Sixth Assessment Report

WORKING GROUP III – MITIGATION OF CLIMATE CHANGE

ipcc

INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

IPCC TG-Data Scenario Database and Scenario Explorer Webinar for Asia

20 April 2022

Hosted by: South and South-east Asia Multidisciplinary Applied Research Network on Transforming Societies of Global South (SMARTS Center)
Asian Institute of Technology, Thailand

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South and South-east Asia
Multidisciplinary Applied Research Network
on Transforming Societies of Global South

[Matt Bridgestock, Director and Architect at John Gilbert Architects]

Agenda

- Joyashree Roy (SMARTS Center, Asian Institute of Technology)- Welcome remarks
- Jim Skea (co-chair WGIII): opening remarks *(pre-recorded)*
- Joyashree Roy (SMARTS Center, Asian Institute of Technology)- AR 6-Global, national and regional scenarios and Bottom up assessment of global mitigation.
- Shreya Some (SMARTS Center, Asian Institute of Technology/ WGIII TSU)- Specific data download-TG data *(pre-recorded)*
    - Q&A
- David Huard (TG-Data), Adam Milward (MetadataWorks), Alaa Al Khourdajie (WGIII TSU)- Introduction to TG Data, FAIR Principles & general guidelines, DDC overview *(pre-recorded)*
- Edward Byers (IIASA)- Introduction to AR6 Scenario explorer *(pre-recorded)*
- Edward Byers (IIASA)- Hands-on demonstration to Scenario Explorer.
    - Q&A
- Joyashree Roy (SMARTS Center, Asian Institute of Technology)- Closing remarks

Regional events in this series

Date	Region	IPCC Authors	Host Institutions
26.01	Europe	Volker Krey, Franck Lecocq, Ed Byers	IIASA & CIRED
13.02	New Zealand	Andy Reisinger	Ministry of Environment, New Zealand
15.02	Australia	Malte Meinshausen	University of Melbourne, Australia
TBC	Africa	Chukwumerije Okereke	Alex Ekwueme Federal University, Nigeria
20.4	**Asia**	**Joyashree Roy**	**Asian Institute of Technology**
17.4.	Latin America	Roberto Schaeffer	Fed. Univ. Rio de Janeiro, Brazil
TBC	North America	TBC	TBC

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IPCC TG-Data Scenario Database and Scenario Explorer Webinars- Asia

AR 6-WGIII-Global, national and regional scenarios and Bottom up assessment of global mitigation

Joyashree Roy (SMARTS/AIT)
Chapter 5 (coordinating lead author)

April 20, 2022

[Matt Bridgestock, Director and Architect at John Gilbert Architects]

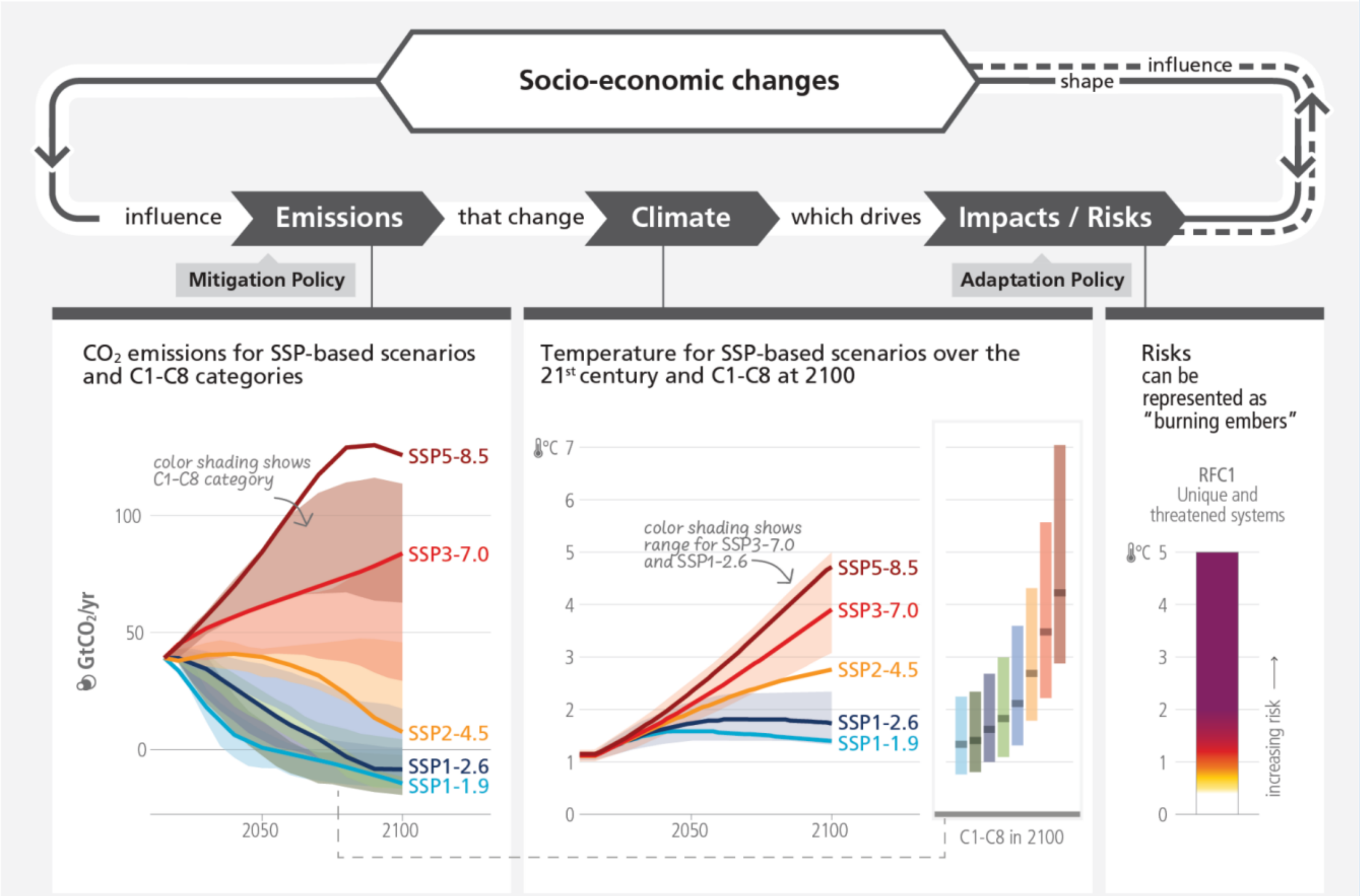
Assessment: of Scientific Literature

Key messages

Key Figures

Scenarios and warming levels structure our understanding across the cause-effect chain from emissions to climate change and risks

a) **AR6 integrated assessment framework on future climate, impacts and mitigation**



