



finance  
initiative

**TCFD and climate scenarios**  
**June 2021**



“

*Markets need the right information to seize the opportunities and mitigate the risks that are being created by the transition to a low carbon economy.*

”

– Mark Carney, Chair of the Financial Stability Board 2011-2018

# WHAT IS THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)? FORMED BY THE FINANCIAL STABILITY BOARD (FSB) IN 2017, THE TCFD PROVIDES GUIDANCE FOR DISCLOSING CLIMATE-RELATED FINANCIAL INFORMATION

## 11 recommended disclosures

Governance	Strategy	Risk Management	Metrics and Targets
a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process
b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate related risks and opportunities on the organization's businesses, strategy, and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets

# CONTINUING DEVELOPMENT OF THE TCFD

## THE TCFD HAS BECOME THE DE FACTO STANDARD FOR CLIMATE RISK DISCLOSURES AND IS INCREASINGLY CONSIDERING THE INCLUSION OF ALIGNMENT METRICS

### 2020 progress

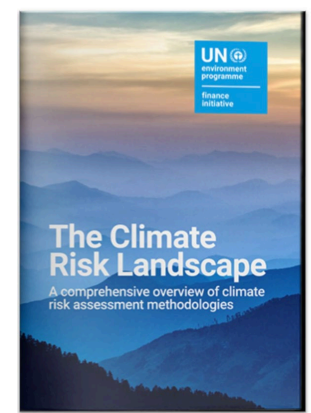
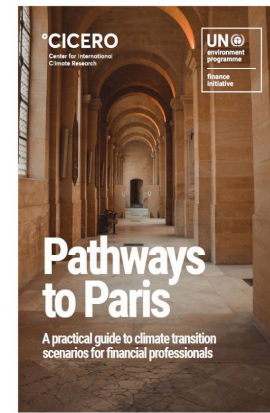
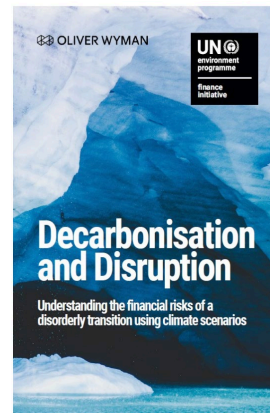
- Currently over 1000 supporters with a market capitalization of nearly \$12 trillion
- Consultation on forward-looking metrics issued
- 2020 Status report key conclusions
  - Disclosure of climate-related financial information has increased since 2017, but many institutions are still in the early stages of their disclosure journey
  - Additional quantification and standardization of disclosures is needed
  - Asset manager and asset owner reporting to their clients and beneficiaries, respectively, is likely insufficient

### 2021 plans

- TCFD will explore forward-looking and alignment metrics based on the results of their public consultation
- TCFD will look to establish a set of metrics for disclosure



