UNIVERSITY OF WARSAW | INSTITUTE OF GEOPHYSICS

NAUKA O KLIMACIE DLA SCEPTYCZNYCH

MITIGATION OF CLIMATE CHANGE

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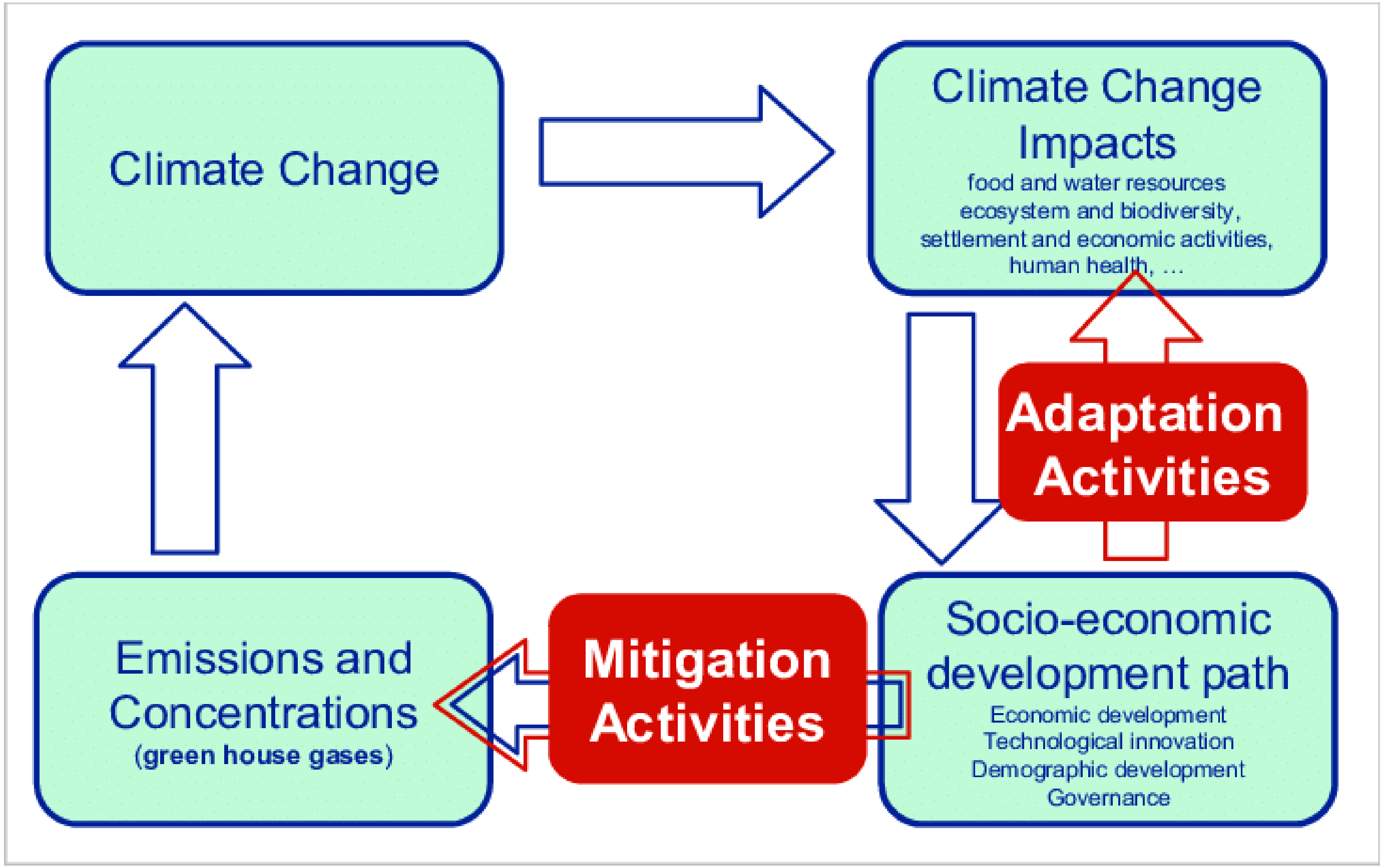
WHAT IS MITIGATION?

- Climate change mitigation involves actions that reduce the rate of climate change.
- Climate change mitigation is achieved by limiting or
- preventing greenhouse gas emissions and by enhancing activities that remove these gases from the atmosphere. (IPCC definition)

Mitigation measures are those actions that are taken to **reduce and curb greenhouse gas emission**s, while **adaptation measures** are based on reducing vulnerability to the effects of climate change.

- Mitigation is a human intervention to reduce the sources or enhance the sinks of greenhouse gases
- Mitigation, together with adaptation to climate change, contributes to the objective expressed in Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC):

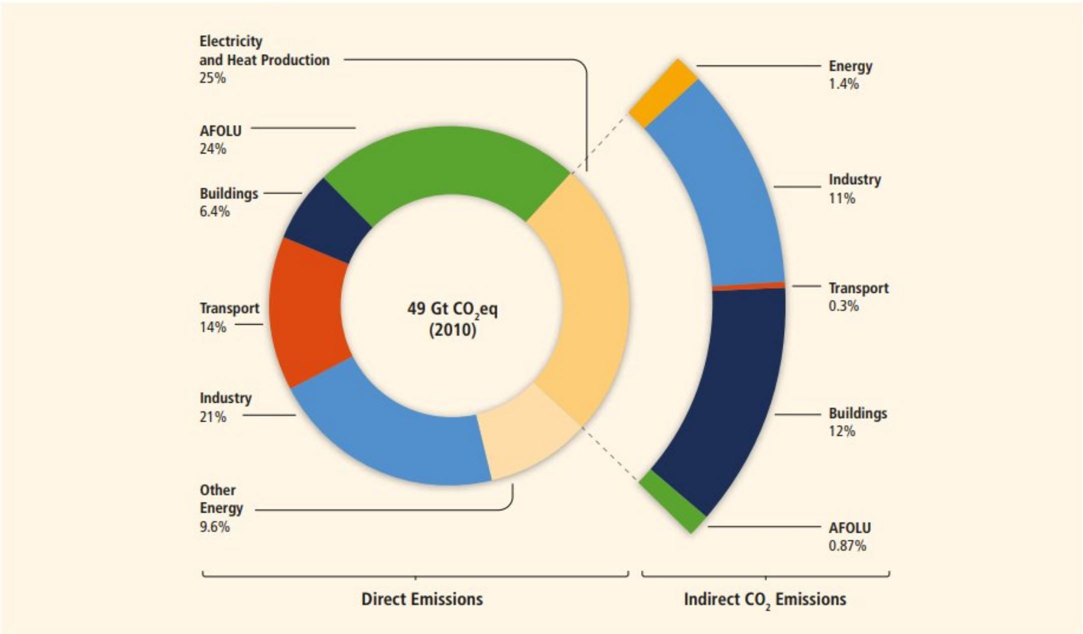

Climate Change
Climate Change Impacts
food and water resources
ecosystem and biodiversity,
settlement and economic activities,
human health, ...
Adaptation Activities
Emissions and Concentrations
(green house gases)
Mitigation Activities
Socio-economic development path
Economic development
Technological innovation
Demographic development
Governance

- **Climate change mitigation involves reducing greenhouse gas emissions by means of increased energy efficiency, sustainable transport, renewable energy technologies, energy**

- **storage and transport, carbon dioxide capture and storage and mineral carbonation and industrial use, and last but not least by forest expansion.**

- **Decarbonization is**

Greenhouse Gas Emissions by Economic Sectors



Total anthropogenic GHG emissions (GtCO2eq/yr) by economic sectors.

Inner circle shows direct GHG emission shares (in % of total anthropogenic GHG emissions) of five economic sectors in 2010.

Pull-out shows how indirect CO2 emission shares (in % of total anthropogenic GHG emissions) from electricity and heat production are attributed to sectors of final energy use.

‘Other Energy’ refers to all GHG emission sources in the energy sector as defined in Annex II other than electricity and heat production

- Climate mitigation is a popular strategy to address climate change by reducing greenhouse gas emissions

- Various options are available for both mitigation policy and technology measures, providing enough economic potential to offset the projected emissions growth.