Use of "Scenarios" is an integral part of IPCC assessment and reports

IPCC synthesis report 2022

Use of "Scenarios" is an integral part of IPCC reports

b) Scenarios and pathways across AR6 Working Group reports

Category in WGIII	Category description	GHG emissions scenarios (SSPx-y*) in WGI & WGII	RCPy** in WGI & WGII
C1	limit warming to 1.5°C (>50%) with no or limited overshoot	Very low (SSP1-1.9)	
C2	return warming to 1.5°C (>50%) after a high overshoot		
C3	limit warming to 2°C (>67%)	Low (SSP1-2.6)	RCP2.6
C4	limit warming to 2°C (>50%)		
C5	limit warming to 2.5°C (>50%)		
C6	limit warming to 3°C (>50%)	Intermediate (SSP2-4.5)	RCP 4.5
C7	limit warming to 4°C (>50%)	High (SSP3-7.0)	
C8	exceed warming of 4°C (>50%)	Very high (SSP5-8.5)	RCP 8.5

c) Determinants of risk

IPCC synthesis report 2022

Chapter 3 assesses the emissions pathways literature (both in commonalities and differences) and to understand how societal choices may steer the system into a particular direction.

More **than 2000 quantitative emissions pathways were submitted** to the IPCC's Sixth Assessment Report AR6 scenarios database, out of which **1202 scenarios included** sufficient information for assessing the associated warming consistent with WGI.

Chapter 3

Two reference scenarios: Current policy and pledges (2020) pathways, moderate action (2020 NDCs) pathways

Five Illustrative Mitigation Pathways (IMPs) were selected, each emphasising a different scenario element as its defining feature:

1. heavy reliance on renewables (IMP- Ren),
2. strong emphasis on energy demand reductions (IMP-LD),
3. extensive use of carbon dioxide removal (CDR) in the energy and the industry sectors to achieve net negative emissions (IMP-Neg),
4. mitigation in the context of broader sustainable development (IMP- SP), and the
5. implications of a less rapid and gradual strengthening of near-term mitigation actions (IMP-GS).

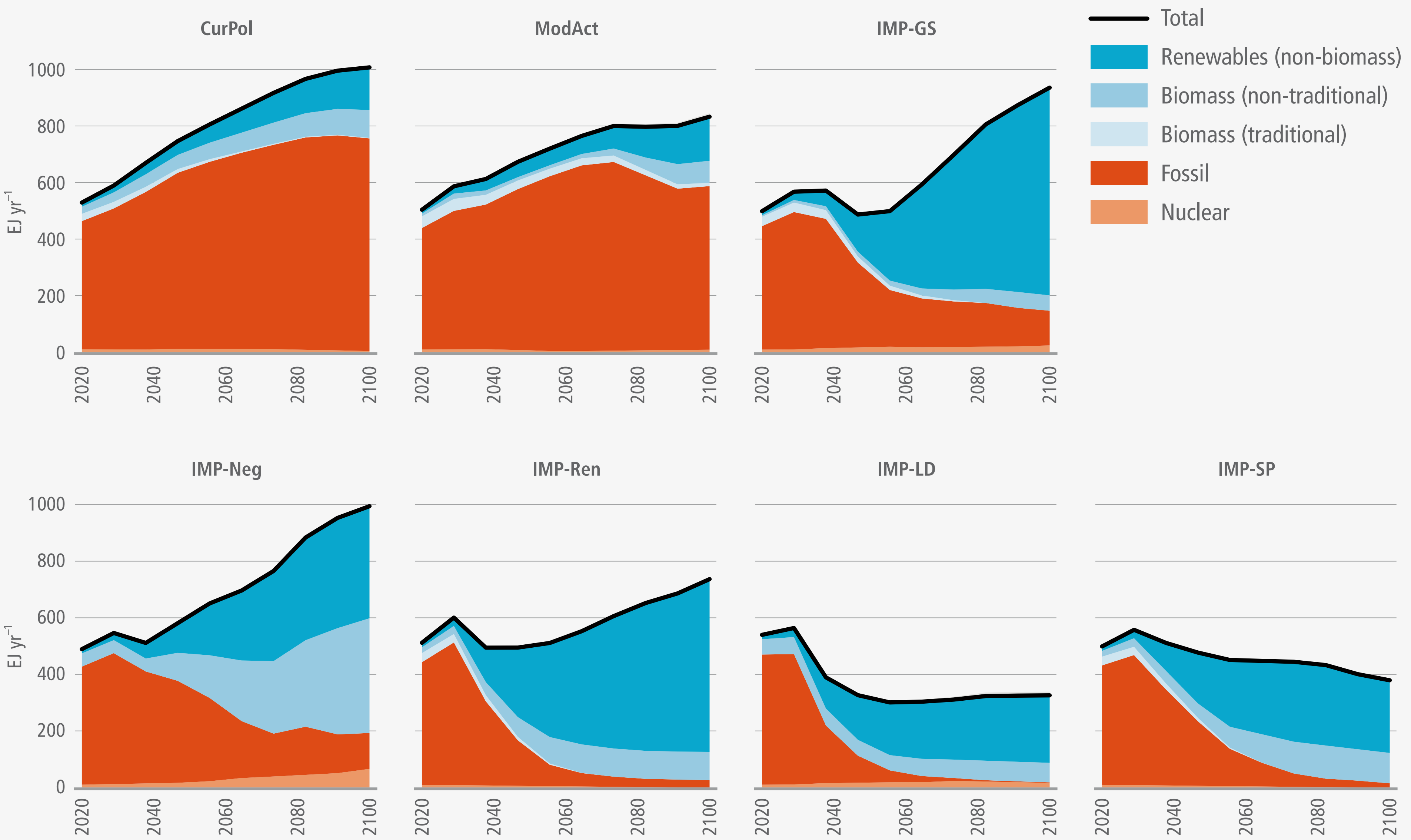


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Figure 3.8 | The energy system in each of the illustrative pathways (IPs).