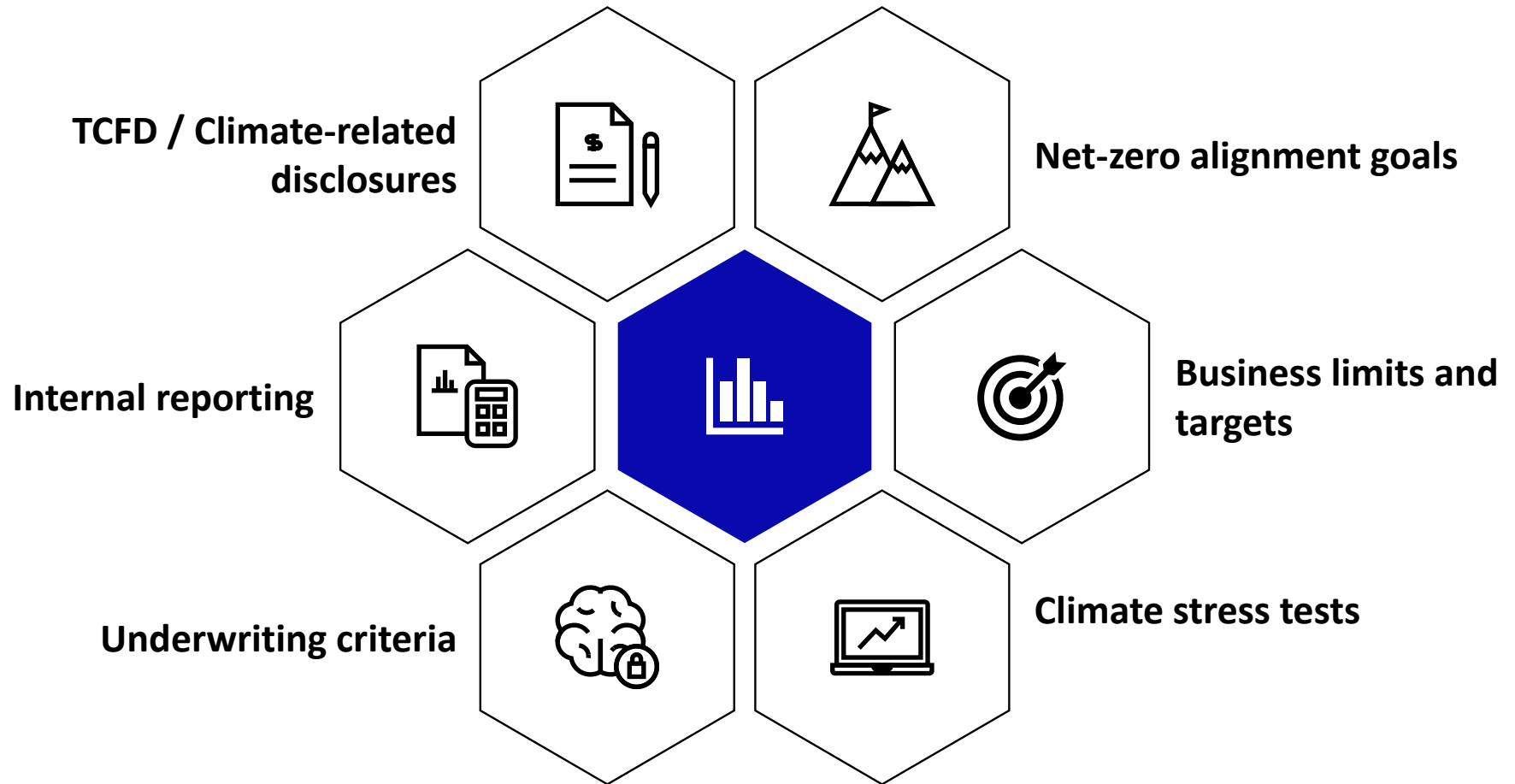
The latest TCFD status report describes the progress companies are making in implementing the TCFD recommendations



UNEP FI's Latest TCFD publications

