



FEBRUARY 25, 2021

COUNCIL ON CLIMATE SOLUTIONS

Organizational Meeting

LIEUTENANT GOVERNOR GILCHRIST



hi everyone this is Lieutenant
Governor Gilchrist



A teal-tinted photograph of a city skyline. In the foreground, a river flows from left to right. A large, multi-span truss bridge crosses the river. In the background, several modern skyscrapers are visible against a cloudy sky. The overall scene is urban and industrial.

PURPOSE

To Guide Michigan's Climate Solutions

MEETING GOALS

- VISION & PURPOSE
- INTRODUCTIONS
- ORGANIZATIONAL BUSINESS
- PROCESS & PARTICIPATION
- CURRENT EMISSIONS PROFILE
- DECARBONIZATION PATHWAYS

INTRODUCTIONS

AGENDA

Review proposed agenda and consider a motion for adoption.

ORGANIZATIONAL BUSINESS

COUNCIL OFFICERS

Discuss council officers and consider a motion for adoption.

GOVERNANCE PROCEDURES

Review Governance Procedures and consider a motion for adoption.

MEETING SCHEDULE

- Proposed monthly meeting every fourth Tuesday.
- Review Meeting Schedule and consider a motion for adoption.



Process

Participation



Advisory Groups

- Michigan Advisory Council on Environmental Justice
 - ✓ Climate Justice Braintrust
- Council on Future Mobility and Electrification
- Energy Transition Impact Project
- UP Energy Task Force



Workgroups

Energy
Production,
Transmission,
Distribution, and
Storage

Co-Chairs
Douglas Jester
and
Katherine
Peretick

Buildings
& Housing

Co-Chairs
Charlotte
Jameson
and
Karen Gould

Transportation
& Mobility

Co-Chairs
Charles
Griffith
and
Judson Herzer

Energy
Intensive
Industries

Co-Chairs
Steven Holty
and
Robert
Jackson

NWL &
Forest
Products

Co-Chairs
Lauren T.
Cooper
and
Scott
Whitcomb

TIMELINE

FROM START TO FINISH



FEBRUARY 2021

- Council on Climate Solutions begins
- Workgroups begin



SEPTEMBER 2020

- Draft Report



DECEMBER 2021

- Final Report



PERSPECTIVE

THE INTERNATIONAL AND NATIONAL
PERSPECTIVES



WORLD
RESOURCES
INSTITUTE

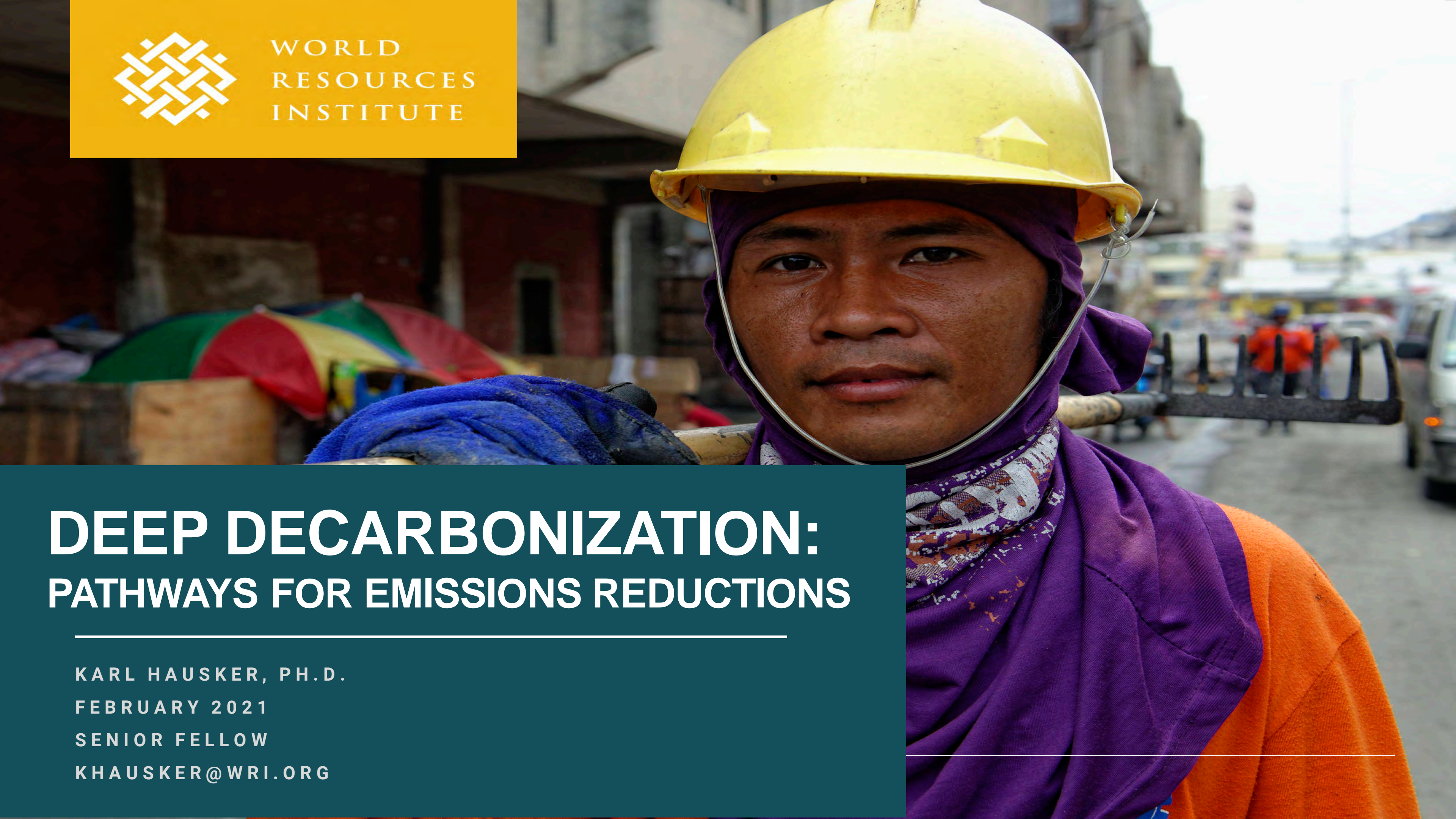
DEEP DECARBONIZATION: PATHWAYS FOR EMISSIONS REDUCTIONS

KARL HAUSKER, PH.D.