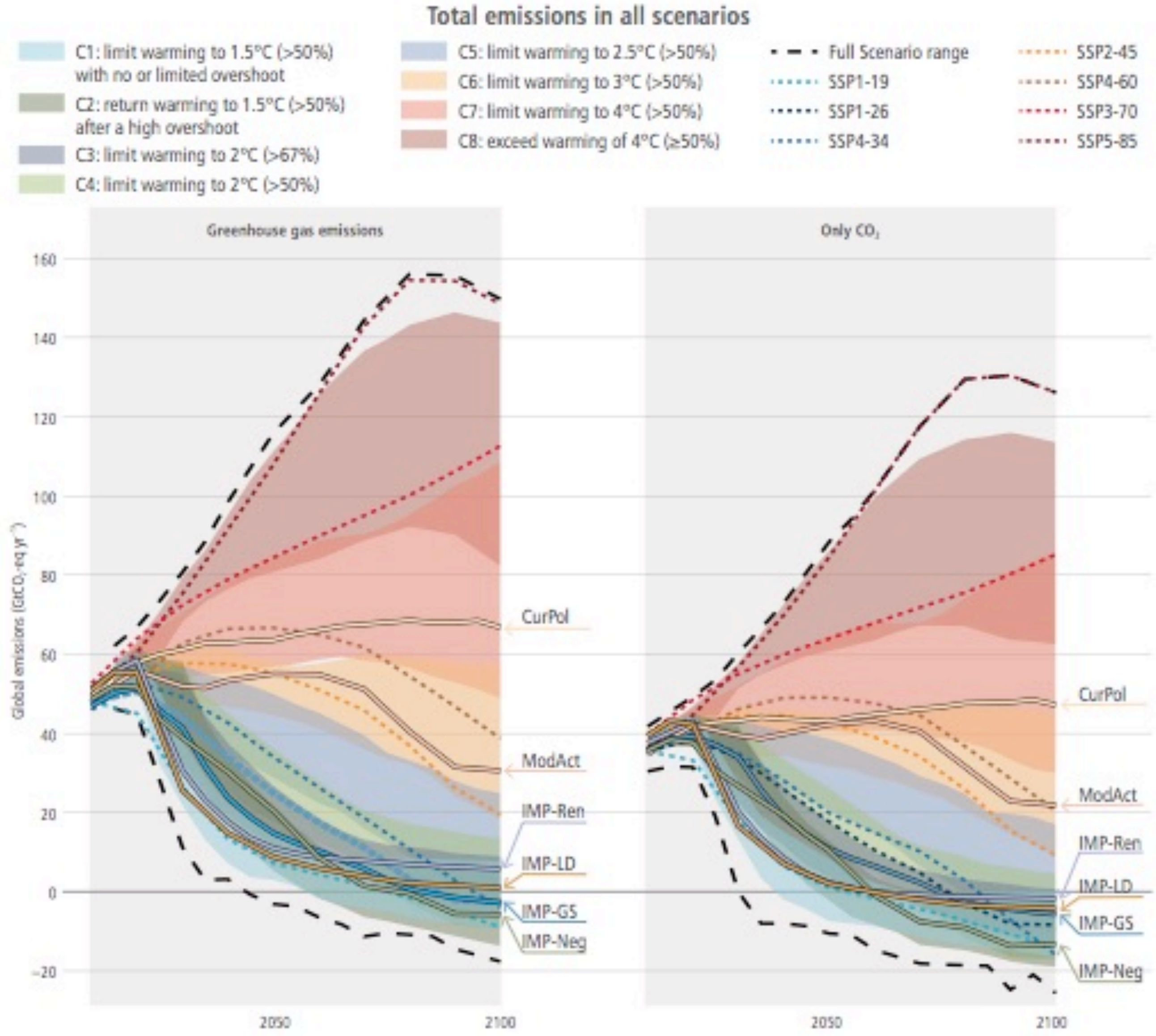

Figure 3.10 | Total emissions profiles in the scenarios based on climate category for GHGs (AR6 GWP-100) and CO_2. The Illustrative mitigation pathways (IMPs) are also indicated.