# APPLICATIONS OF CLIMATE SCENARIOS IN THE FINANCIAL SECTOR

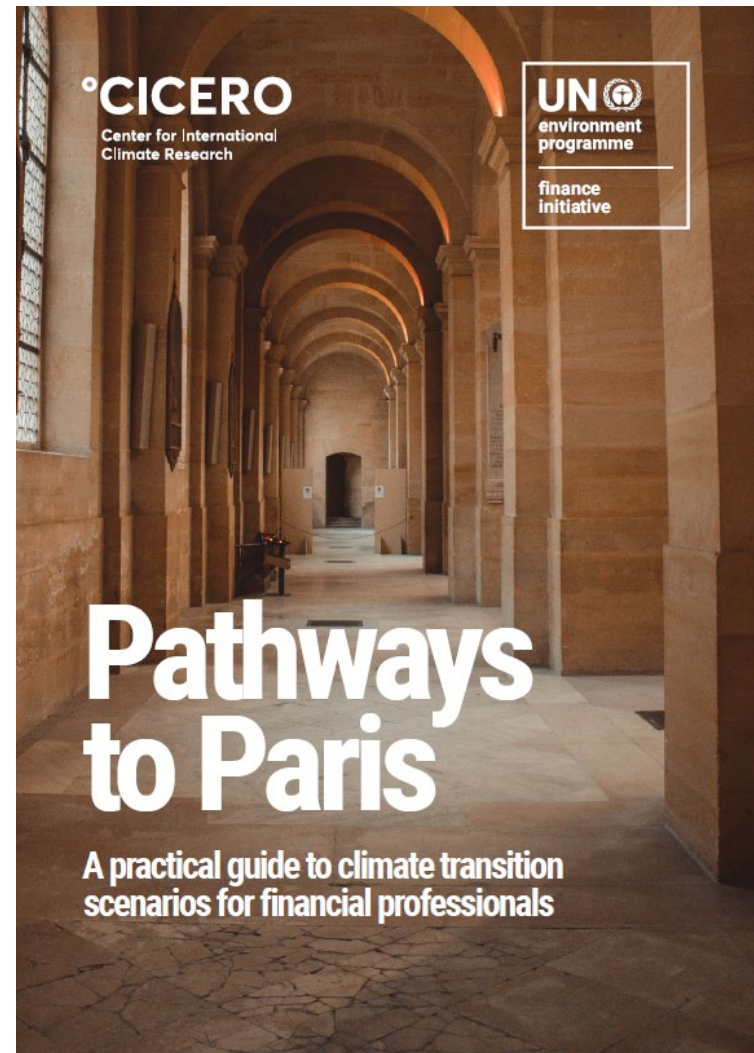
## CLIMATE SCENARIOS ARE BECOMING A CRITICAL INPUT INTO PROCESSES THROUGHOUT FINANCIAL INSTITUTIONS