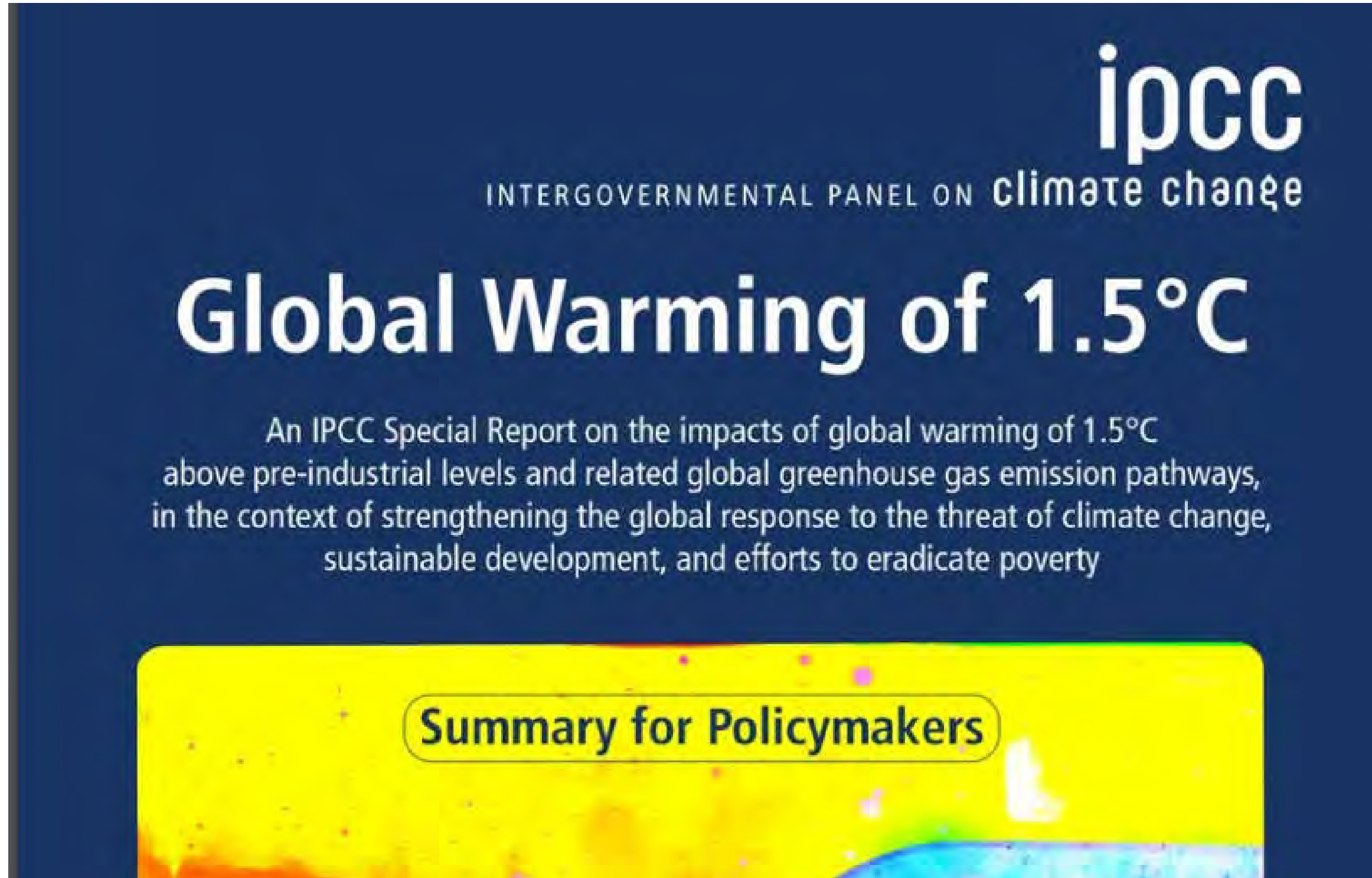
FEBRUARY 2021

SENIOR FELLOW

[KHAUSKER@WRI.ORG](mailto:khausker@wri.org)



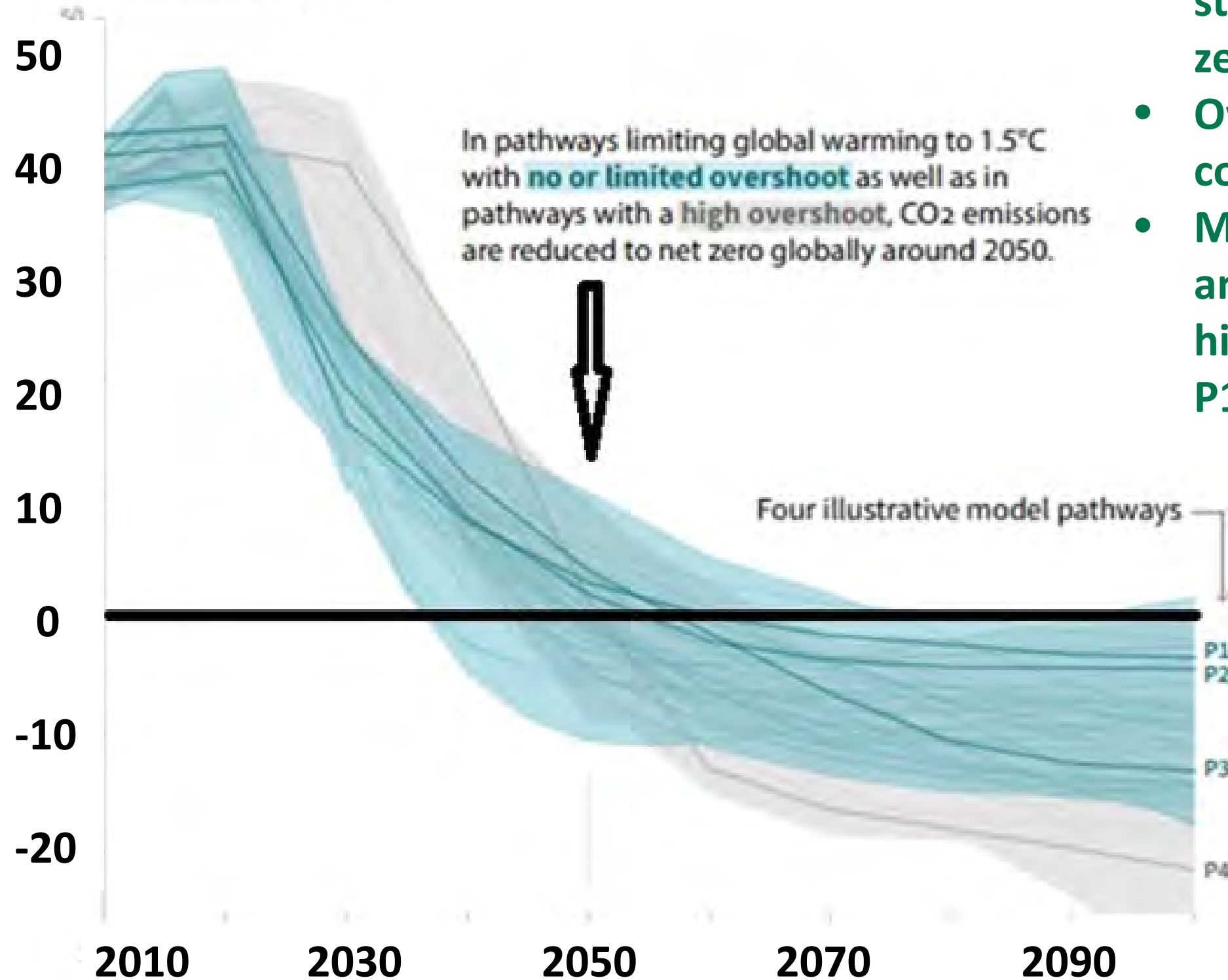
ipcc “1.5 degrees report” lays out global pathways to a safe climate