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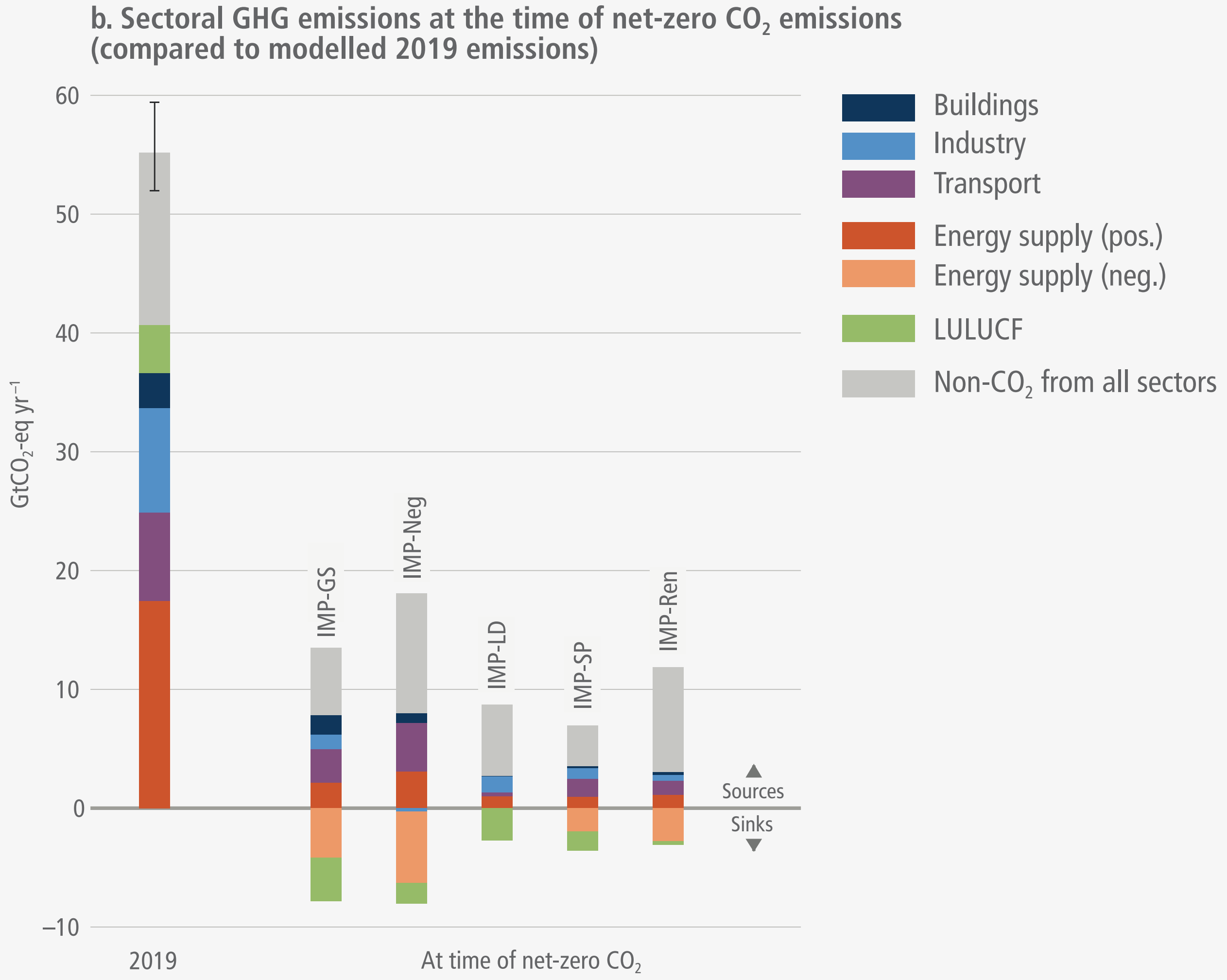

Figure 3.16 | Primary energy use and net emissions at net zero year for the different IMPS. Source: AR6 Scenarios Database.

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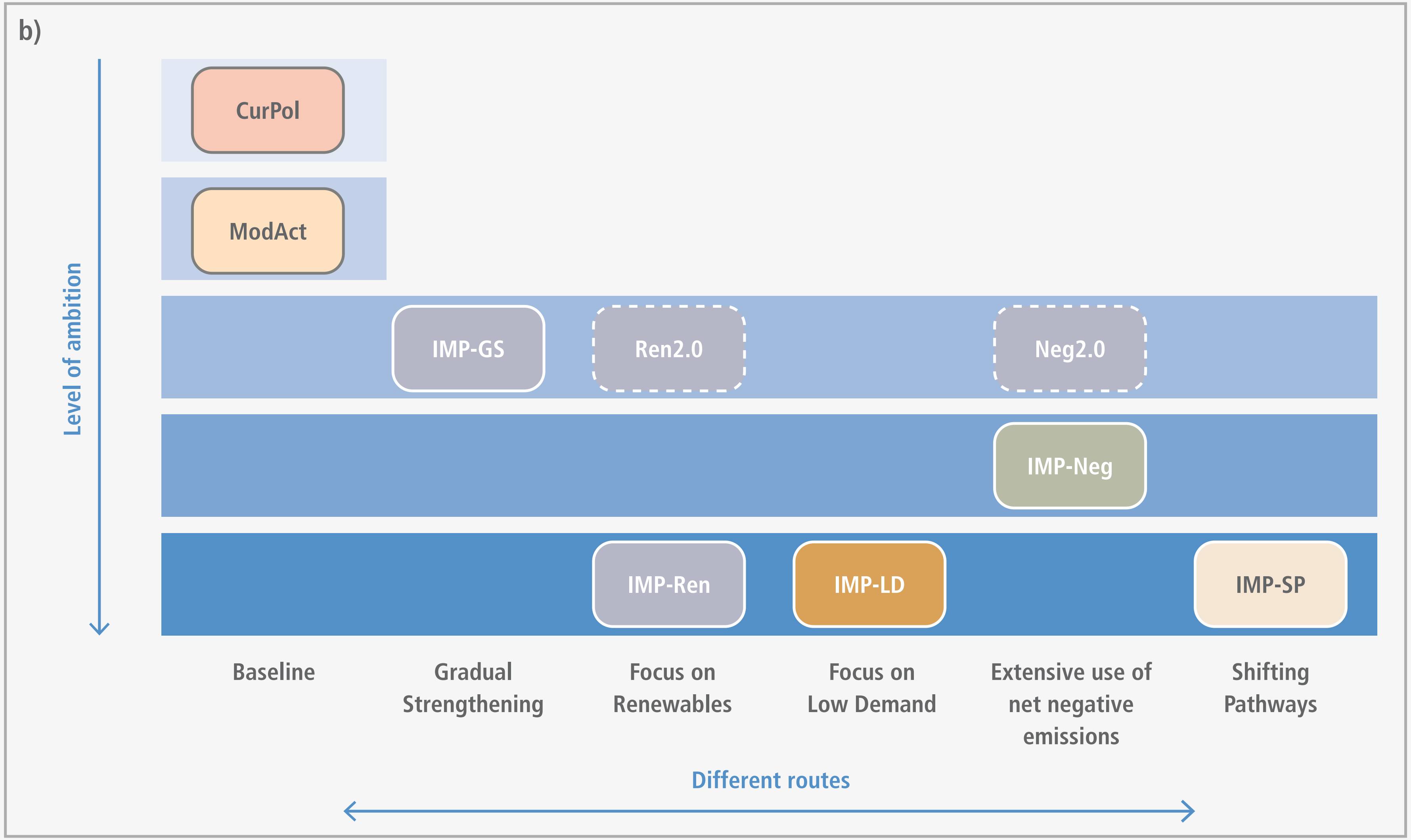