# PATHWAYS TO PARIS

## PRACTICAL GUIDE TO CLIMATE TRANSITION SCENARIOS

- Produced with CICERO - a global expert on climate scenarios and models
- Expands on the work in Phase I by providing a practical guide for using climate transition scenarios in a financial risk context
- Features specific chapters and case studies on a variety of elements of climate transition scenarios
  - Exploration of climate scenario analysis in the financial sector
  - Evaluation of Integrated Assessment Models (IAMs)
  - Understanding key assumptions of IAMs
  - Examination of sectoral insights from climate scenarios
  - Recommendations for climate modelers and financial users

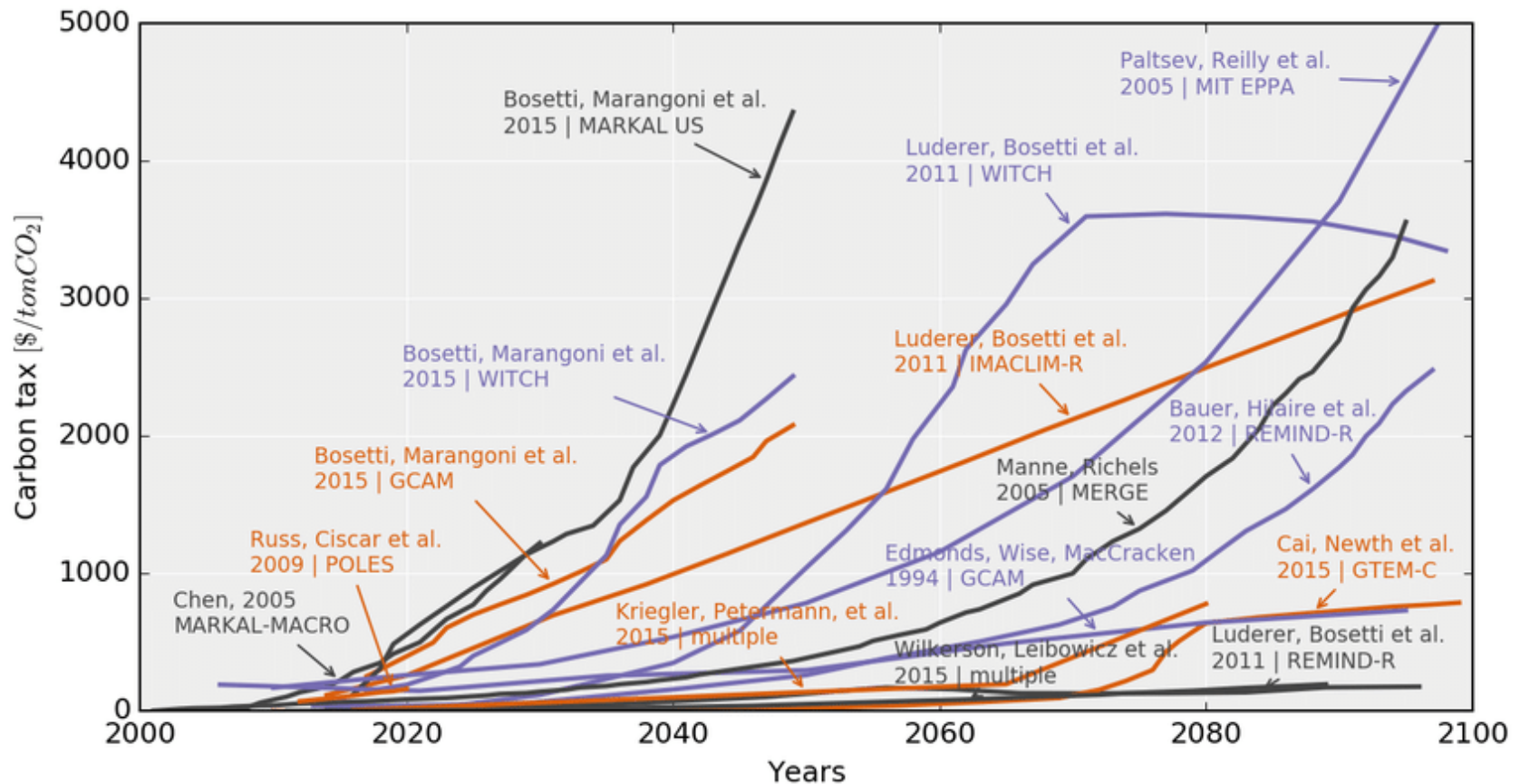


# KEY VARIABLES: CARBON PRICE

## A VARIETY OF POLICY AND MARKET MECHANISMS ARE REPRESENTED BY THE CARBON PRICE IN MOST CLIMATE MODELS

### Carbon price estimations from various IAMs

The steepness of the curve may indicate greater disruption to emissions intensive sectors