1.5°C pathways: GLOBAL EMISSION TRAJECTORIES

Global total net CO₂ emissions

Billion tonnes of CO₂/yr

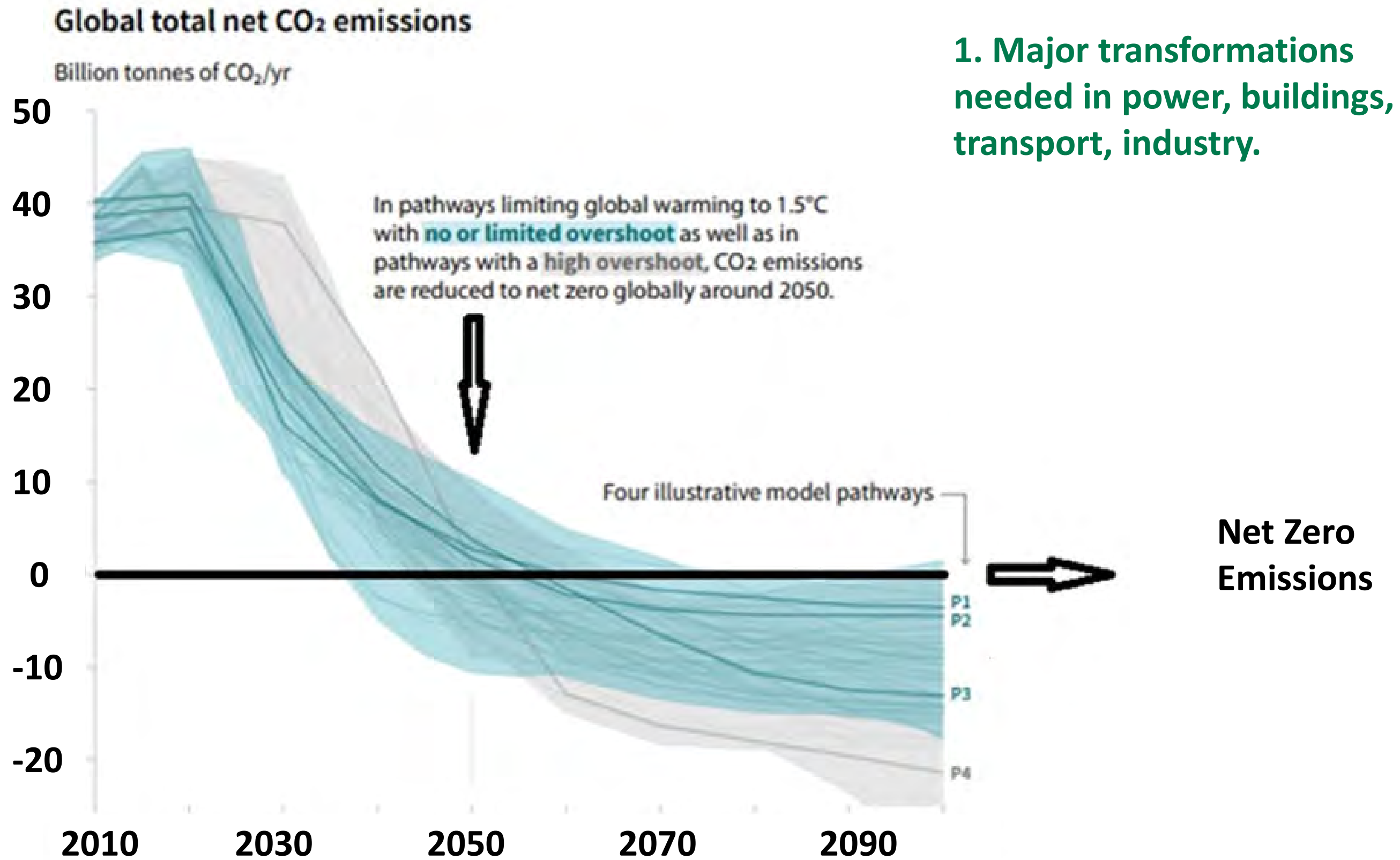


- Emissions need to begin a steep decline and reach net-zero by mid-century.
- Overshoot of safe concentrations is likely.
- Many pathways examined and four illustrative pathways highlighted: P1, P2, P3, P4

Net Zero Emissions

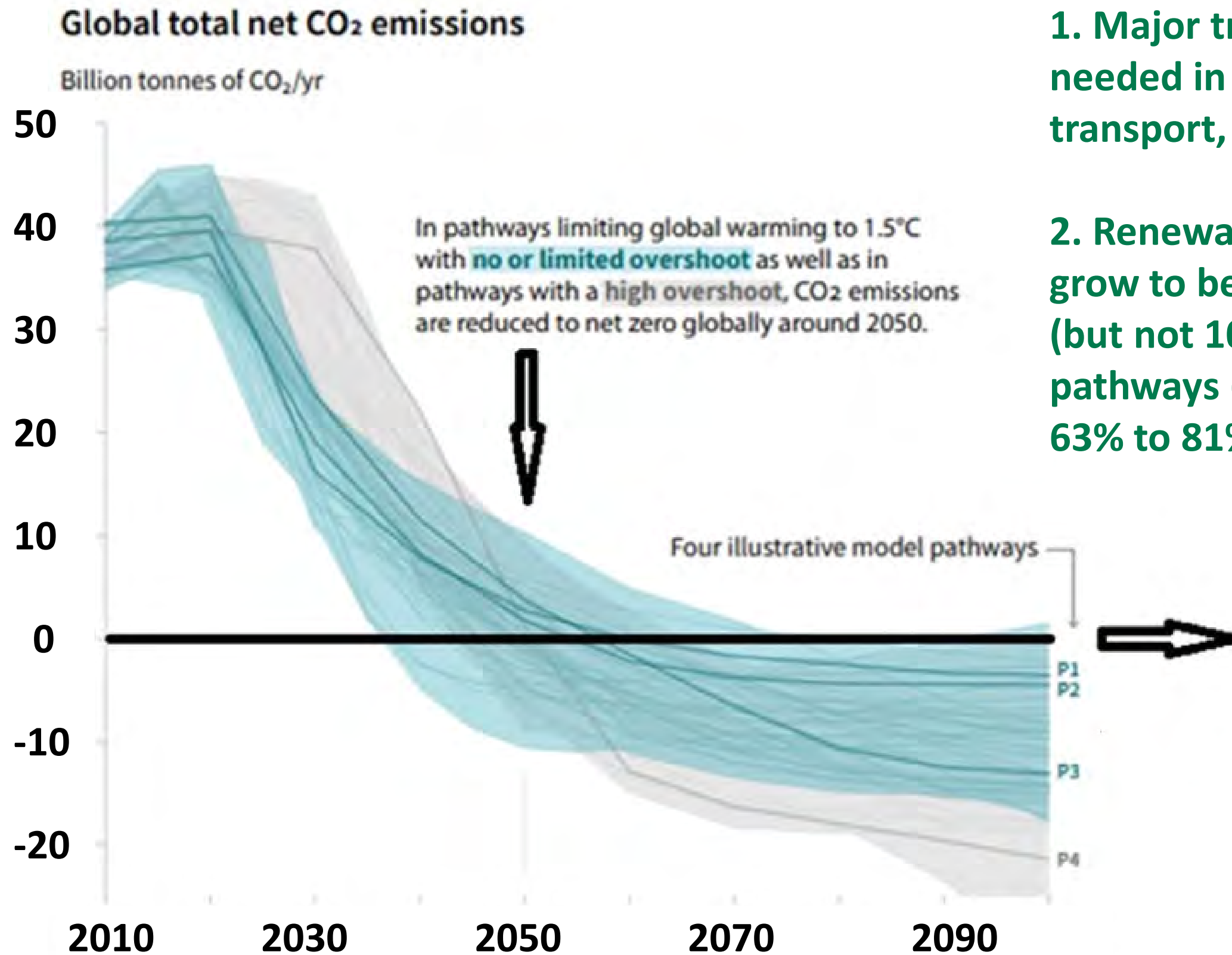
“Net Negative Emissions”