- It is crucial for policymakers to be aware of possible side

	Mitigation policy	Mitigation technology
Energy supply sector	• reduction of fossil fuel subsidies • taxes or carbon charges on fossil fuels	• switching fuel from coal to gas
Waste sector	• financial incentives for improved waste and wastewater management • renewable energy incentives • obligations and waste management regulations	• waste incineration with energy recovery • composting of organic waste • controlled wastewater treatment and recycling • waste minimization
Buildings sector	• appliance standards and labeling • building codes and certification	• efficient lighting and daylighting • more efficient electrical appliances • heating and cooling

Some of the changes in extreme weather and climate events observed since about 1950 have been linked to human influence

AR5 WGI SPM

Impacts are already underway

- Tropics to the poles
- On all continents and in the ocean
- Affecting rich and poor countries

AR5 WGII SPM

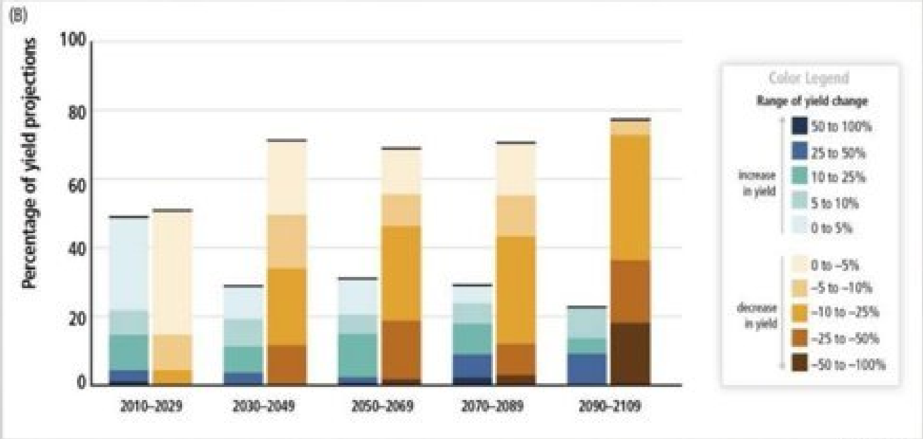
Ambitious Mitigation Is Affordable

- → Economic growth reduced by ~ 0.06%
  (BAU growth 1.6 - 3%)
- → This translates into delayed and not forgone growth
- → Estimated cost does not account for the benefits of reduced climate change
- → Unmitigated climate change would create increasing risks to economic growth

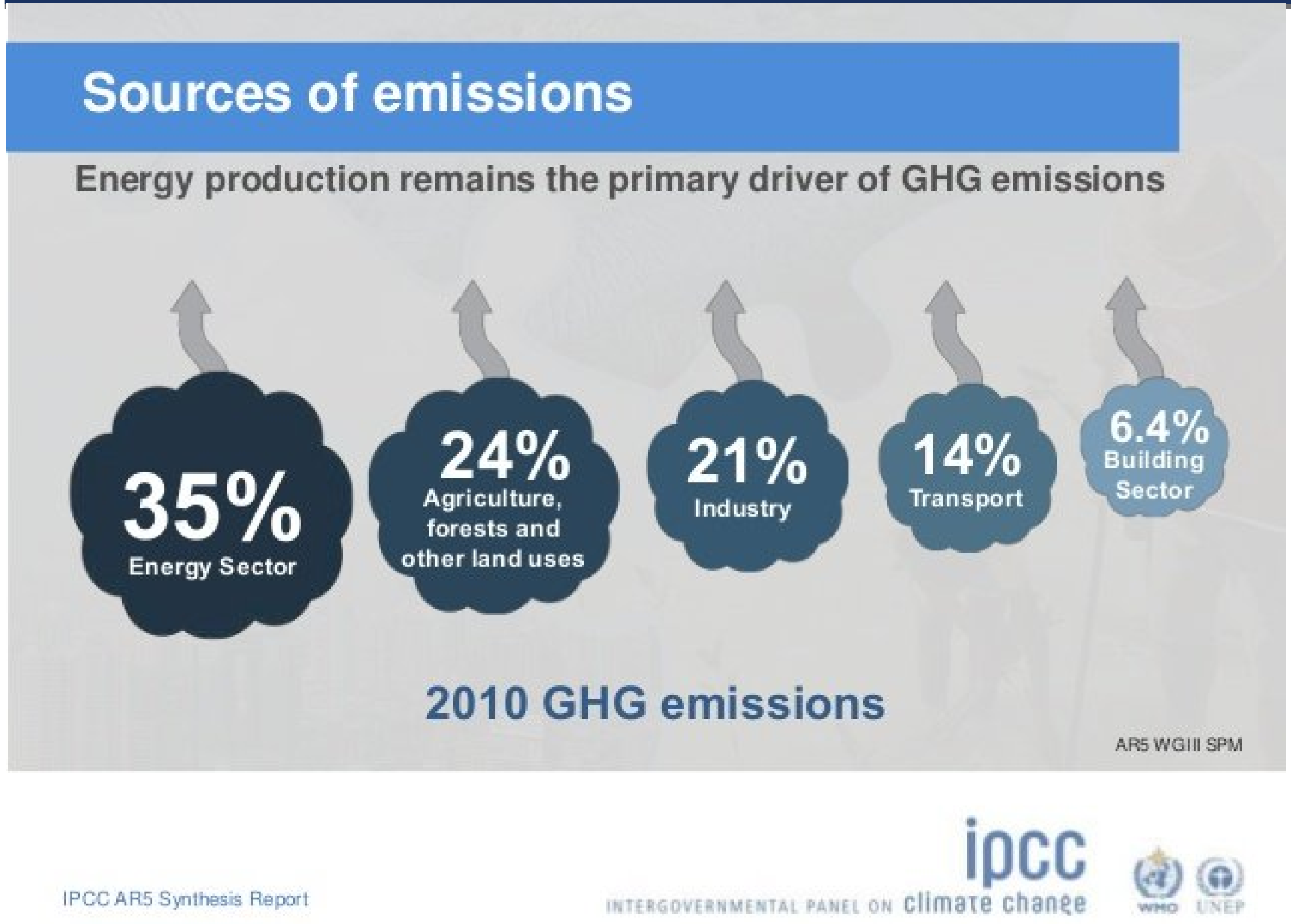
AR5 WGI SPM, AR5 WGII SPM

Climate Change Poses Risk for Food Production

Percentage of yield projections



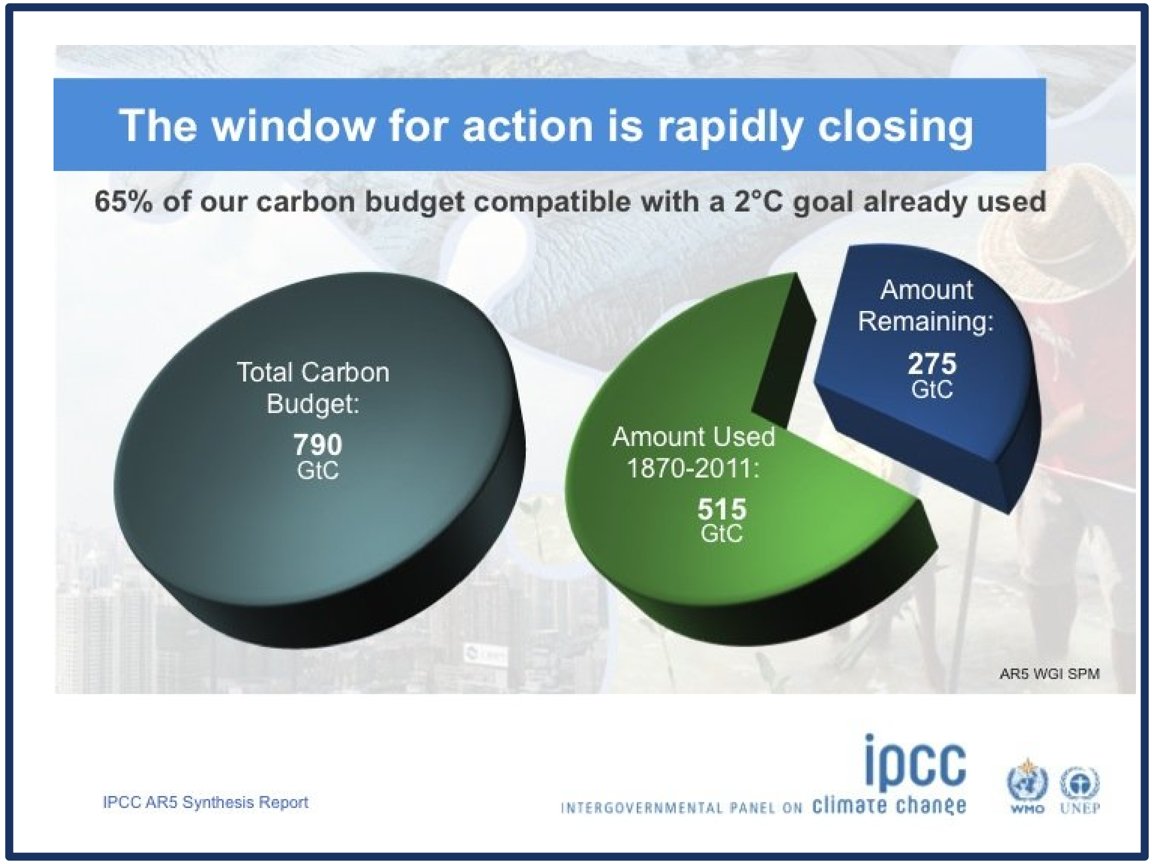
AR5 SYR SPM



At COP24, countries also adopted accounting guidance on how countries should:

- Account for anthropogenic emissions and removals in accordance with the Intergovernmental Panel on Climate Change’s methodologies and metrics;

- Ensure methodological consistency, including on baselines — the starting point for comparison — between the communication and implementation of NDCs;



- Strive to include all categories of anthropogenic emissions and removals in the NDC in a consistent manner; and
- Explain why any categories of anthropogonic emissions or removals are excluded from their NDC.

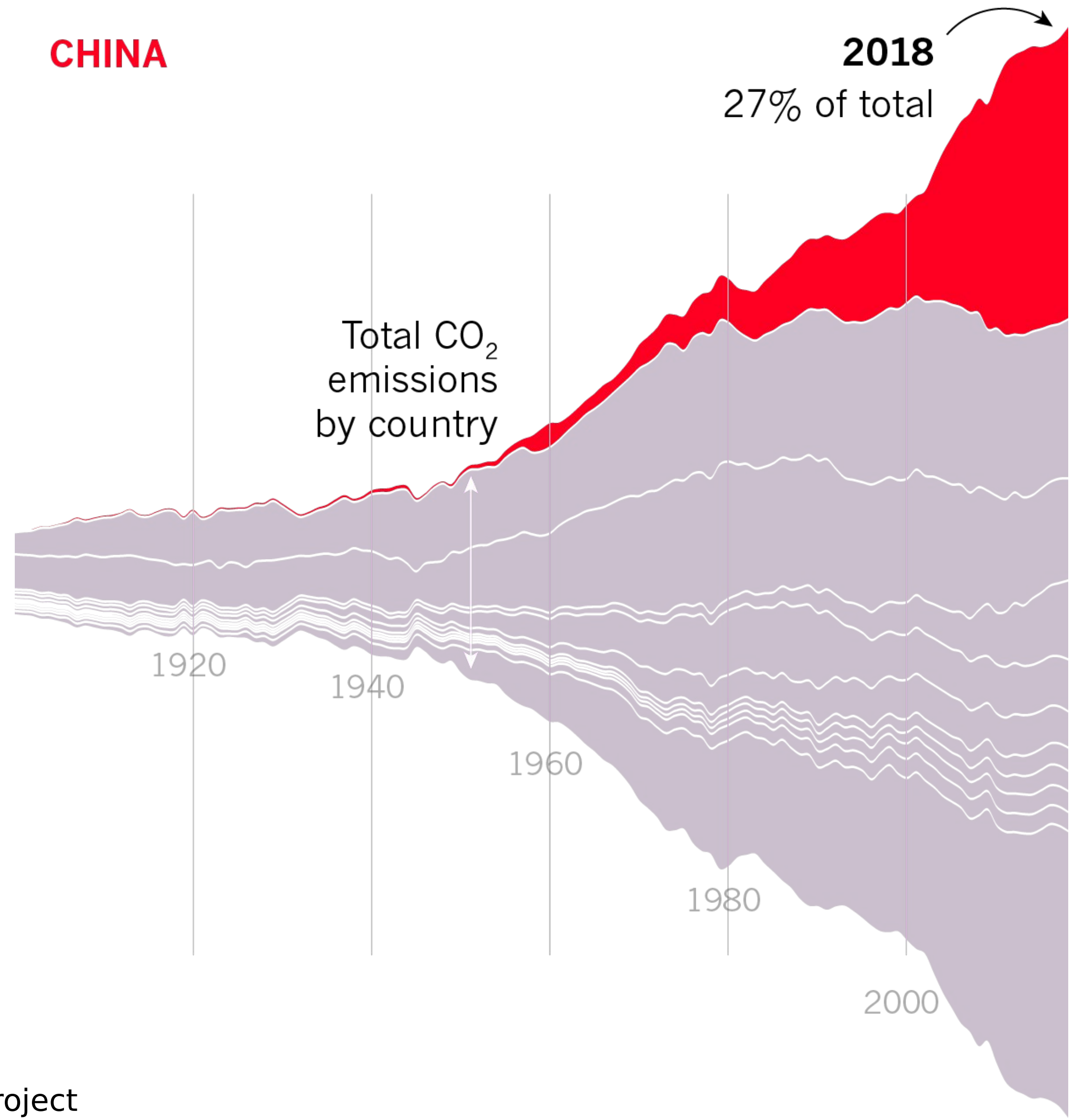
Image: REUTERS/David W Cerny

Coal-fired power plants are some of the biggest single sources of carbon dioxide in our atmosphere.

China:

Where China goes, the world goes. The country is the largest source of CO_2 and its emissions are growing while other big emitters are turning the corner.

CAT says China is on track to see its emissions peak by 2030 in line with its Paris pledges but that is not consistent with keeping global warming below 2 °C.



Source: Global Carbon Project

CHINA

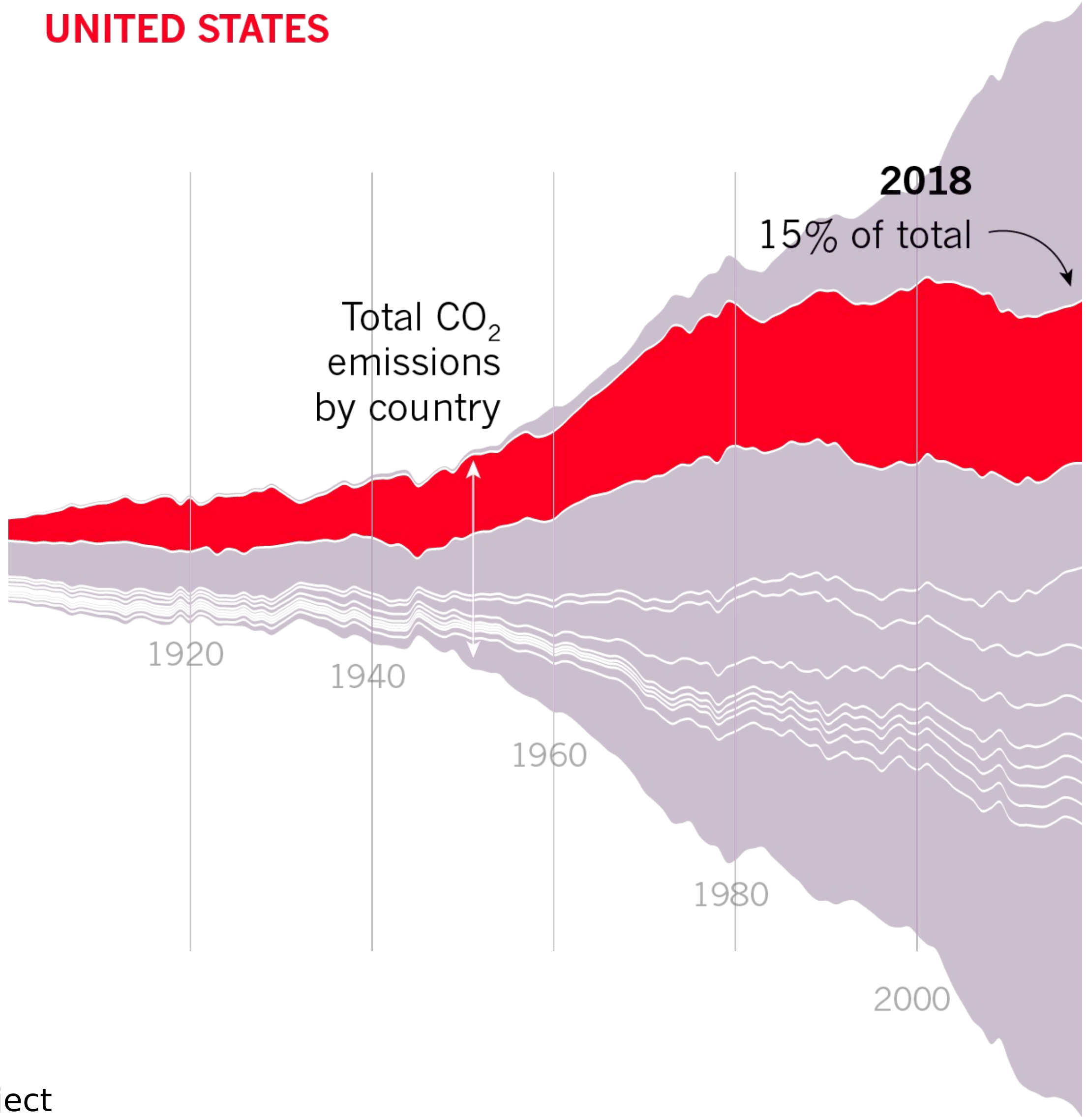
- China burns about half the coal used globally each year. Between 2000 and 2018, its annual carbon emissions nearly tripled, and it now accounts for about 30% of the world’s total. Yet it’s also the leading market for solar panels, wind turbines and electric vehicles, and it manufactures about two-thirds of solar cells installed worldwide.
- “We are witnessing many contradictions in China’s energy development,” said Kevin Tu, a Beijing-based fellow with the Center on Global Energy Policy at Columbia University. “It’s the largest coal market and the largest clean energy market in the world.”
- That apparent paradox is possible because of the sheer scale of China’s energy demands.