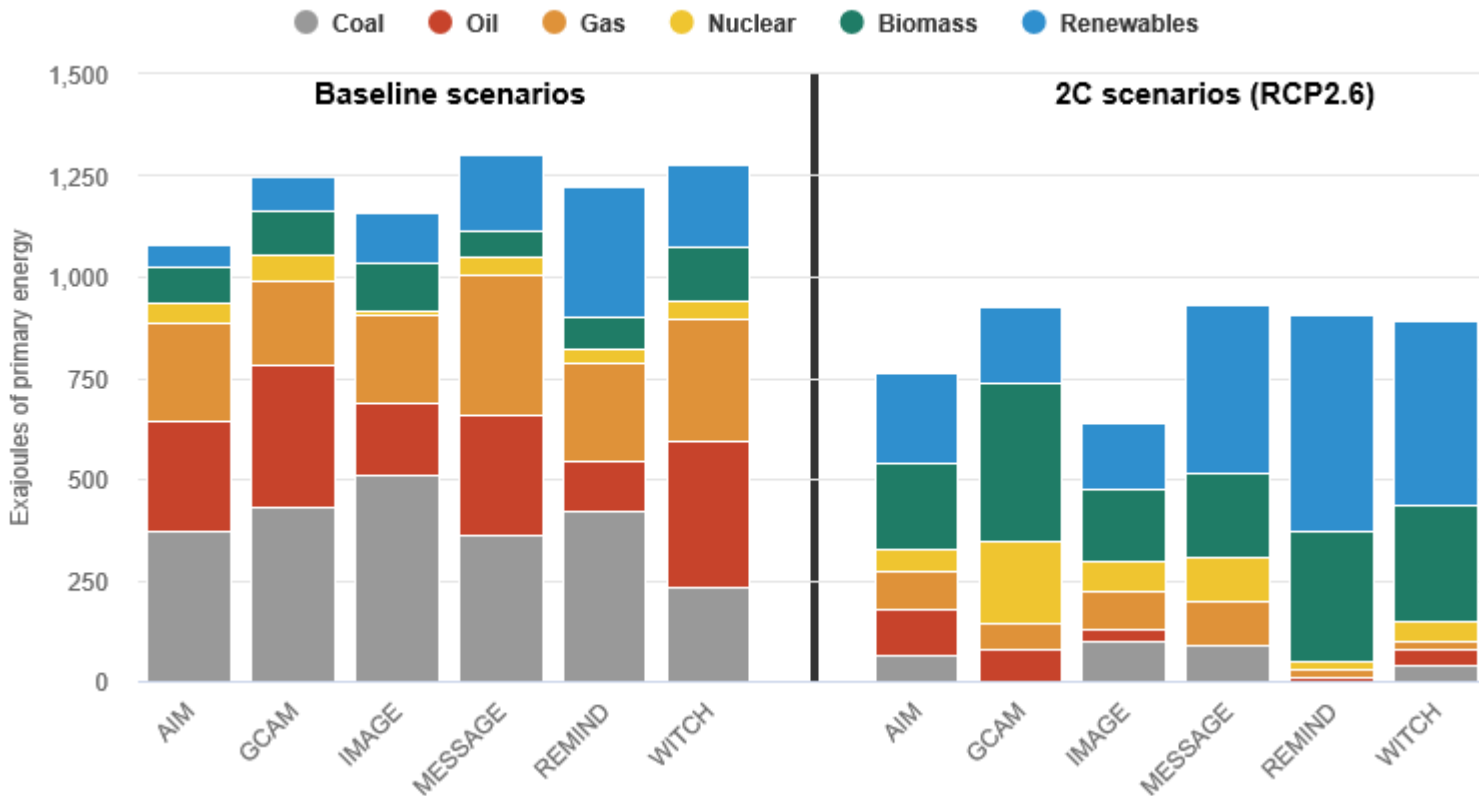


# KEY VARIABLES: FUTURE ENERGY COMPOSITION AND TOTAL ENERGY USE

## NEARLY ALL MODELS REQUIRE A RAPID DRAWDOWN IN FOSSIL FUEL USE TO HIT TEMPERATURE TARGETS

Energy composition in 2100

Selected IAMs<sub>1</sub>



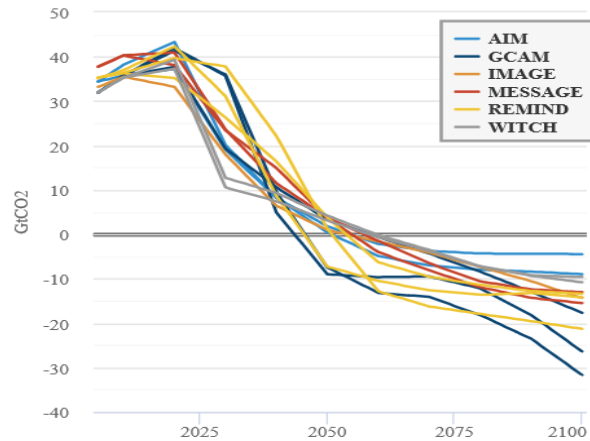


# KEY VARIABLES: YEAR OF PEAK EMISSIONS AND TEMPERATURE OVERSHOOT

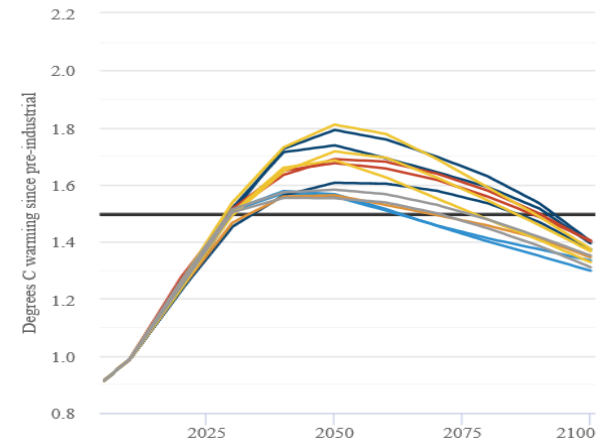
## HOW SOON EMISSIONS PEAK AND HOW MUCH OVERSHOOT IS ALLOWED INFLUENCE THE SPEED OF THE LOW-CARBON TRANSITION