Figure 3.5 | (a) Process for creating the AR6 scenario database and selecting the illustrative (mitigation) pathways. The compiled scenarios in the AR6

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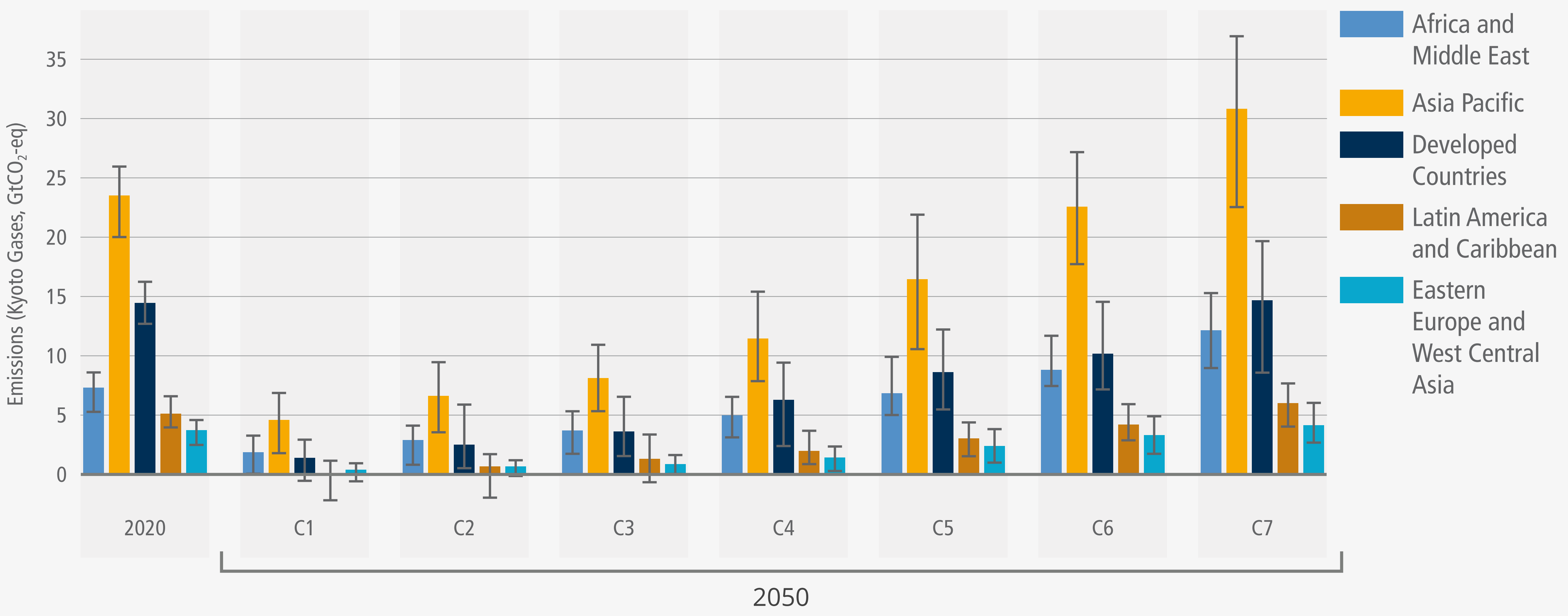

Figure 3.17[11] | Emissions by region (including 5–95th percentile range). Source: AR6 Scenarios Database.

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Regional Investment information