- **Greening urban areas can also make a difference**
- **Cities are home to half the planet's population, and are responsible for three-quarters of energy consumption and 80% of carbon emissions**
- **Retro-fitting buildings to make them more energy efficient and cutting the impact of transport emissions represent some of the strategies for doing this**


By 2040, an average Chinese household will consume nearly twice as much electricity as today
iea.org/weo2017

United States:

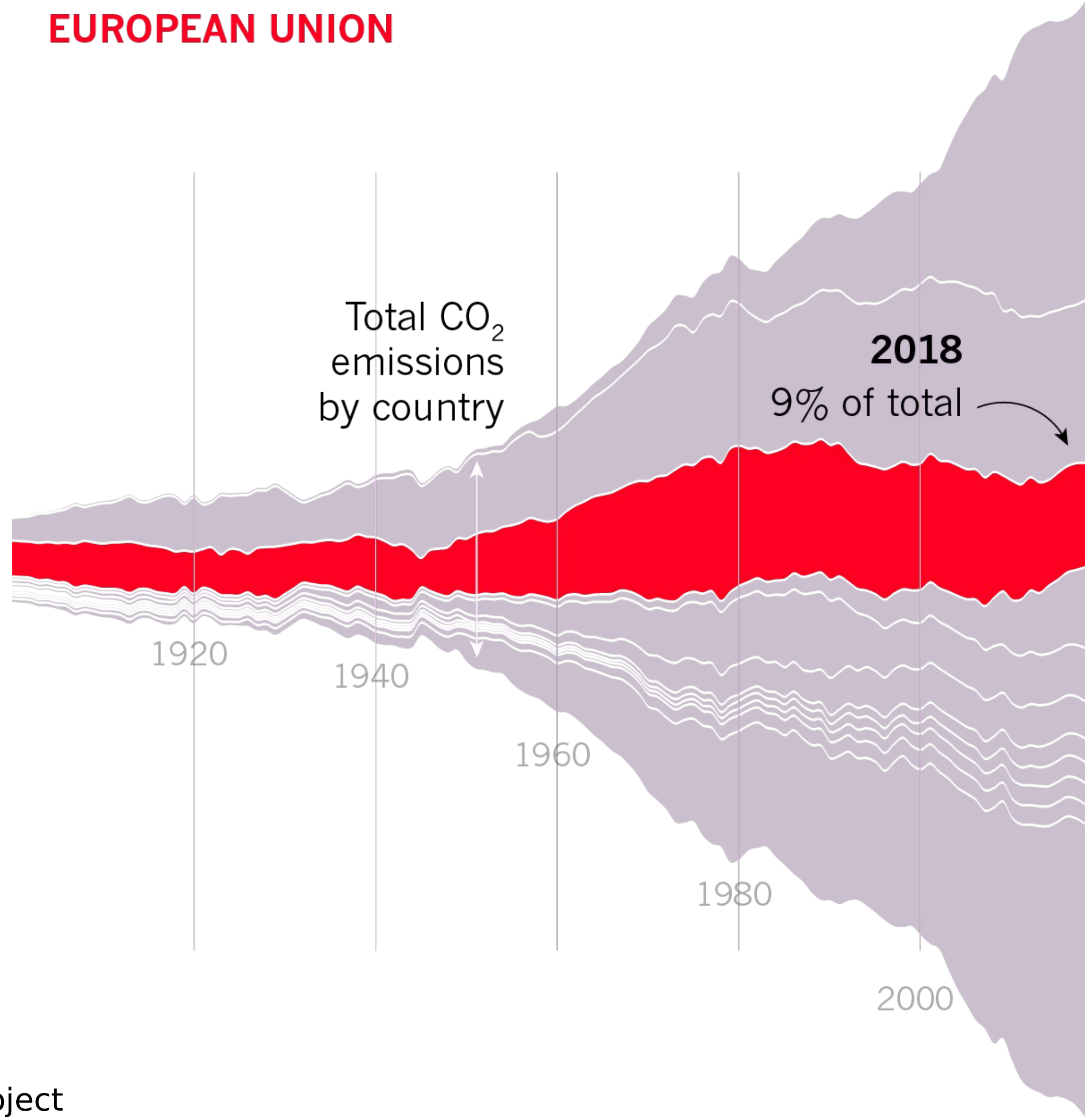
US emissions surged in 2018, but they have been declining generally over the past decade because coal use has fallen, in favor of natural gas and renewables. However, President Donald Trump is rolling back provisions to curb greenhouse-gas pollution and has already decided to pull the country out of the Paris accord.



Source: Global Carbon Project

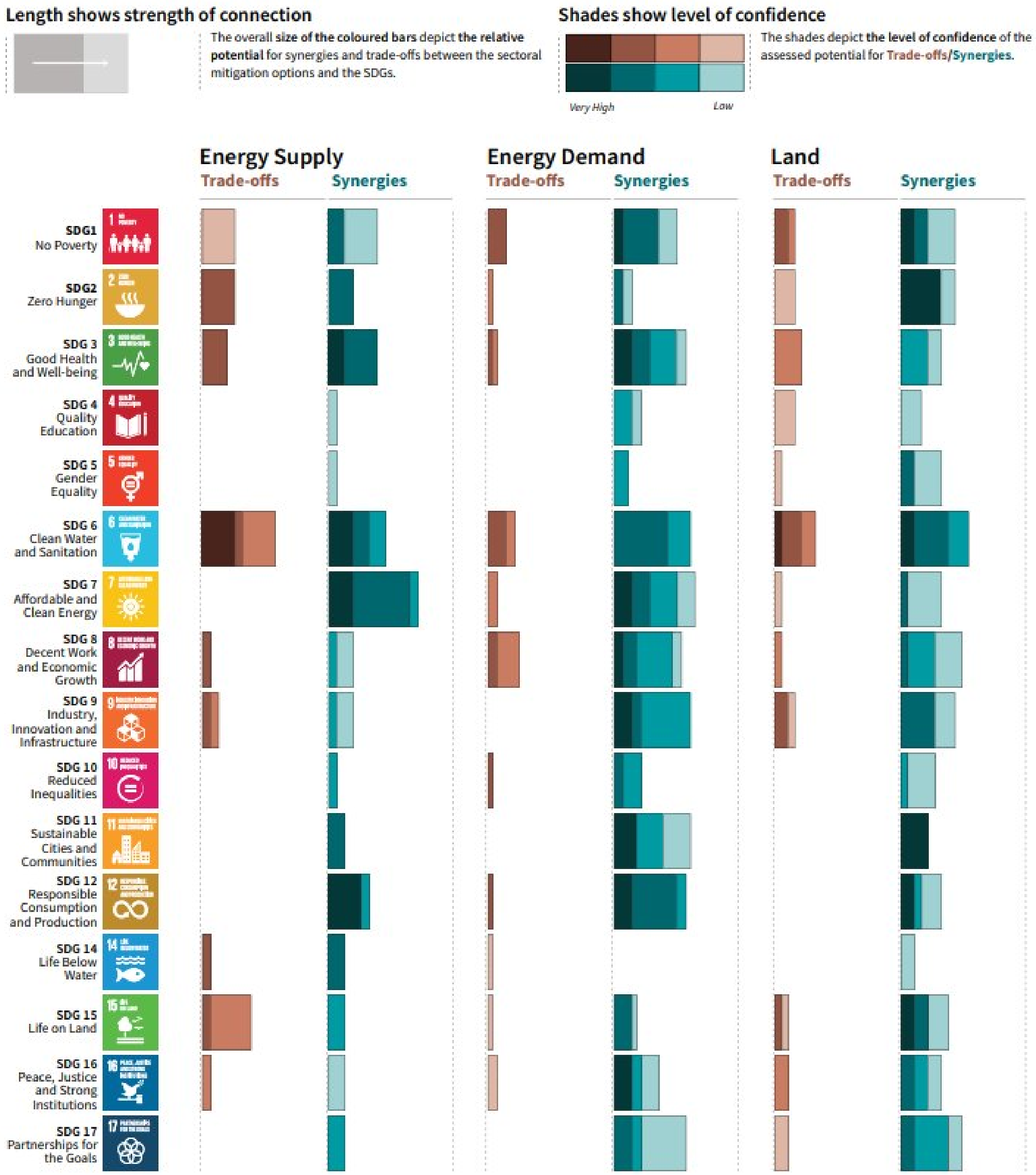
European Union:

The 28 EU nations account for more than one-fifth of CO2 emissions over time, but their collective annual emissions have dropped by more than 20% since 1990. Some estimates suggest the EU is on track to meet its Paris targets. Coal use is dropping but remains a major source of emissions.



Source: Global Carbon Project

Indicative linkages between mitigation options and sustainable development using SDGs
(The linkages do not show costs and benefits)



- Mitigation options deployed in each sector can be associated with potential positive effects (synergies) or negative effects (trade-offs) with the Sustainable Development Goals (SDGs).
- The degree to which this potential is realized will depend on the selected portfolio of mitigation options, mitigation policy design, and local circumstances and context.
- Particularly in the energy-demand sector, the potential for synergies is larger than for trade-offs.
- The bars group individually assessed options by level of confidence and take

- The leaders of these sinking countries are fighting to stop climate change. Here's what the rest of the world can learn

- Any new global climate pact, the leaders agreed, had to aim to stop temperatures from rising more than 1.5°C by the year 2100

- Even so, the push for the 1.5°C target has paid huge dividends in publicity. As directed by the Paris deal, the IPCC released a report on the difference between 1.5°C and 2°C of warming.

These are some of the **mitigation measures** that can be taken to **avoid the increase of pollutant emissions**:

- Guterres is requiring leaders make new commitments to reduce countries’ emissions.

The conclusions were stark:

- The world is dangerously close to climate catastrophe that could impoverish hundreds of millions of people, lead to the disappearance of coral reefs and expose 10 million additional people to the effects of sea-level rise.

EXTREME HEAT Global population exposed to severe heat at least once every five years	14%	37%	2.6X WORSE
SEA LEVEL RISE Amount of sea level rise by 2100	0.40 METERS	0.46 METERS	.06M MORE
CROP YIELDS Reduction in maize harvests in tropics	3%	7%	2.3X WORSE

How to mitigate climate change?

- These are some of the **mitigation measures** that can be taken to **avoid the increase of pollutant emissions**:

- Practice Energy efficiency Greater use of renewable energy
- Electrification of industrial processes Efficient means of transport implementation: electric public transport, bicycle, shared cars ...

