future development, a phenomenon known as ‘carbon rush’ (碳冲锋). The article explores the consequences and antecedents of such a strategy through the lens of environmental authoritarianism. It also makes a theoretical con-



# In 2023, clean energy growth will exceed average demand growth for the first time

Annual increase in output or demand, terawatt hours



Carbon Brief

Source: CREA.



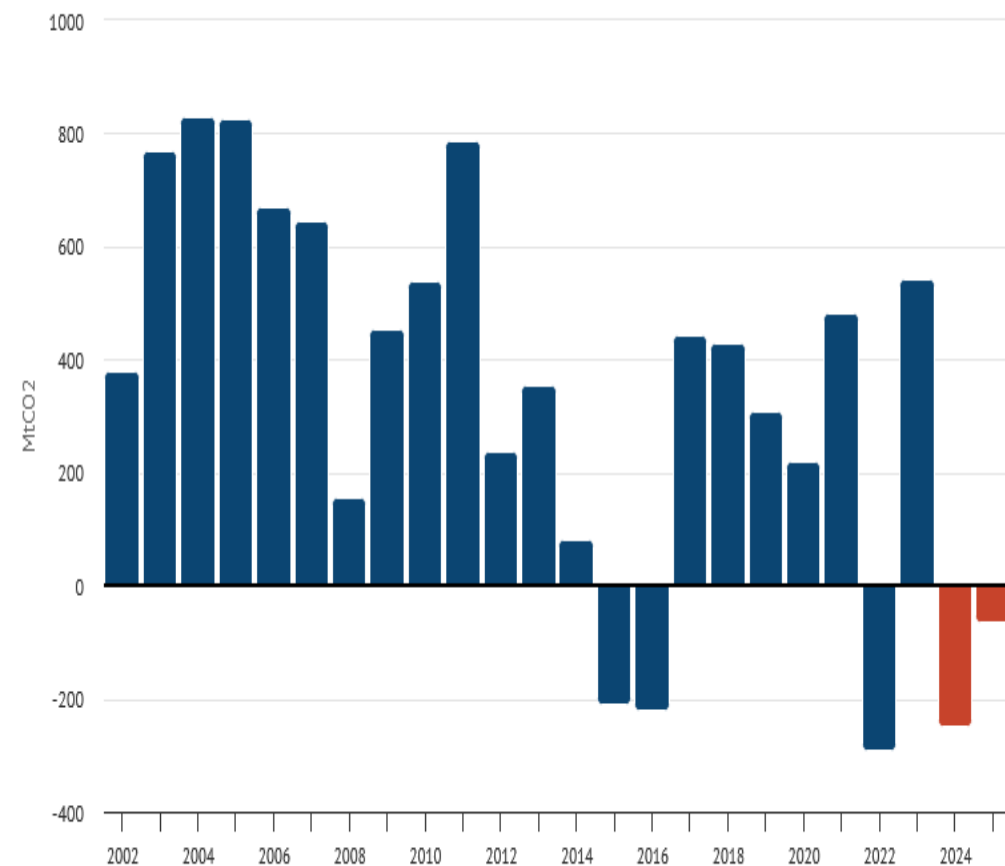
Columns: Annual increase in expected electricity generation from new low-carbon installations, terawatt hours, broken down by source. Dots: Annual increase in electricity demand overall. Dashed line: Average increase in demand during 2010-2023. Figures for 2023 are forecast. Data sources: [China Electricity Council \(CEC\)](#) and [Ember](#), with 2023 capacity additions from [CEC](#) and [Bloomberg](#). Chart by Carbon Brief.