1.5°C pathways: three key takeaways



1. Major transformations needed in power, buildings, transport, industry.

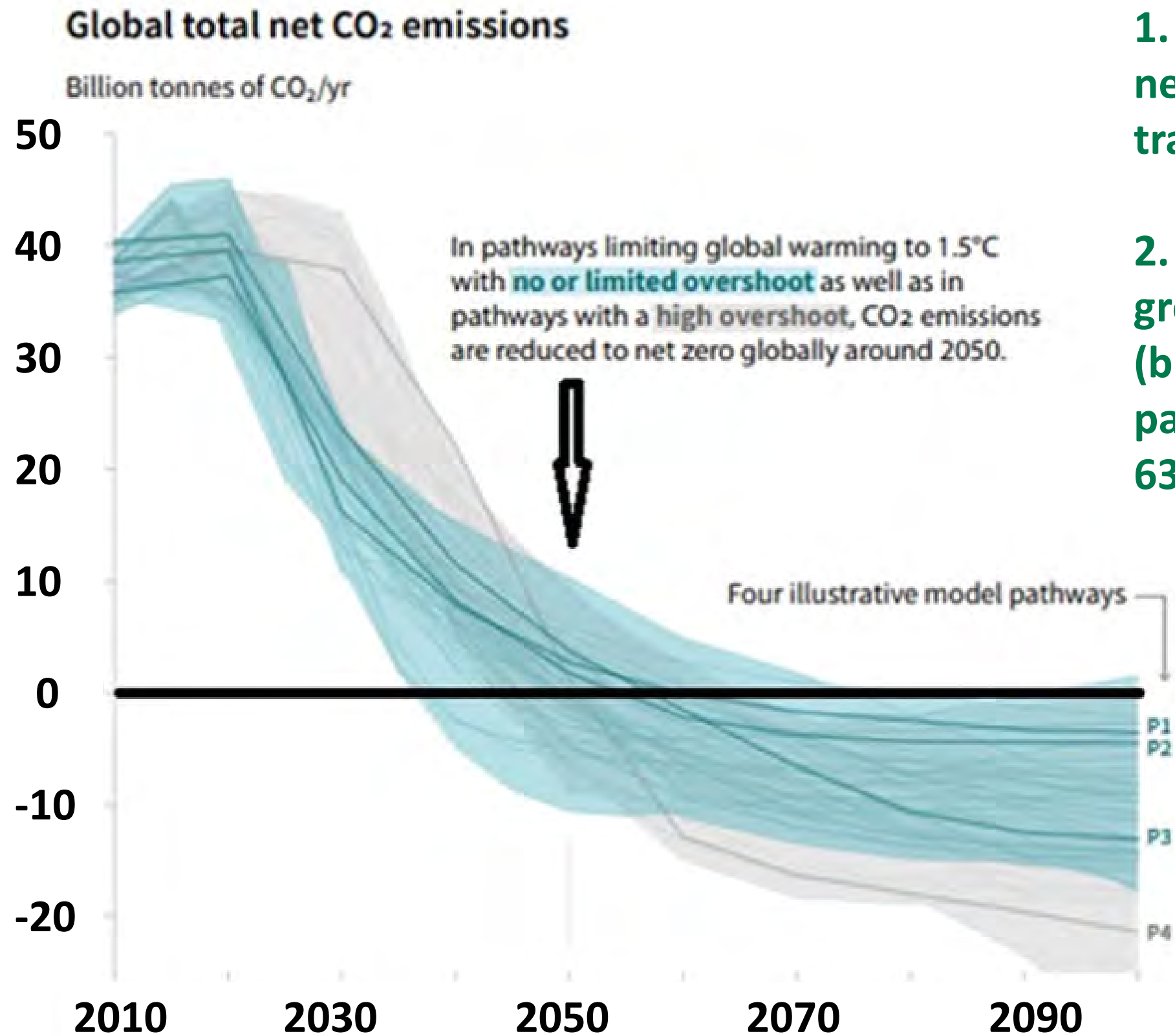
1.5°C pathways: three key takeaways



1. Major transformations needed in power, buildings, transport, industry.

2. Renewable electricity can grow to be predominant source (but not 100%). Four illustrative pathways (P1-P4) have range of 63% to 81% wind and solar.

1.5°C pathways: three key takeaways

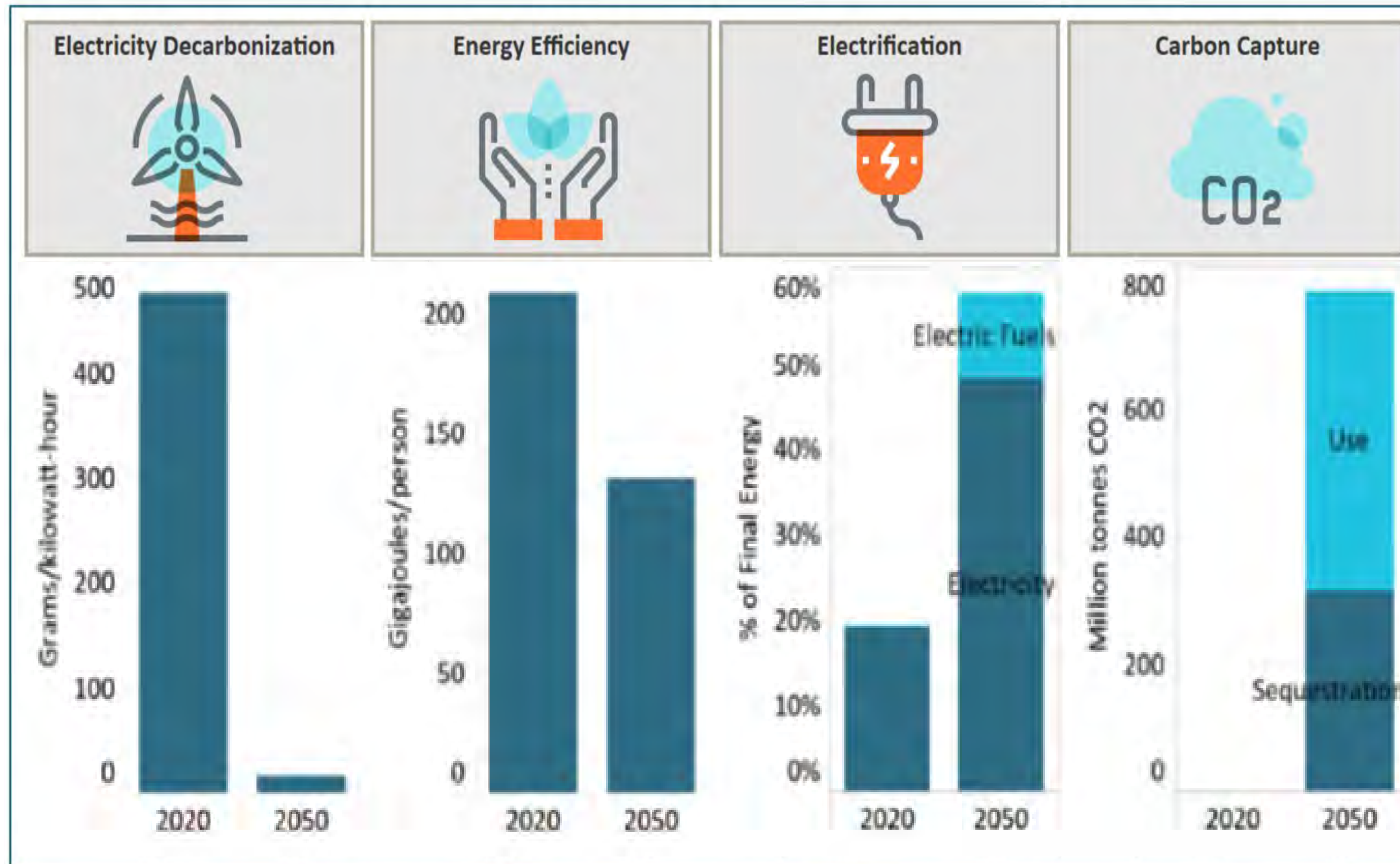


1. Major transformations needed in power, buildings, transport, industry.

2. Renewable electricity can grow to be predominant source (but not 100%). Four illustrative pathways (P1-P4) have range of 63% to 81% wind and solar.