Carbon tax and emissions markets

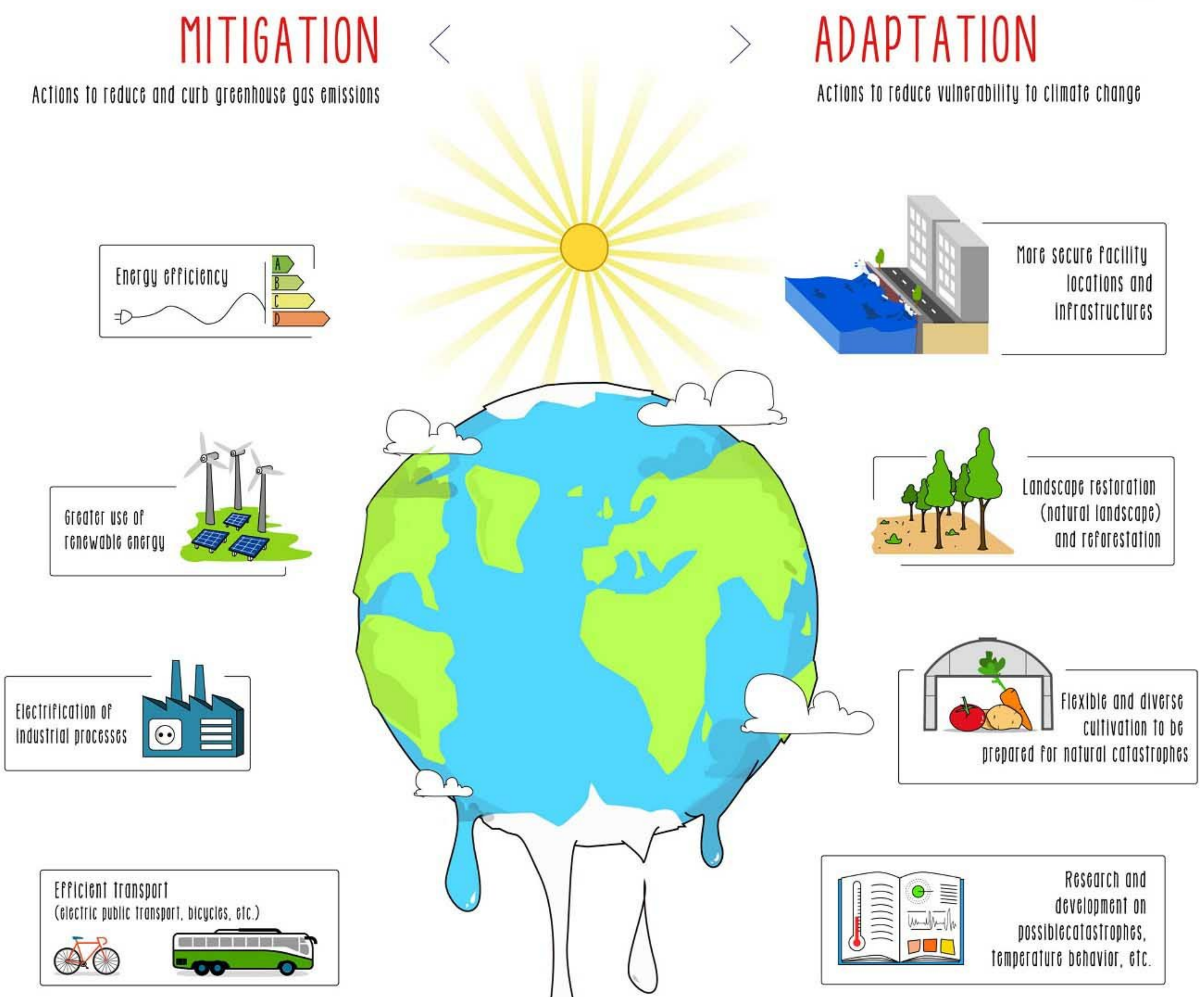
Practice Energy efficiency

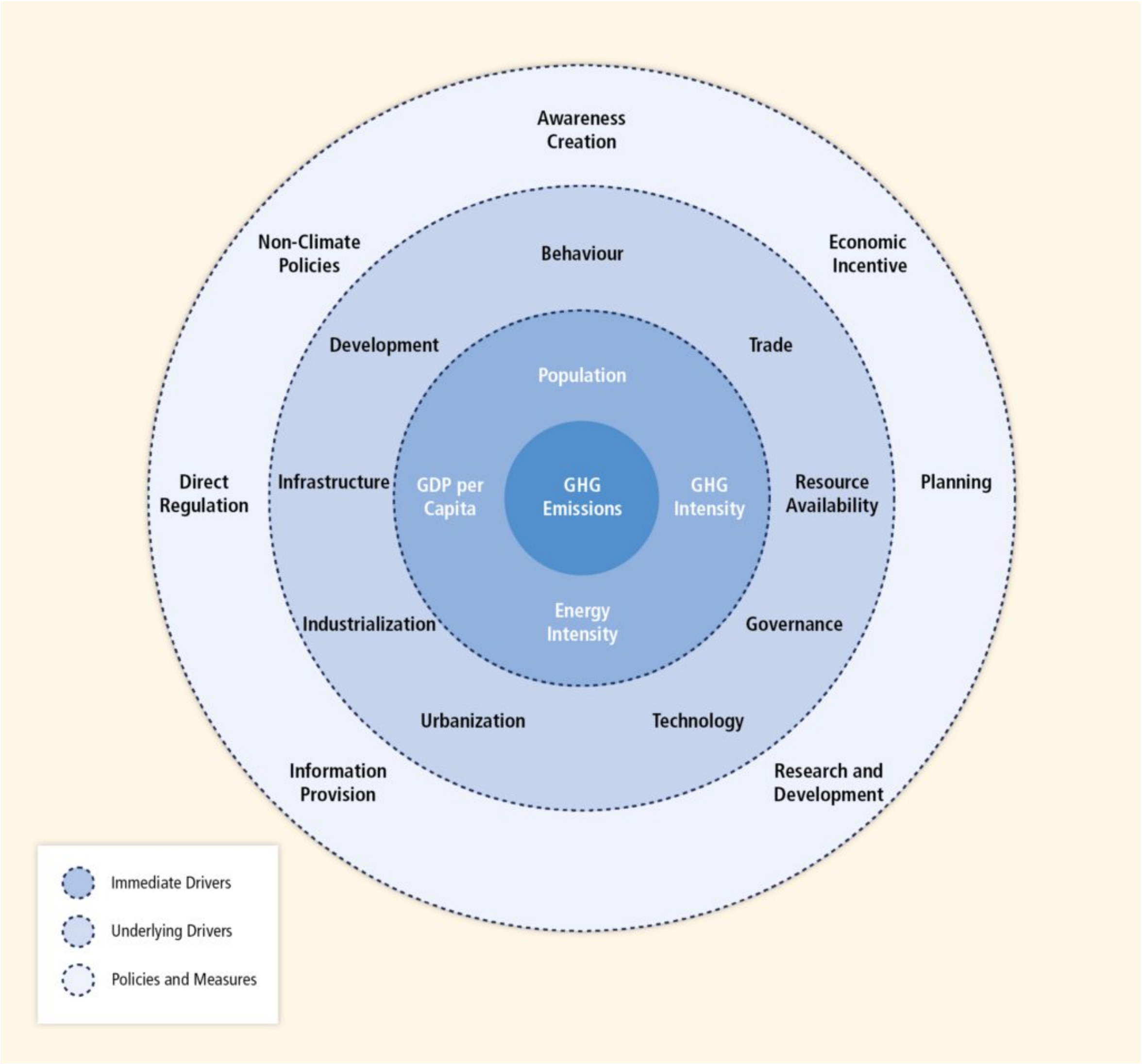
- Greater use of renewable energy

Electrification of industrial processes

Efficient means of transport implementation:

- electric public transport, bicycle, shared cars ...
- Carbon tax and emissions markets


MITIGATION
Actions to reduce and curb greenhouse gas emissions
ADAPTATION
Actions to reduce vulnerability to climate change
Energy efficiency
A
B
C
D
Greater use of renewable energy
Electrification of industrial processes
Efficient transport
(electric public transport, bicycles, etc.)
More secure facility locations and infrastructures
Landscape restoration (natural landscape) and reforestation
Flexible and diverse cultivation to be prepared for natural catastrophes
Research and development on possiblecatastrophes, temperature behavior, etc.



- Interconnections among GHG emissions, immediate drivers, underlying drivers, and policies and measures Immediate drivers comprise the factors in the decomposition of emissions

- Underlying drivers refer to the processes, mechanisms, and characteristics that influence emissions through the factors

- Policies and measures affect the underlying drivers that, in turn, may change the factors.

On the last day of #COP25 I appeal to countries to send a message of ambition to the world - to align their climate objectives to science, and commit to stronger (UN Boss)