# De store tiltakene

- EU
  - Prismekanisme
  - Støtte til fornybar: nasjonalt
- USA
  - Karbonpriser i noen delstater.
  - Føderalt: IRA (2022)
- Kina
  - Provins/by: pilot-ETS
  - Nasjonalt ETS: Intensitetsmål
  - Støtte til fornybar

## China's CO2 emissions could enter structural decline from 2024

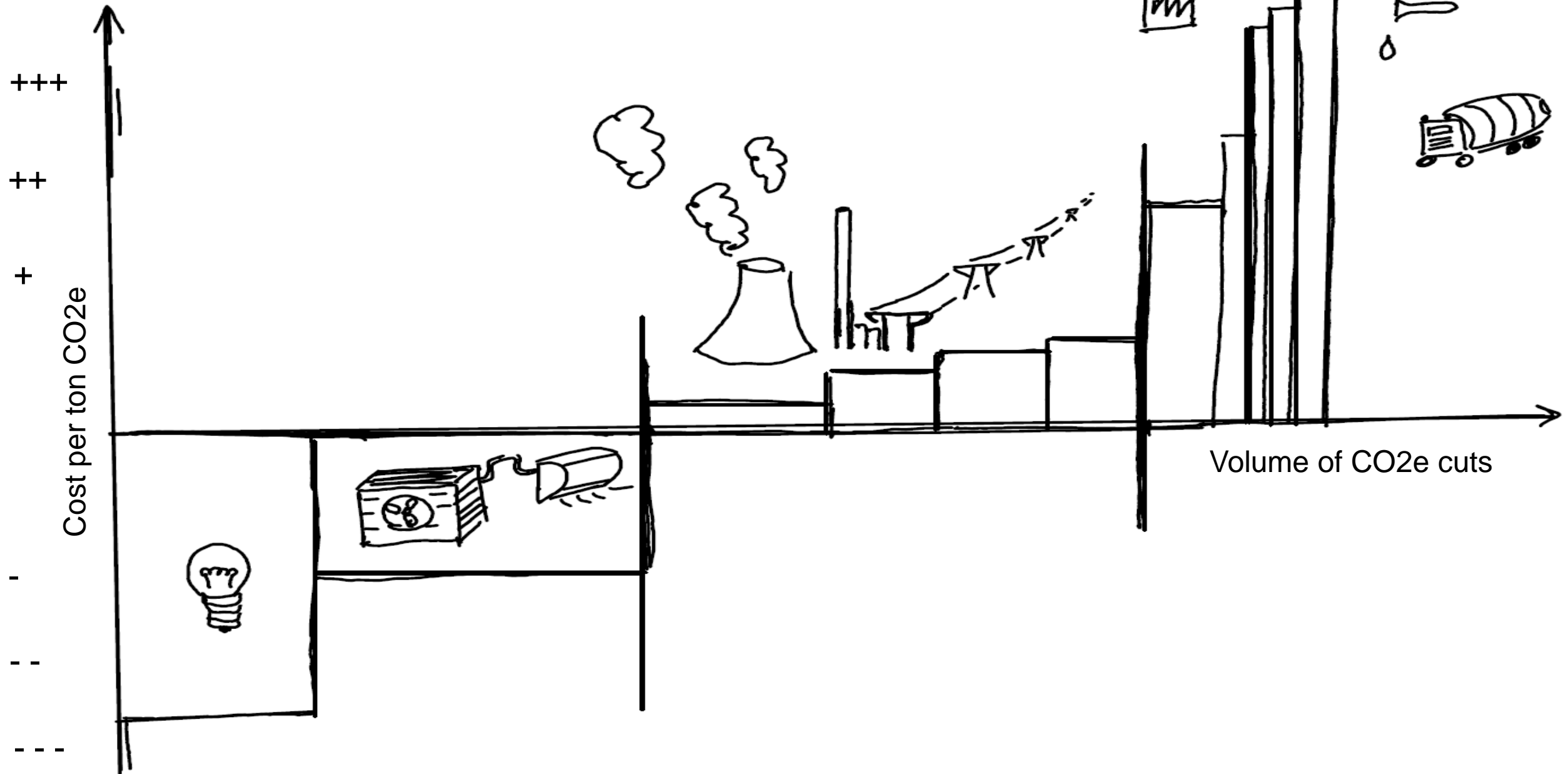
Annual change in emissions from fossil fuels and cement, million tonnes of CO2



Source: CREA.