Emissions and temperature forecasts for selected IAMs<sup>1</sup>

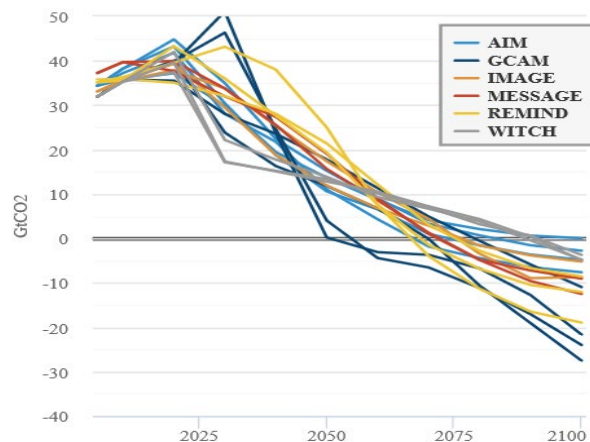
1.5C scenario CO2 emissions



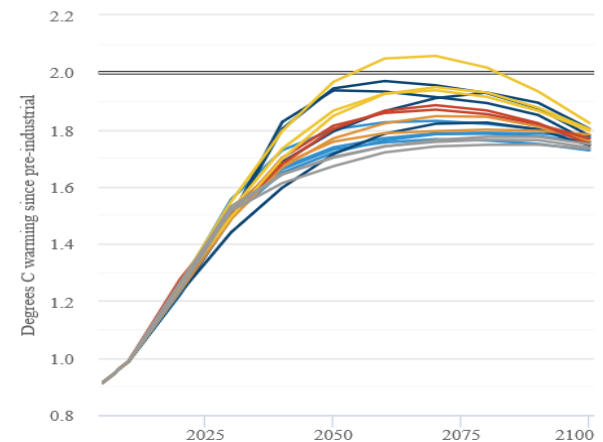
1.5C scenario global temperature change



2C scenario CO2 emissions



2C scenario global temperature change

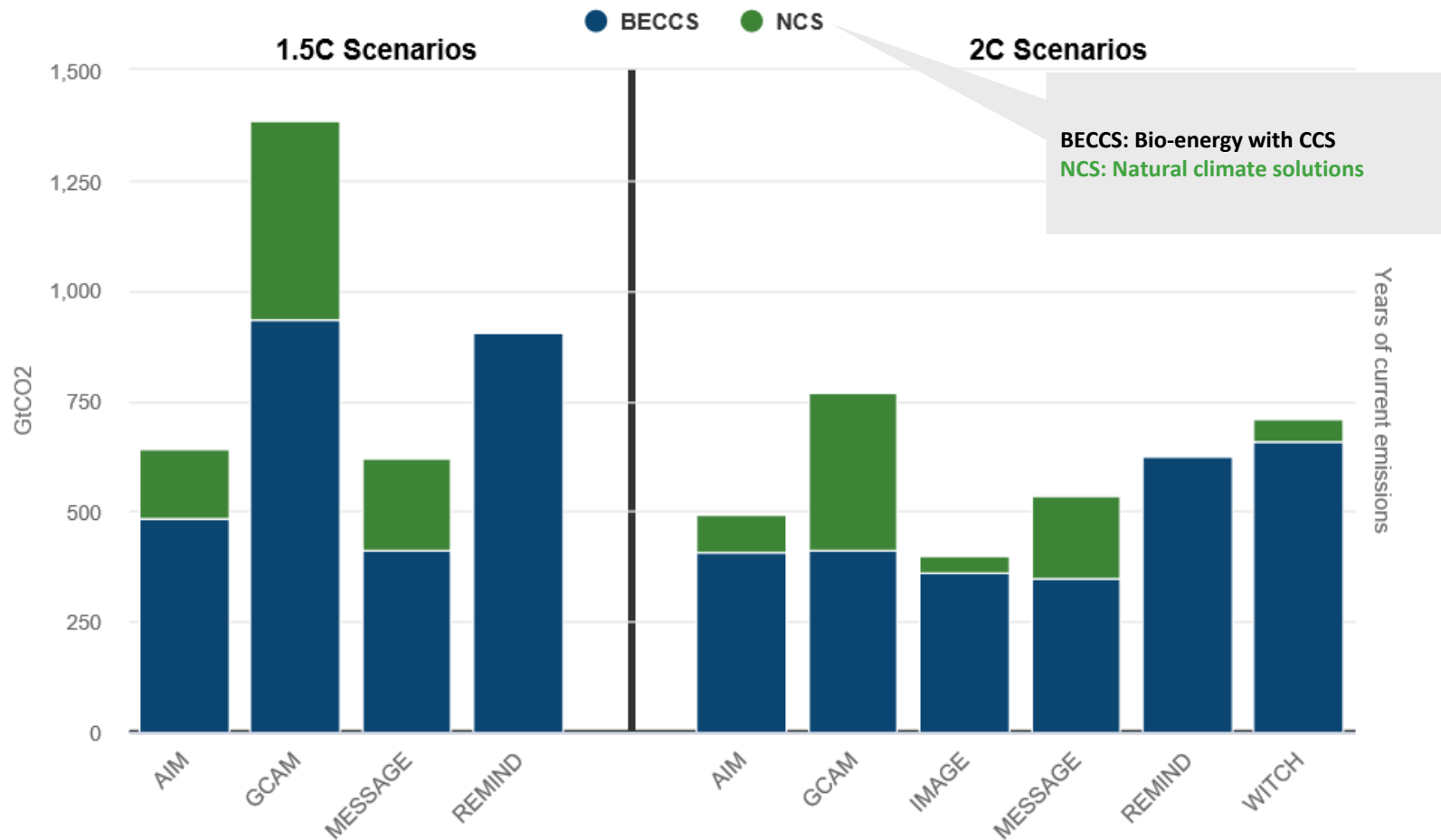


# KEY VARIABLES: NEGATIVE EMISSIONS TECHNOLOGIES

## THE CREDIBILITY OF CERTAIN TARGETS OR MODELS CAN