Building Transport Industry

Buildings

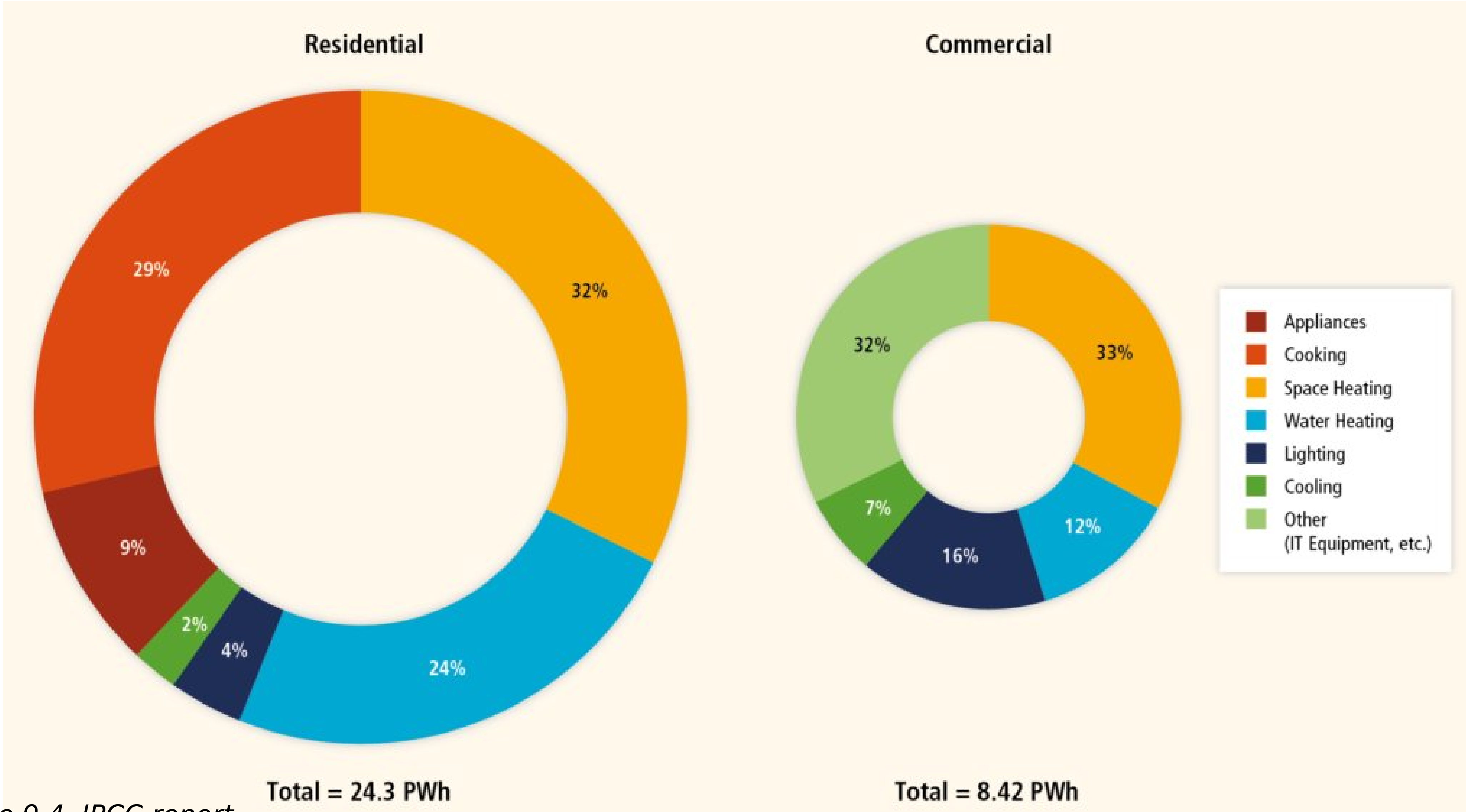


Figure 9.4, IPCC report

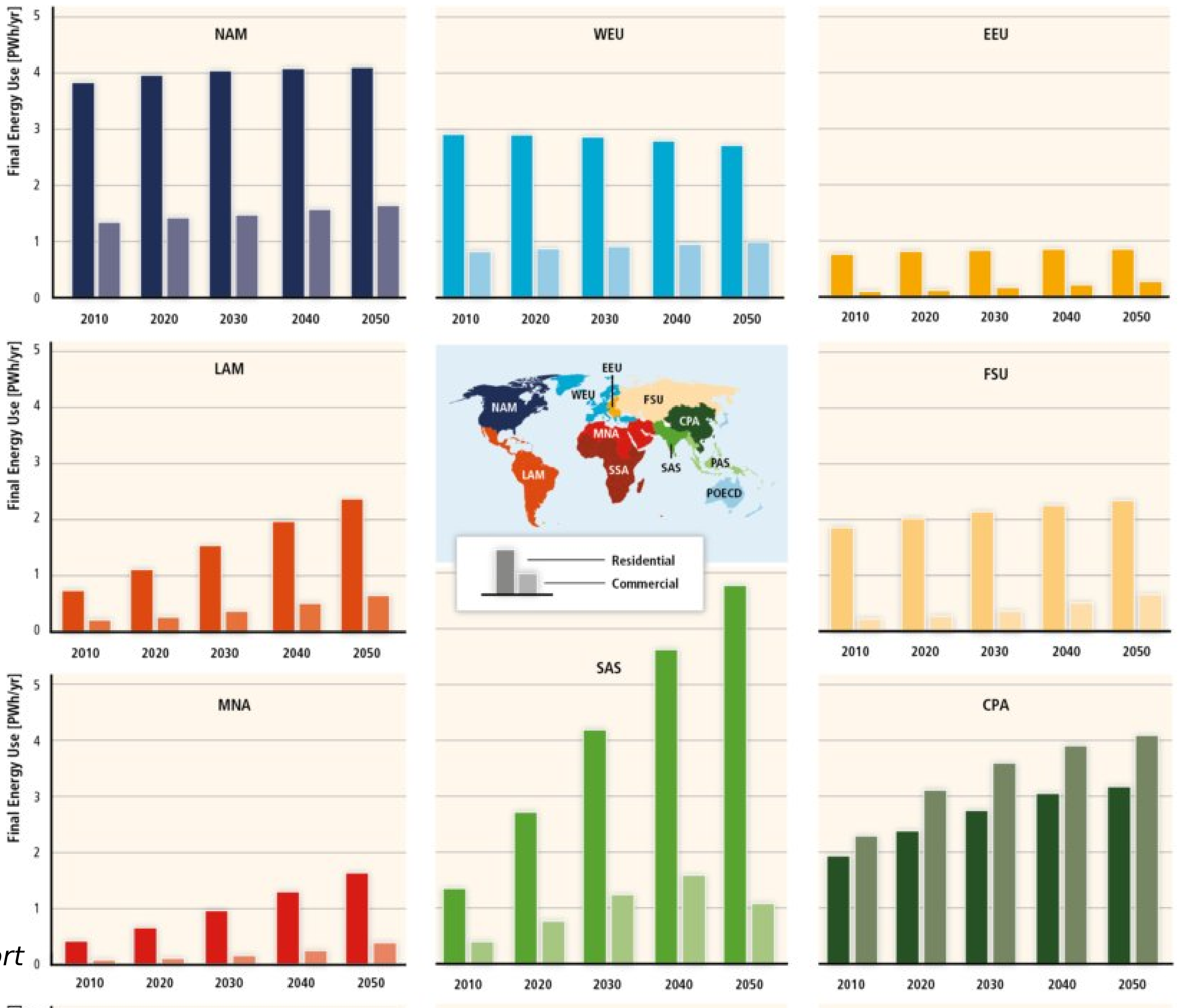


Figure 9.5, IPCC report

Mitigation Measures

INFORMATION PROGRAMS

Labelling

Demonstration projects

MARKET BASED PROGRAMS

Incentives to consumers for new energy-efficient products

Energy service companies

Energy-efficient product development incentives for manufacturers

Government or large-customer procurement for energy-efficient products

REGULATORY MEASURES

Mandated energy-efficiency performance standards, increasingly stringent over time

Mandated appliance efficiency standard and efficiency labeling

Technical Options

Building Equipment

energy efficient space and heating (heat pumps, CHP)

efficient lighting, air conditioners, refrigerators

efficient cook stoves, household appliances, and electrical equipment

efficient building energy management and maintenance

Building Thermal Integrity

improved insulation and sealing

energy-efficient windows

proper building orientation

Using Solar Energy

active and passive heating and cooling; climate-sensitive design

effective use of natural light ("daylighting")

Transport

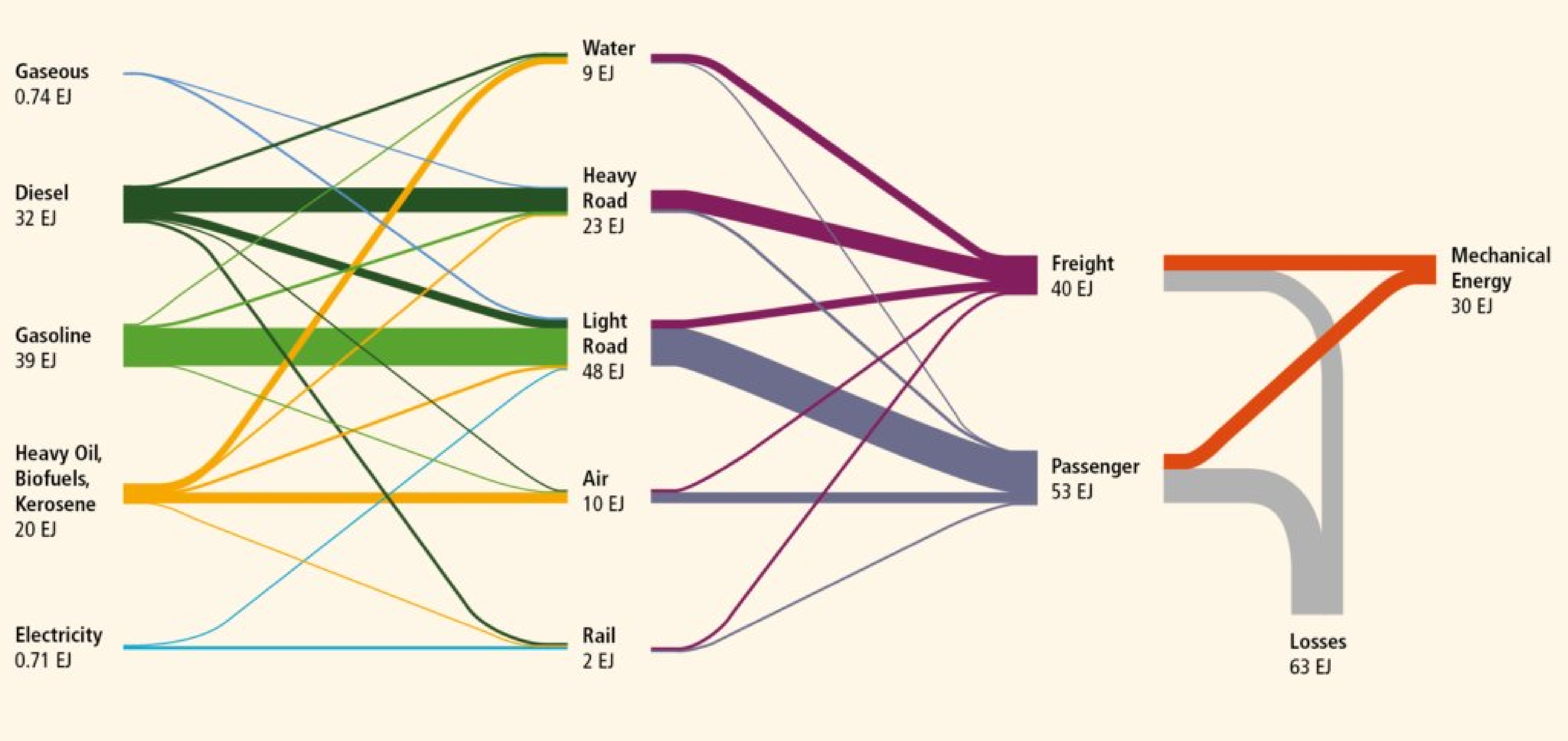


Figure 8.5, IPCC report

Activities with high mitigation potential

avoiding journeys where possible

modal shift to lower carbon transport system

lowering energy intensity

reducing carbon intensity of fuels

Transport mitigation strategies

Long-term (to 2050 and beyond)