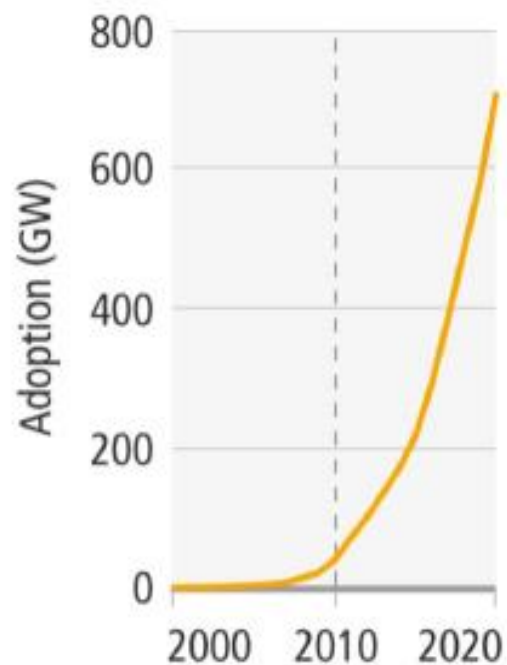
CarbonBrief  
CLEAR ON CLIMATE

# Marginal abatement cost (MAC) curve – schematic



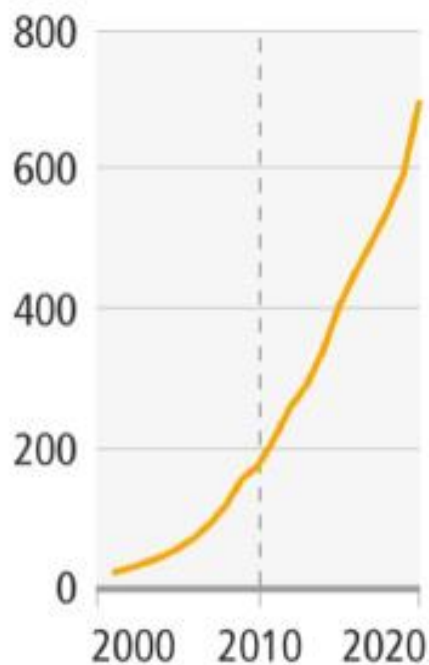


### Photovoltaics (PV)



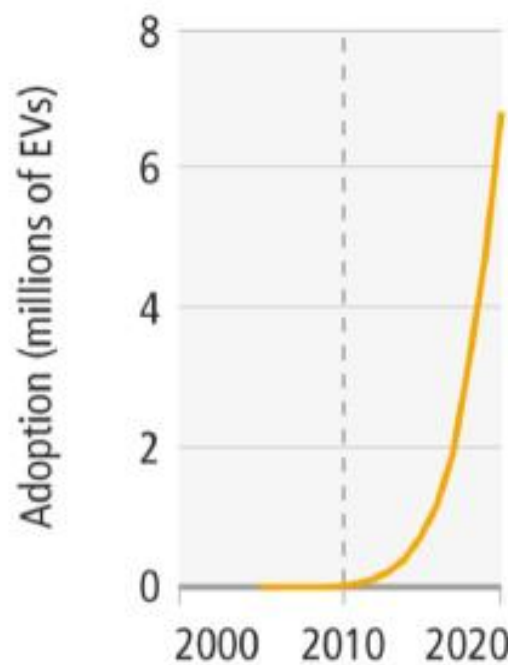
Share of electricity produced in 2020: 3%