3. All pathways require Carbon Dioxide Removal

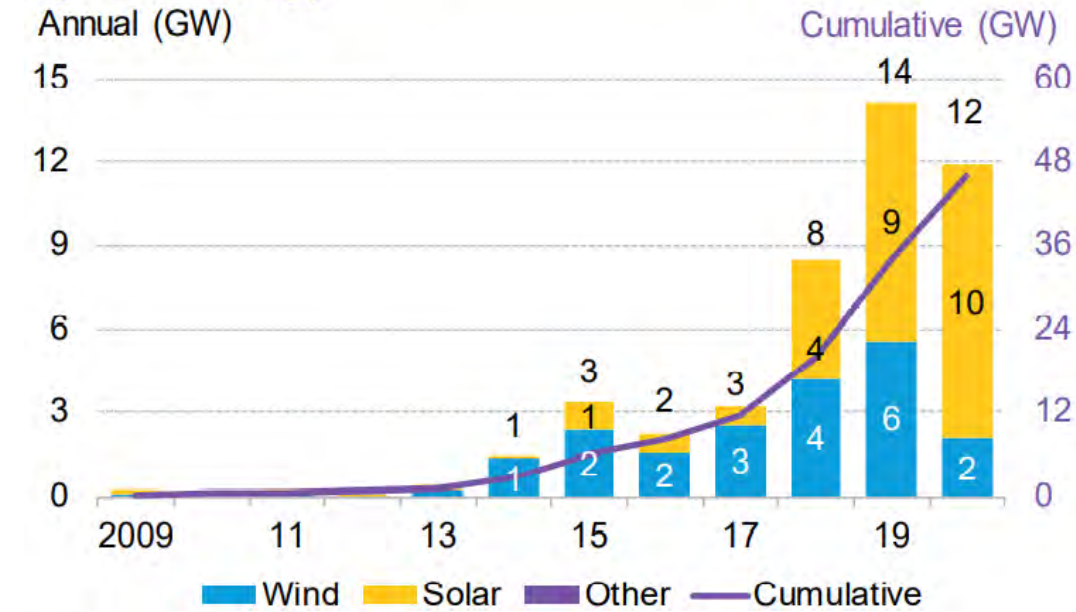
FOUR strategies to transform the U.S. energy system to zero-carbon



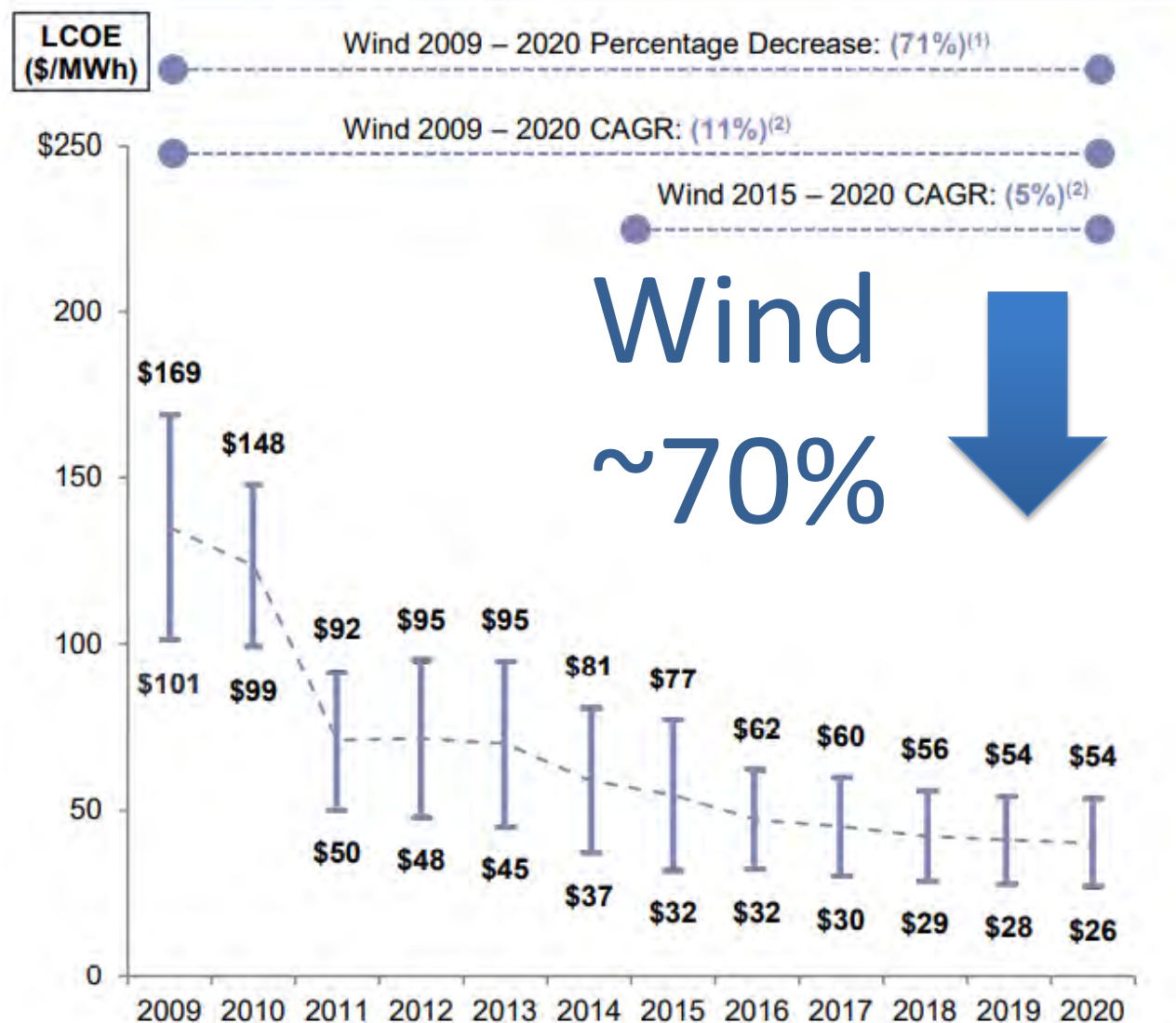
RENEWABLE REVOLUTION

- Major cost decreases for wind and solar generation in last ten years.
- Federal and state policies and corporate purchasing drive renewables to 20% of total generation (includes hydro).

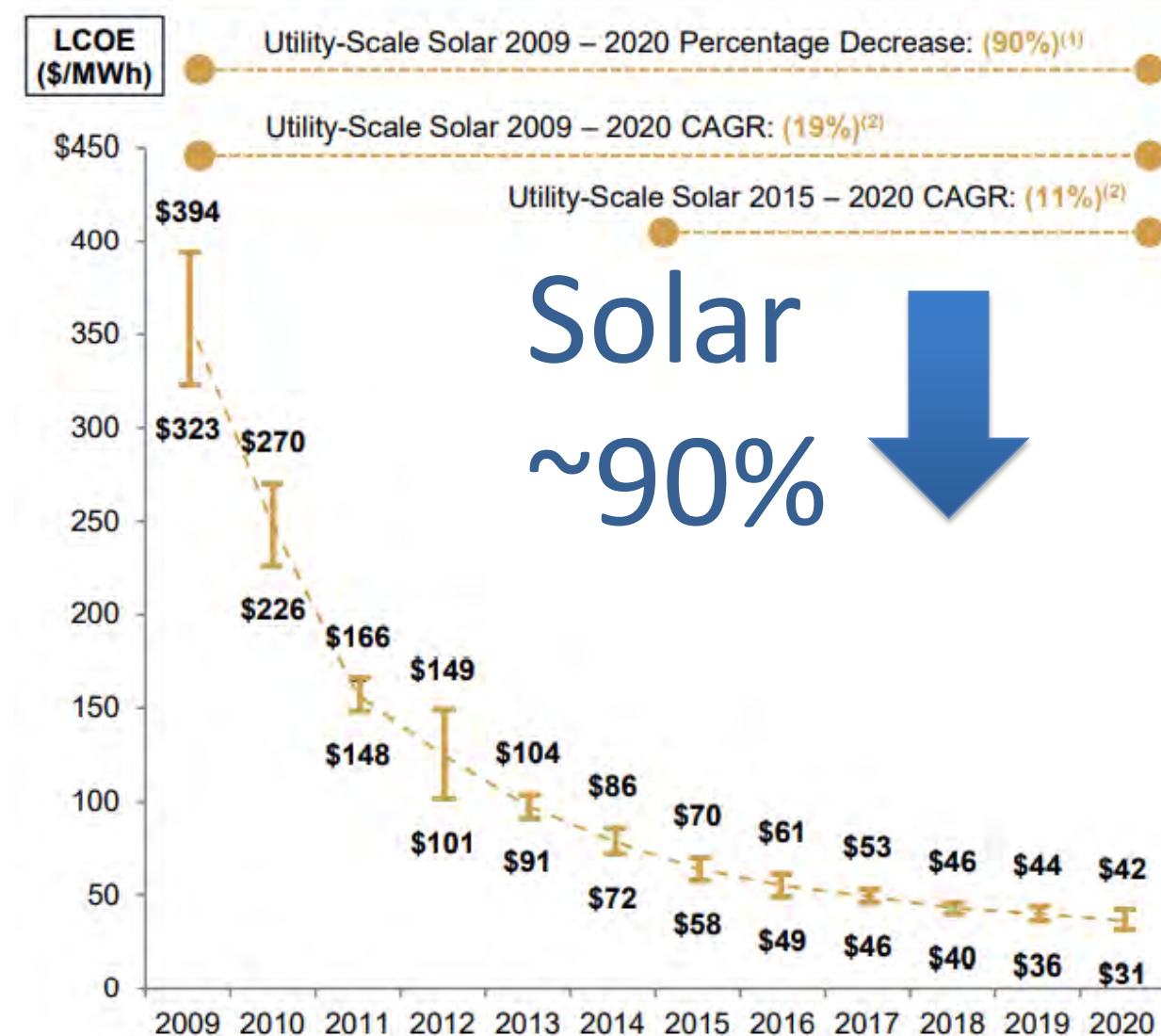
Renewable capacity contracted by corporations, by technology