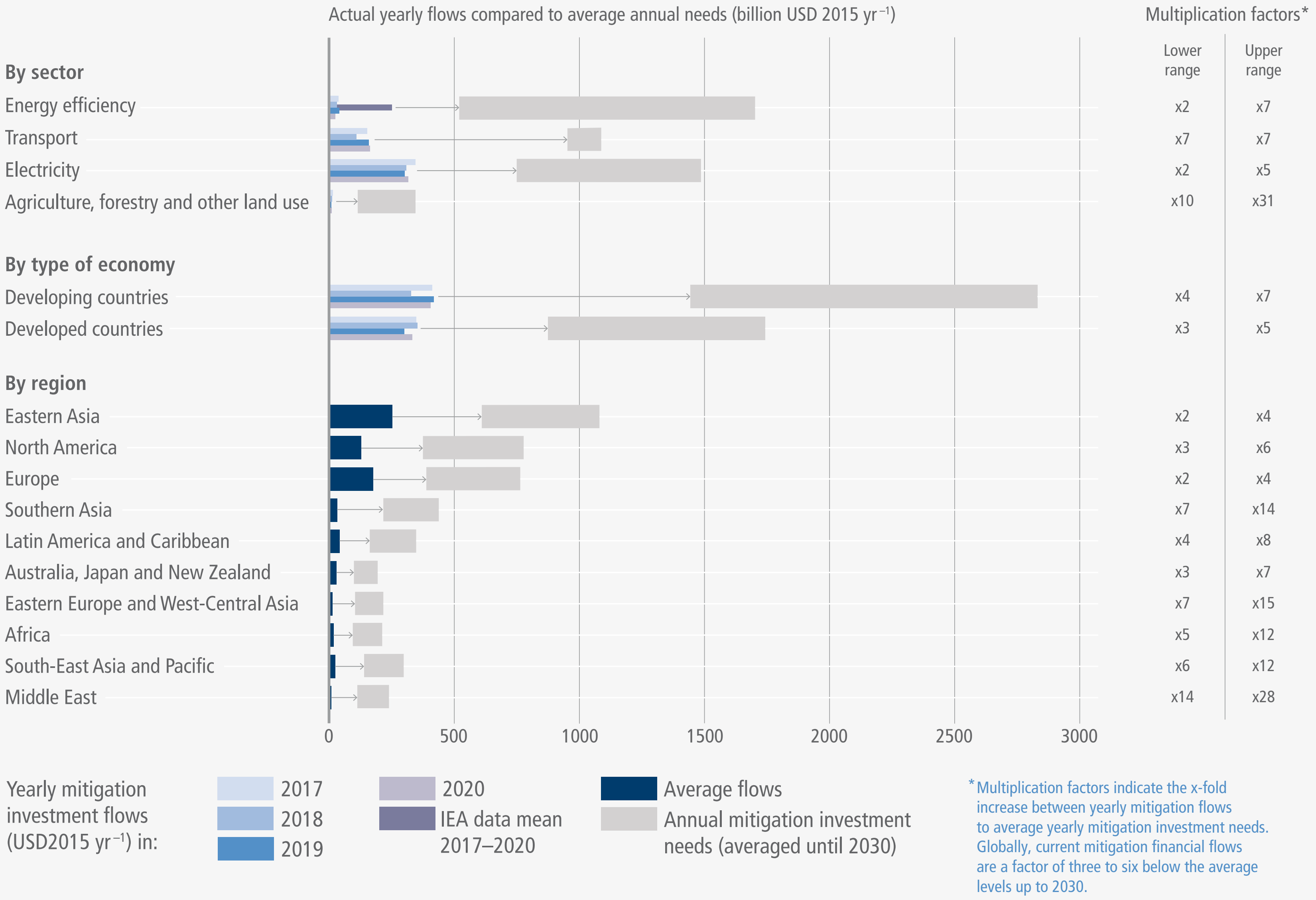
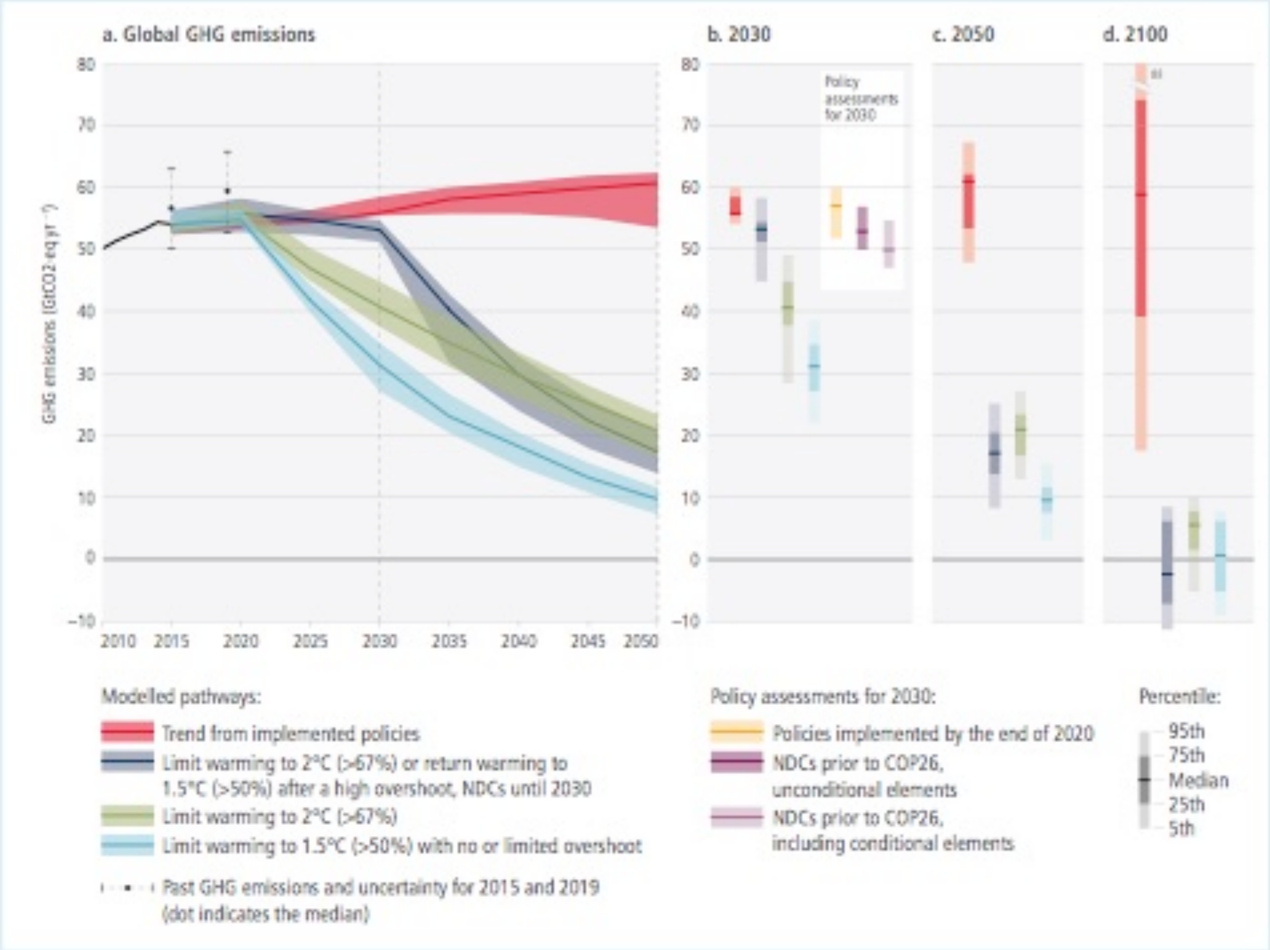


Figure TS.25 | Breakdown of recent average (downstream) mitigation investments and model-based investment requirements for 2020–2030 (USD billion) in scenarios that likely limit warming to 2°C or lower. Mitigation investment flows and model-based investment requirements by sector / segment (energy efficiency

IPCC AR6 WGIII Chapter 15

Chapter 4 focuses on accelerating mitigation and on shifting development pathways to increased sustainability, based on literature particularly at national scale. Development pathways are major drivers of GHG emissions



Cross-Chapter Box 4, Figure 1 | Global GHG emissions of modelled pathways (funnels in Panel a, and associated bars in Panels b, c, d) and projected emission outcomes from near-term policy assessments for 2030 (Panel b).