BE INFLUENCED BY THE ASSUMPTIONS AROUND BECCS AND NCS

Levels of negative emissions technologies forecast<sub>1</sub>

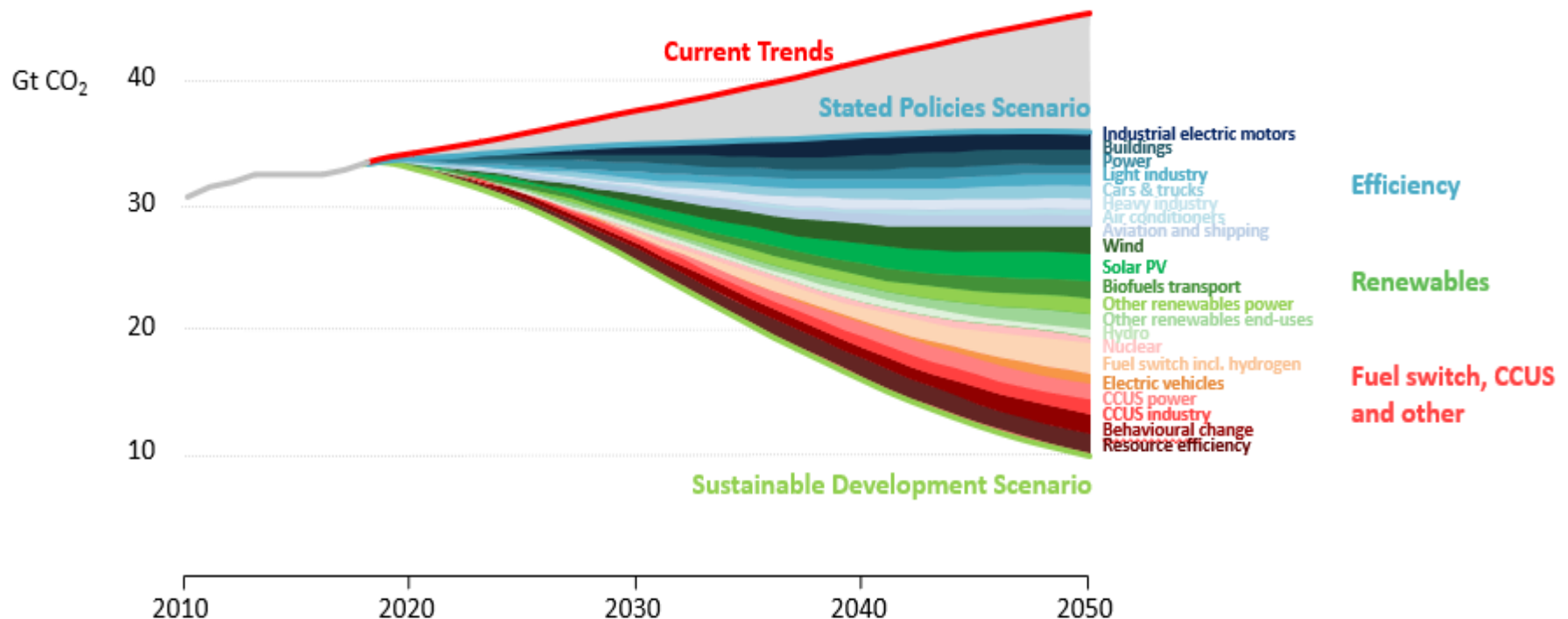
Lower levels of negative emissions will require a faster transition away from fossil fuels



# KEY VARIABLES: EMISSIONS REDUCTION TECHNOLOGIES

## EACH MODEL MAKES DIFFERENT ASSUMPTIONS ABOUT TECHNOLOGICAL DEVELOPMENT AND ROLLOUT THAT AFFECT SECTORAL DECARBONIZATION PATHWAYS