Unsubsidized Wind LCOE



Unsubsidized Solar PV LCOE



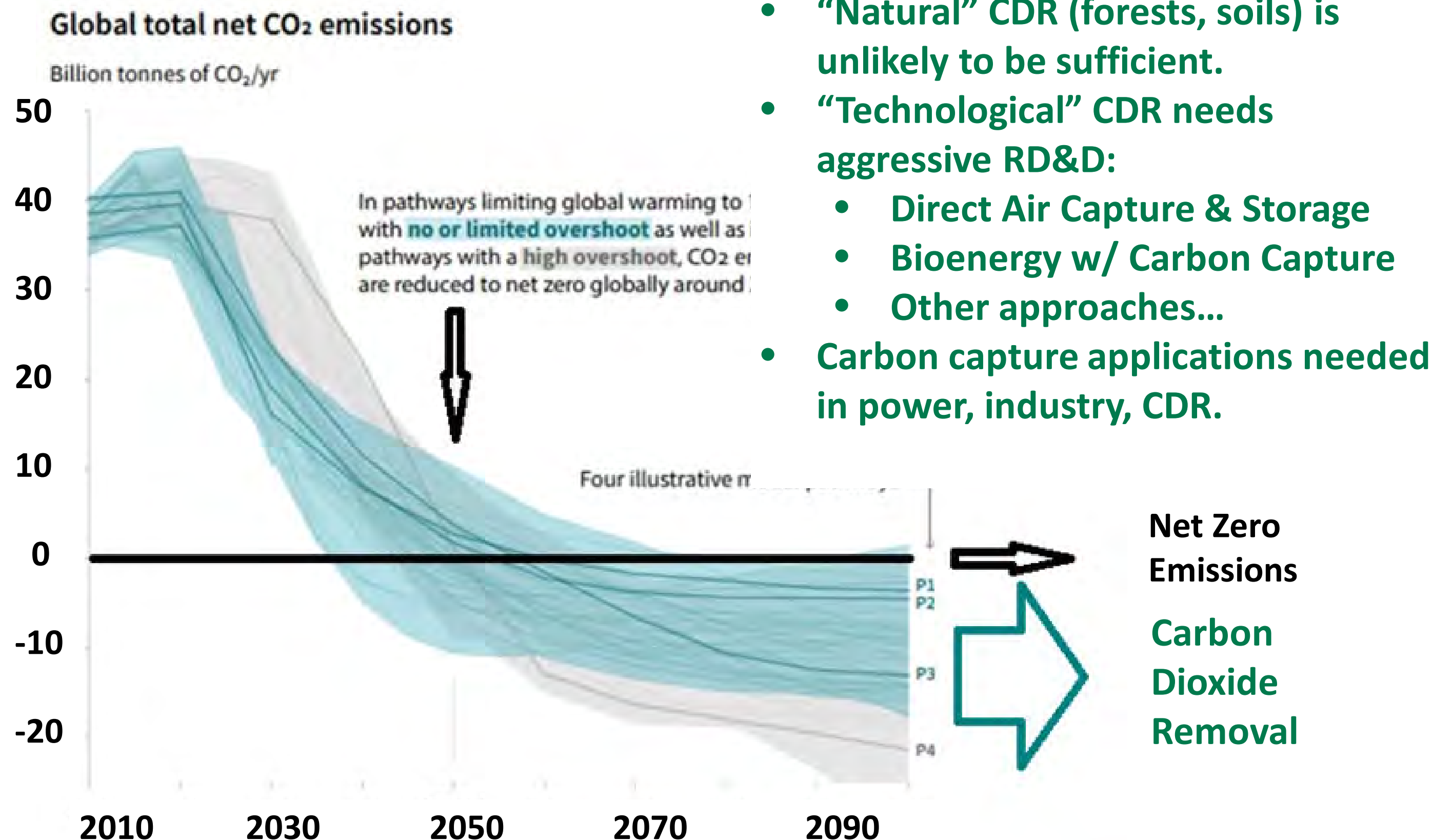
CAN WE BUILD LARGE 100% RENEWABLE GRIDS?

- Though technically feasible, they would likely be very expensive.
- Wind and solar are highly variable and intermittent due to:
 - Time of day
 - Month and season
 - Random weather fluctuation – Germans have a word for that:



- Grid operators would incur major “integration costs” that drive up total costs: “Overbuild”, transmission, demand response, storage.

Preparing for carbon dioxide removal



- “Natural” CDR (forests, soils) is unlikely to be sufficient.
- “Technological” CDR needs aggressive RD&D:
 - Direct Air Capture & Storage
 - Bioenergy w/ Carbon Capture
 - Other approaches...
- Carbon capture applications needed in power, industry, CDR.