IPCC AR6 WGIII Chapter 4

Chapter 4 focuses on accelerating mitigation and on shifting development pathways to increased sustainability, based on literature particularly at national scale. Development pathways are major drivers of GHG emissions

Region[a]	GHG share [%][b]	Type[c]	# estimates[d]	Current Policies 2030 emissions			NDC 2030 emissions (conditional/unconditional)		
				CO_2 only [$GtCO_2$] median (min–max)[f]		Kyoto GHGs[e] [$GtCO_2$-eq] median (min–max)[f]	CO_2 only [$GtCO_2$] median (min–max)[f]		Kyoto GHGs[e] [$GtCO_2$-eq] median (min–max)[f]
				incl. AFOLU[g]	fossil fuels	incl. AFOLU[g]	incl. AFOLU[g]	fossil fuels	incl. AFOLU[g]
World	100	global	93	43 (38–51)	37 (33–45)	60 (54–68)	40 (35–45)/ 37 (35–39)	32 (26–39)/ 31 (27–37)	54 (50–60)/ 57 (49–63)
CHN	27	global	76	12 (9.7–15)	11 (8.4–14)	15 (12–18)	– /11 (9.8–13)	– /8.8 (6.9–13)	– /14 (13–16)
		national	13	12 (12–12)	11 (9.2–13)	15 (13–15)	– /12 (11–12)	– /11 (10–11)	– /15 (13–16)
USA[h]	12	global	71	4.9 (4.4–6.6)	4.6 (3.5–6.5)	5.9 (4.9–6.6)	– /3.8 (3.3–4.1)	– /3.9 (3.1–5.3)	– /4.6 (4–5.1)
		national	5	4.1	4.5 (4.1–4.9)	5.9 (5.2–6.7)	– /3.4	– /3.5	– /4.3
EU[i]	8.1	global	24	2.7 (2.1–3.5)	2.6 (2.1–3.3)	3.4 (2.6–4.7)	– /2.6 (2.1–2.8)	– /2.4 (2.1–2.7)	– /3.2 (2.6–3.7)
		national	3	3.1	2.6		– /2.5		
		official	3			3.2 (2.8–3.7)			
IND	7.1	global	79	3.7 (3–4.5)	3.2 (2.5–4.5)	4.7 (4.1–6.4)	3.3 (3.1–4.4)/4	3.3 (2.4–5.6)/3.8 (2.9–5.6)	5 (4.2–6.4)/5.8 (4.9–6.1)
		national	9	3.4 (3.3–4)	3.4 (2.9–3.9)	5.5 (5–5.7)	3.4 (3.2–3.6)/3.2	3.4 (3.2–3.5)/2.9	5.1/4.9