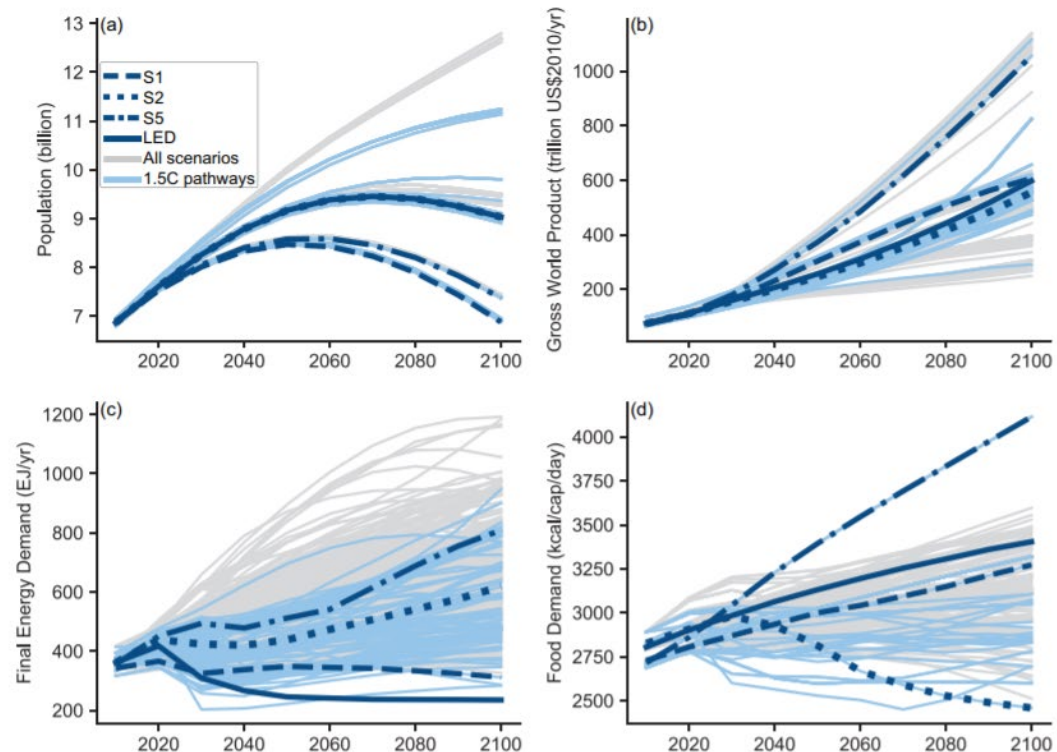
Energy-related CO<sub>2</sub> emissions and reductions in the Sustainable Development Scenario  
 IEA's World Energy Outlook 2019<sub>1</sub>



1. IEA 2019

# KEY VARIABLES: SOCIOECONOMIC ASSUMPTIONS UNDERLYING EACH PATHWAY ARE SOCIOECONOMIC ASSUMPTIONS THAT INFLUENCE THE CHALLENGE OF REACHING NET-ZERO

Different variable forecasts within IPCC pathways to 1.5° C<sub>1</sub>



**Figure 2.4 | Range of assumptions about socio-economic drivers and projections for energy and food demand in the pathways available to this assessment.** 1.5°C-consistent pathways are blue, other pathways grey. Trajectories for the illustrative 1.5°C-consistent archetypes used in this Chapter (LED, S1, S2, S5; referred to as P1, P2, P3, and P4 in the Summary for Policymakers.) are highlighted. S1 is a sustainability oriented scenario, S2 is a middle-of-the-road scenario, and S5 is a fossil-fuel intensive and high energy demand scenario. LED is a scenario with particularly low energy demand. Population assumptions in S2 and LED are identical. Panels show (a) world population, (b) gross world product in purchasing power parity values, (c) final energy demand, and (d) food demand.

# RECOMMENDATIONS FOR FUTURE CLIMATE SCENARIO ENHANCEMENTS (1/2)

## CLIMATE RISK ANALYSES AND TARGET-SETTING WILL BENEFIT FROM GREATER CLARITY AROUND SECTORAL AND REGIONAL ASSUMPTIONS



### Sectoral granularity

- Identification of the relevant risk drivers for different economic sectors to allow the development of science-based targets
- Exploration of how these risk drivers interact with current scenario assumptions
- Development of sectoral assumptions/sub-models consistent with overall scenarios



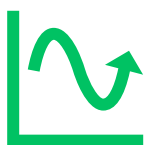
### Regional granularity

- Identification of national policy and economic factors that will influence transitions
- Creation of national sub-models consistent with overall scenarios



### Financial Market Dynamics

- Assessment of dynamics of major sectors under supply and demand shifts
- Exploration of the business intuition and implications behind sub-model pathways that influence final output



### Non-linear and second order effects

- Identification of potential economic tipping points
- Determination of cascading effects of sectoral transitions
- Integration of non-linear features into certain scenarios

# RECOMMENDATIONS FOR FUTURE CLIMATE SCENARIO ENHANCEMENTS (2/2)

## CLIMATE RISK ANALYSES AND TARGET-SETTING WILL BENEFIT FROM ADDING PHYSICAL IMPACTS AND MACROECONOMIC FACTORS INTO PATHWAYS



### Physical risk integration

- Evaluation of the interaction effects between physical and transition risks
- Development of integrated scenarios with both types of risks
- Inclusion of SBTi



### Time Horizons

- Assessment of the implications of the economic shifts required in the short-term
  - SBTi approach: developing the most ambitious decarbonization scenario
- Consideration of assumptions regarding impacts of long-term solutions



### Macro-economic factors

- Determination of how transitions impact the overall macroeconomy
- Consideration of the short-term scenarios with significant macroeconomic shocks
- Integration of endogenous macroeconomic factors into scenario models