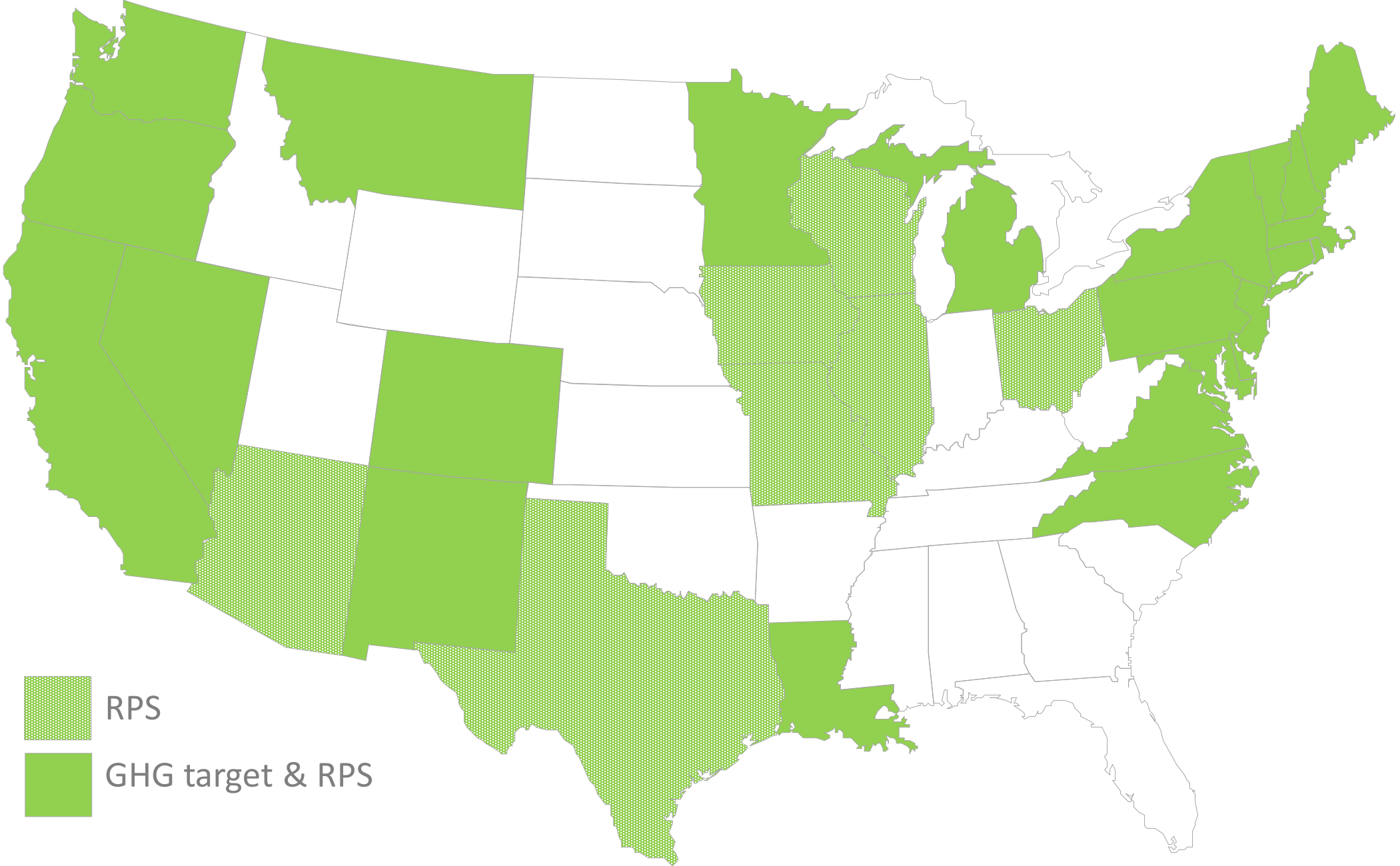
Betting on climate solutions:

Place all our chips on a few technologies? -or-



Spread our chips on a broad portfolio?

STATES WITH RENEWABLE PORTFOLIO STANDARDS (RPS) AND GHG TARGETS:



Source: The Analysis Group



WORLD
RESOURCES
INSTITUTE

THANK YOU

Karl Hausker, Ph.D.
Senior Fellow
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MICHIGAN

UNDERSTANDING MICHIGAN'S CONTEXT



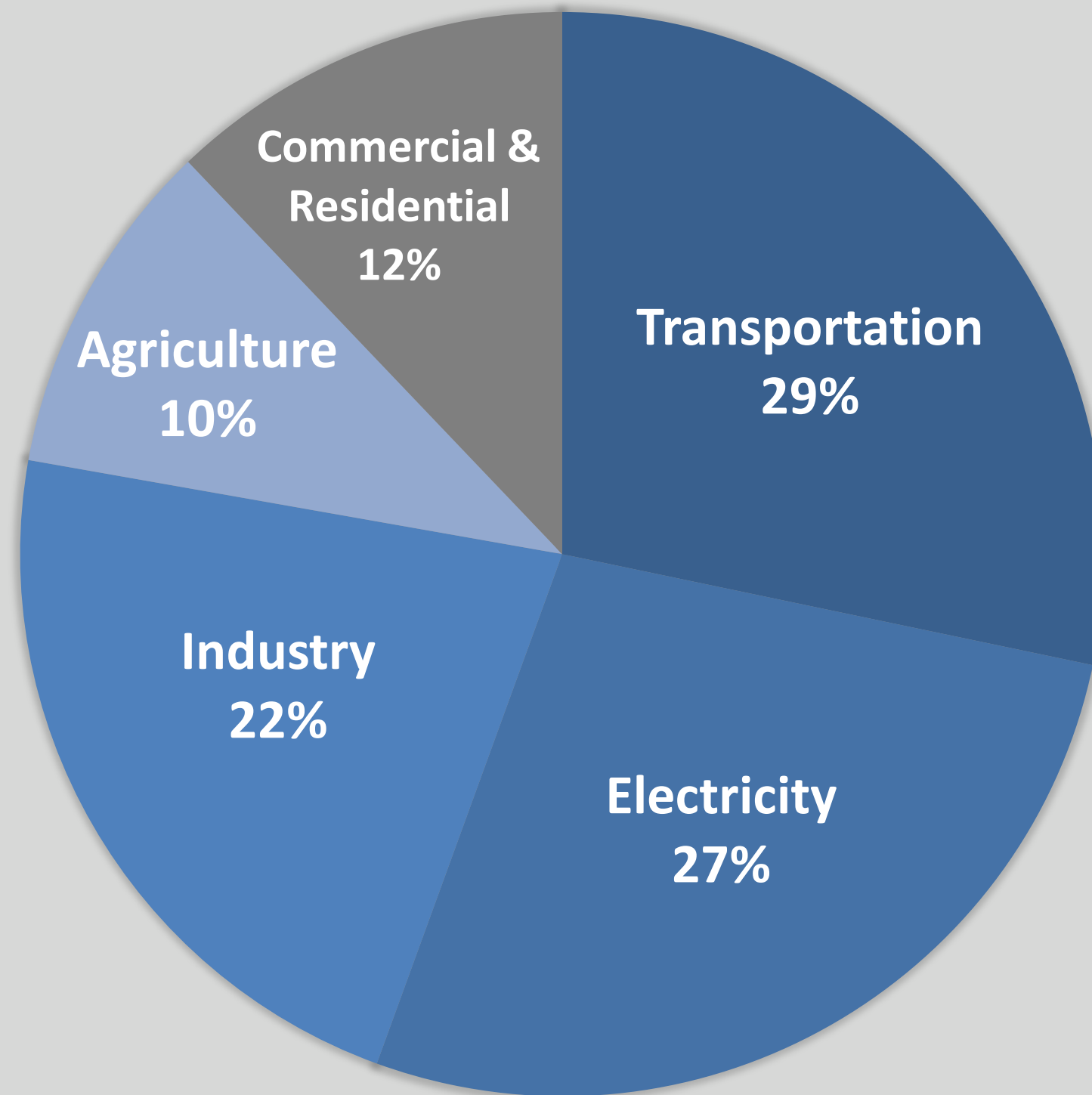
LEADING BY EXAMPLE

ACTIONS UNDERWAY

State of Michigan agencies are leading on efforts to reduce our emission profiles. A few examples include:

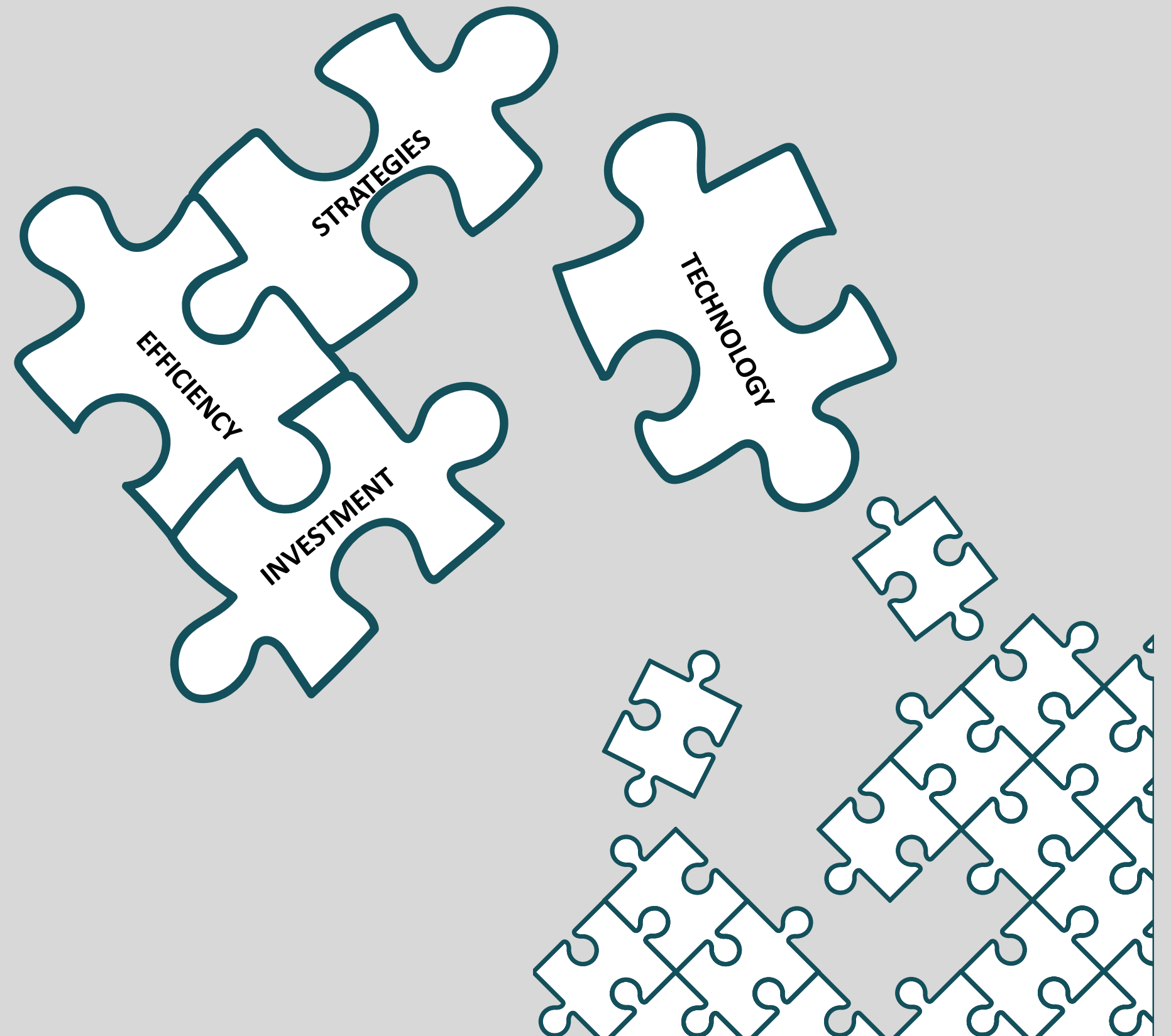
- State employee education campaign,
- Renewable hatcheries and state parks,
- MI Power Grid,
- Energy Transition Impact Project,
- Facilities management best practices,
- And more...

Sources of Emissions by Sector



PARTNERSHIP & PERSISTENCE

BUILDING MICHIGAN'S
MIDCENTURY FUTURE

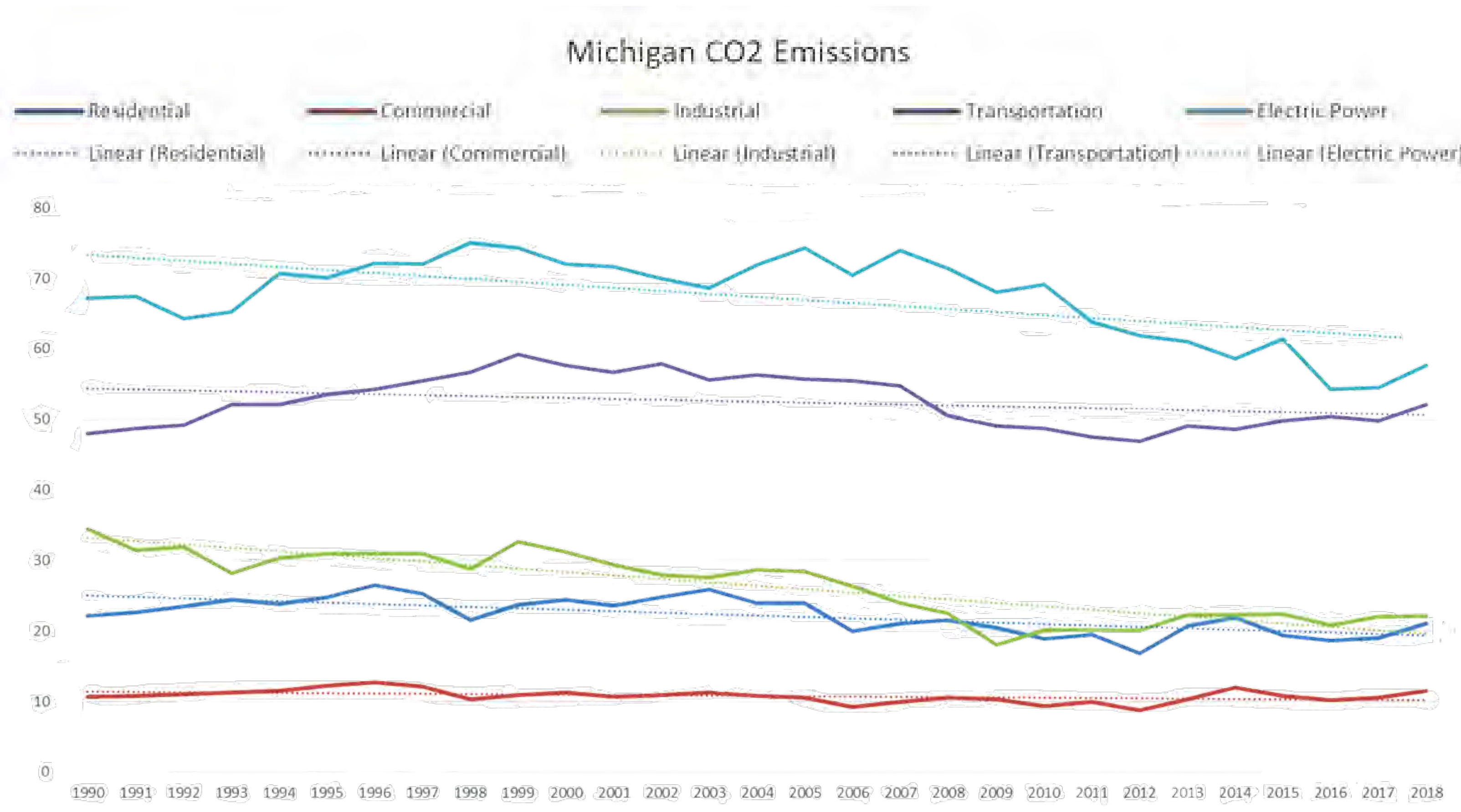


The background image is a teal-tinted photograph. On the left, a suspension bridge with multiple towers and cables spans across the frame. On the right, a traditional building with a multi-tiered, thatched roof stands prominently. The overall scene is misty or hazy, creating a serene and atmospheric mood.

TRENDS & PATHWAYS

TRENDS

1990-2018



TRENDS

BY FUEL TYPE & SECTOR

Michigan Carbon Emissions 2017-2005 (% change)	Residential Sector	Commercial Sector	Industrial Sector	Transportation Sector	Electric Power Sector	All Sectors
Coal		-89%	-32%		-37%	-37%
Petroleum Products	-49%	78%	-43%	-10%	63%	-14%
Natural Gas	-14%	-4%	-19%	-27%	67%	-2%
Total	-21%	0%	-28%	-10%	-26%	-20%
Further reduction by 2025 (MMT)						-15.5
% Reduction 2017-2025						-10.2%



NEXT STEPS

NEXT MEETING - MARCH 23, 2021

Meetings will be held the fourth Tuesday of every month.

WORKGROUPS

Workgroup Co-Chairs will communicate meeting information in the coming weeks.

MEETING MATERIALS

Meeting materials will be distributed to council members prior to each meeting and subsequently posted online. Michigan.gov/Climate

Reach Us Online

WEBSITE

Michigan.gov/Climate

EMAIL ADDRESS

EGLE-ClimateSolutions@Michigan.gov