IPCC AR6 WGIII Chapter 4 part only

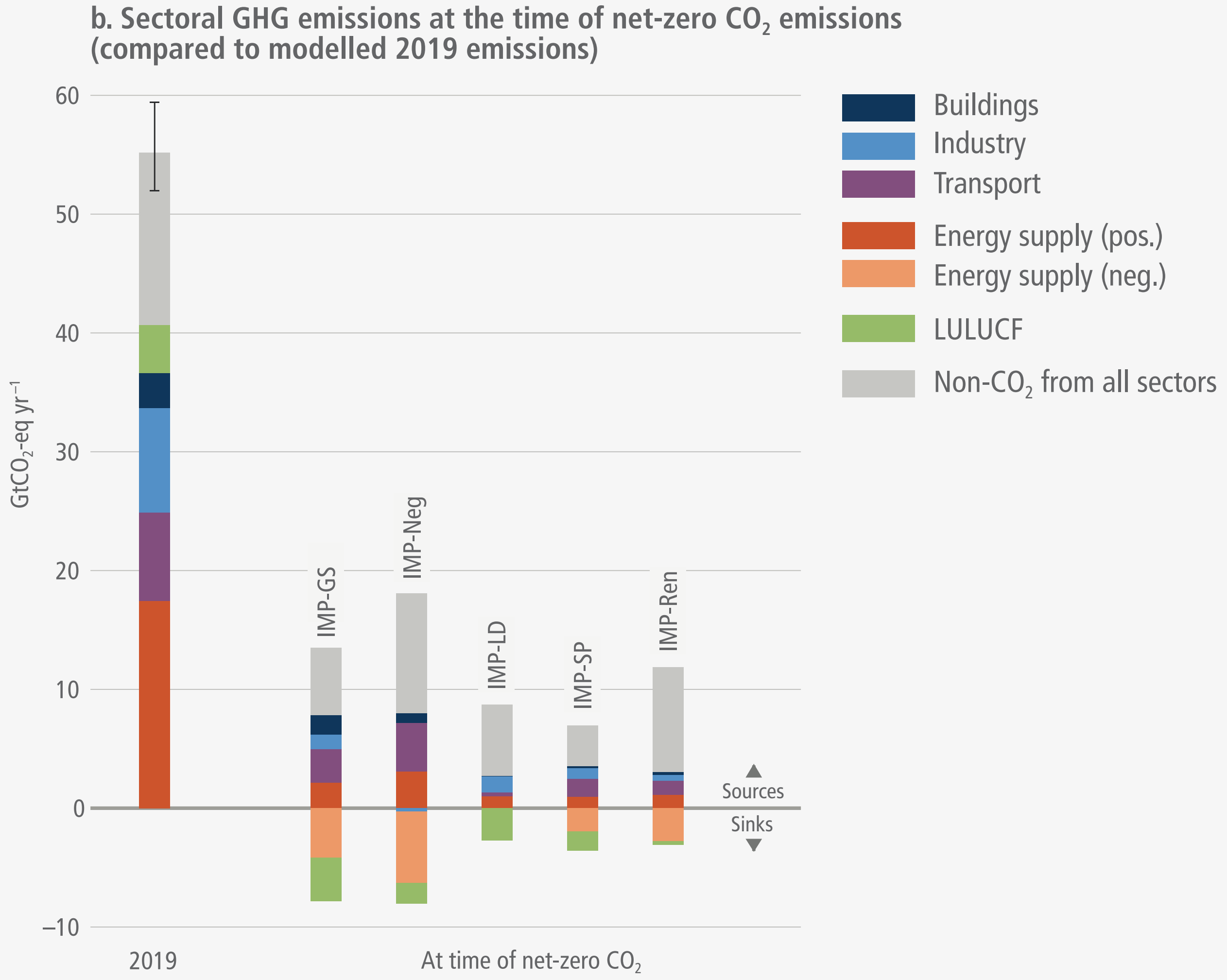


Figure 3.16 | Primary energy use and net emissions at net zero year for the different IMPS. Source: AR6 Scenarios Database.

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Chapter 5 Demand-side mitigation and new ways of providing services can help every sector to reduce greenhouse gas (GHG) emissions and the The indicative potential to reduce emissions of direct and indirect CO2 and non-CO2 GHG emissions in three end-use sectors (buildings, land transport, and food) is 40–70% globally by 2050

estimates based on approximately 500 bottom-up studies representing all global regions

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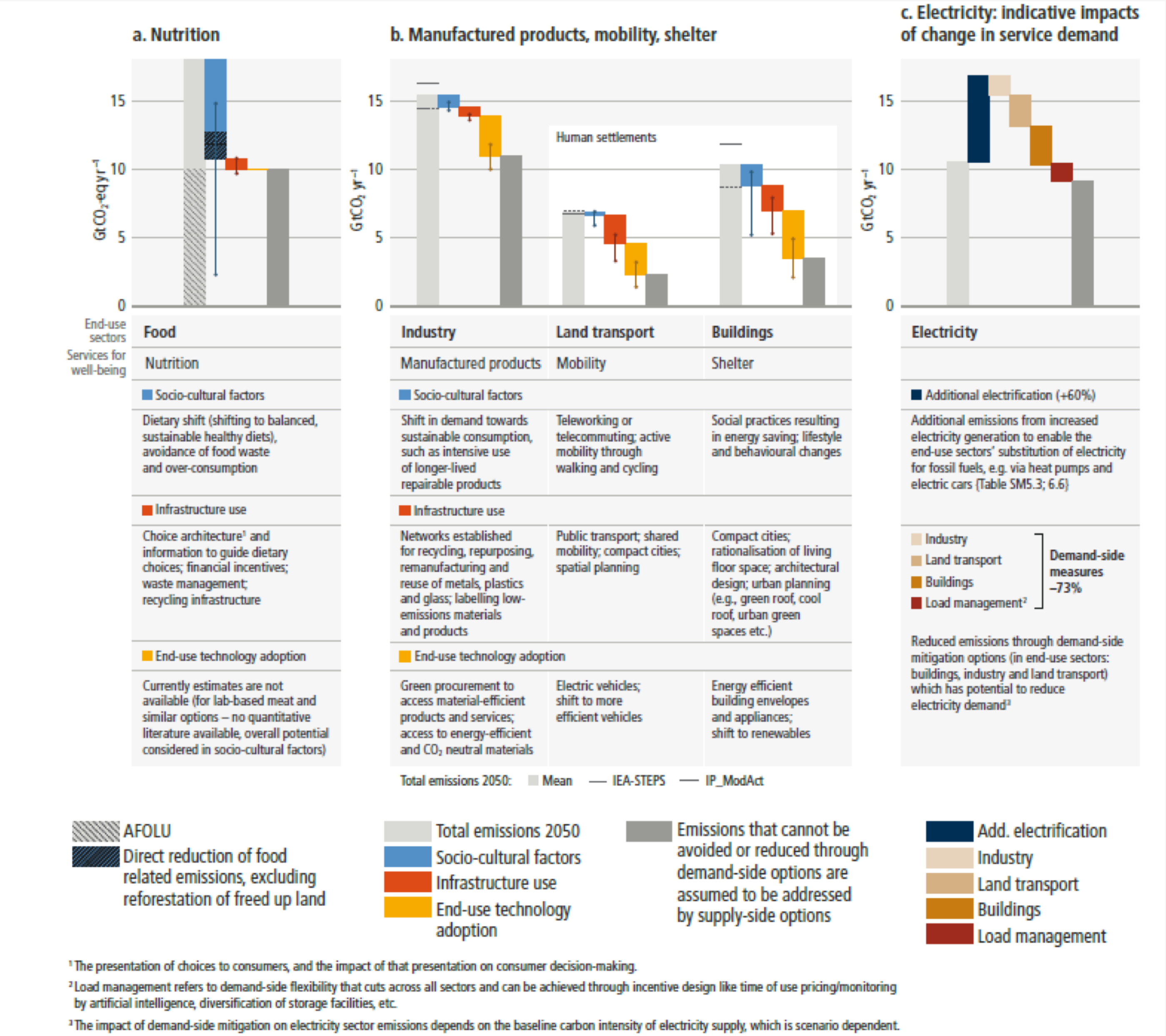
Chapter 5



Closing Remarks

I thank all the speakers: Jim Skea, Shreya Some, David Huard (TG-Data), Adam Milward (MetadataWorks), Alaa Al Khourdajie, Edward Byers from IIASA for joining us today in this webinar for the Asian region despite odd hours for some of you

I thank all the participants in this webinar and look forward to many scientific outputs from the science community from this region to generate scenarios appropriate for your country or the region /,sector and even for the global scale

I thank Asian Institute of Technology for hosting this event

At SMARTS centre in AIT we are currently developing low demand scenarios and national scale sectoral models using open source modelling tools using national level detailed data sets: we are working with various institutions and researchers in the region on India's zero carbon pathways and developing various scenarios, similarly for Bangladesh, Thailand and Pakistan and Mapping sector specific transition challenges

With sincere thanks we end today's webinar.

Thank you

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