### Onshore wind



Share of electricity produced in 2020: 6%

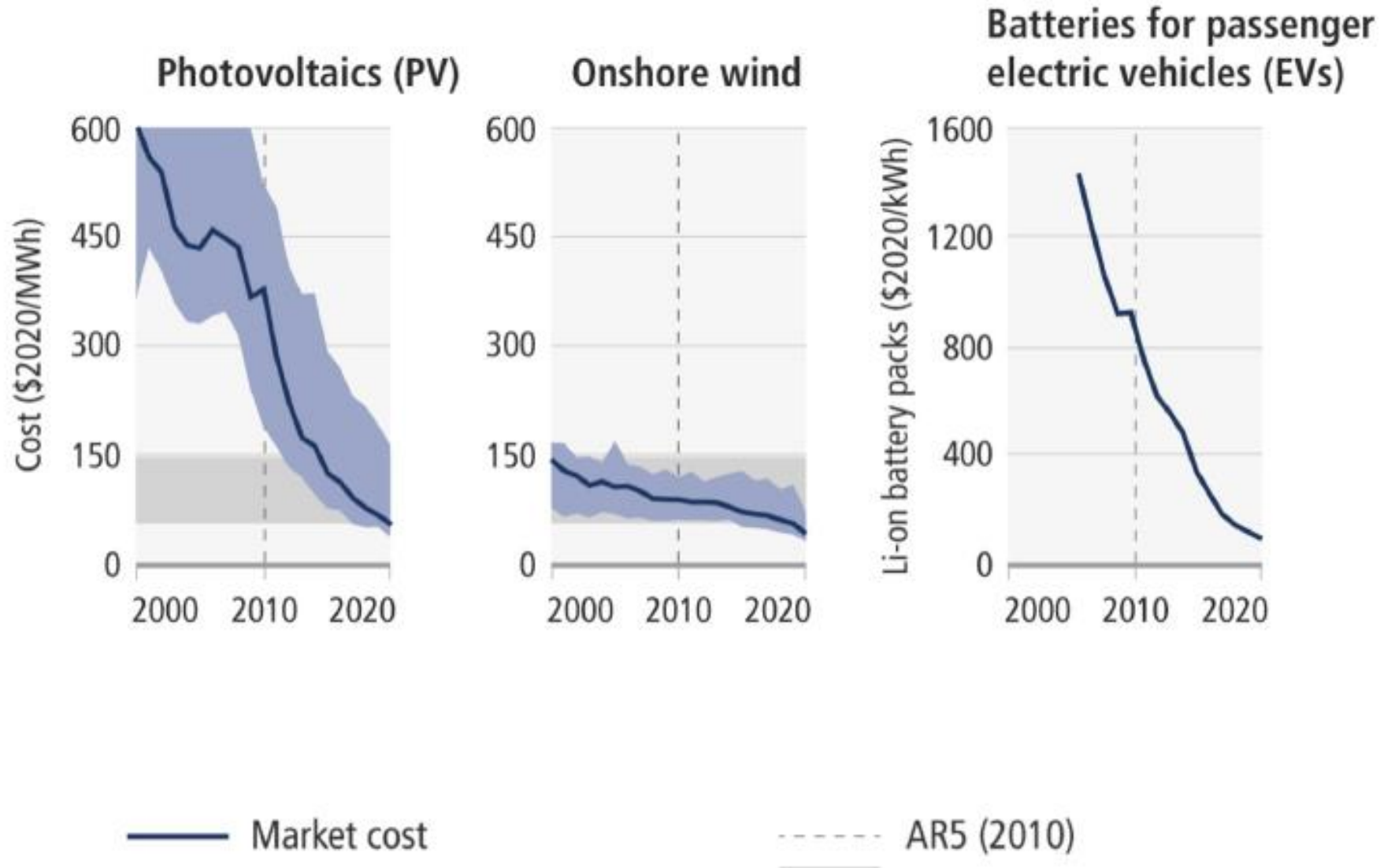
### Batteries for passenger electric vehicles (EVs)



Share of passenger vehicle fleet in 2020: 1%

— Adoption (note different scales)    Fossil fuel cost (2020)

Electricity systems in some countries and regions are already predominantly powered by renewables.



In some cases, costs for renewables have fallen below those of fossil fuels.