- hydrogen fuels from low-carbon sources (gaseous and liquid-biofuels)
- urban development and investment in new infrastructure, linked with integrated urban planning
- transit-oriented development
- improvements for aircraft efficiency

Medium-term (up to 2030)

- producing electricity from low-carbon sources
- constructing high-speed rail systems

Short-term

- changing the behavior of consumers and businesses
- decarbonize freight transport – support from policies that encourage shifting to low-carbon modes
- reducing aviation contrails and emissions of particular matter, tropospheric ozone and

Strategies exist to reduce emission from transport

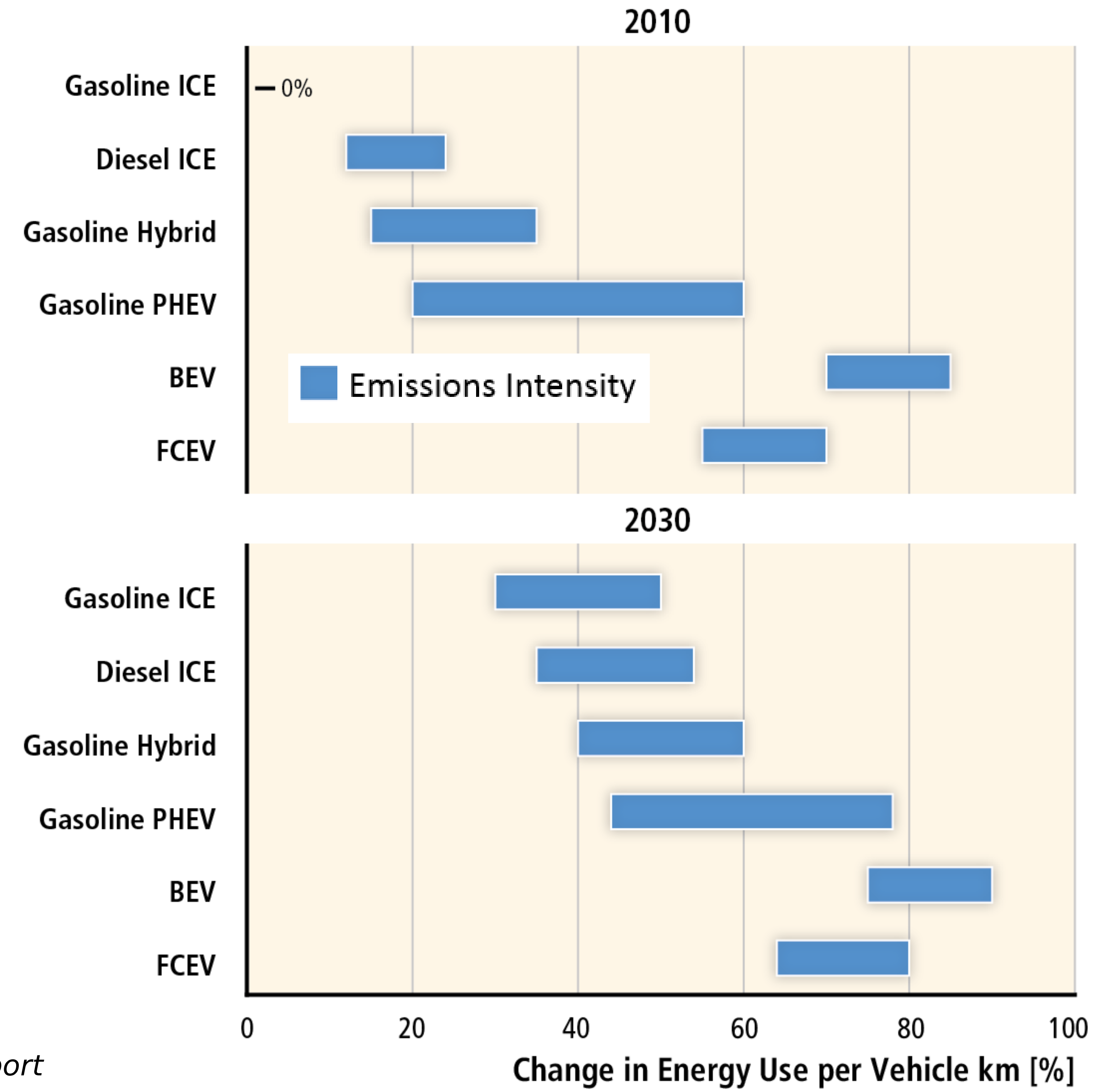


Figure 8.7, IPCC report

Industry

World production of minerals and manufactured products is growing steadily driving GHG emissions

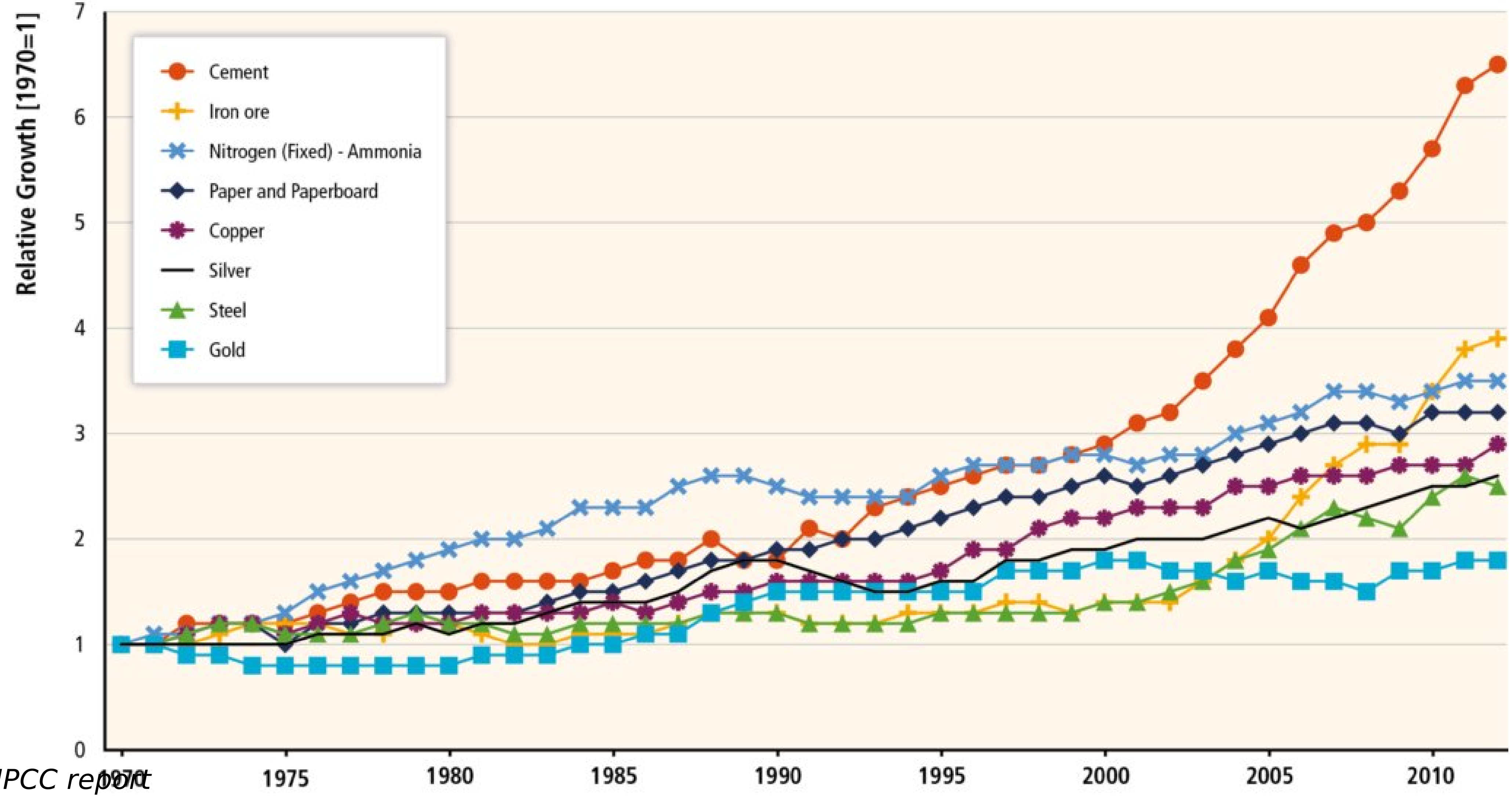


Figure 10.3, IPCC report

Significant mitigation potentials exist in various cost ranges including cost effectives measures (case study of steel)

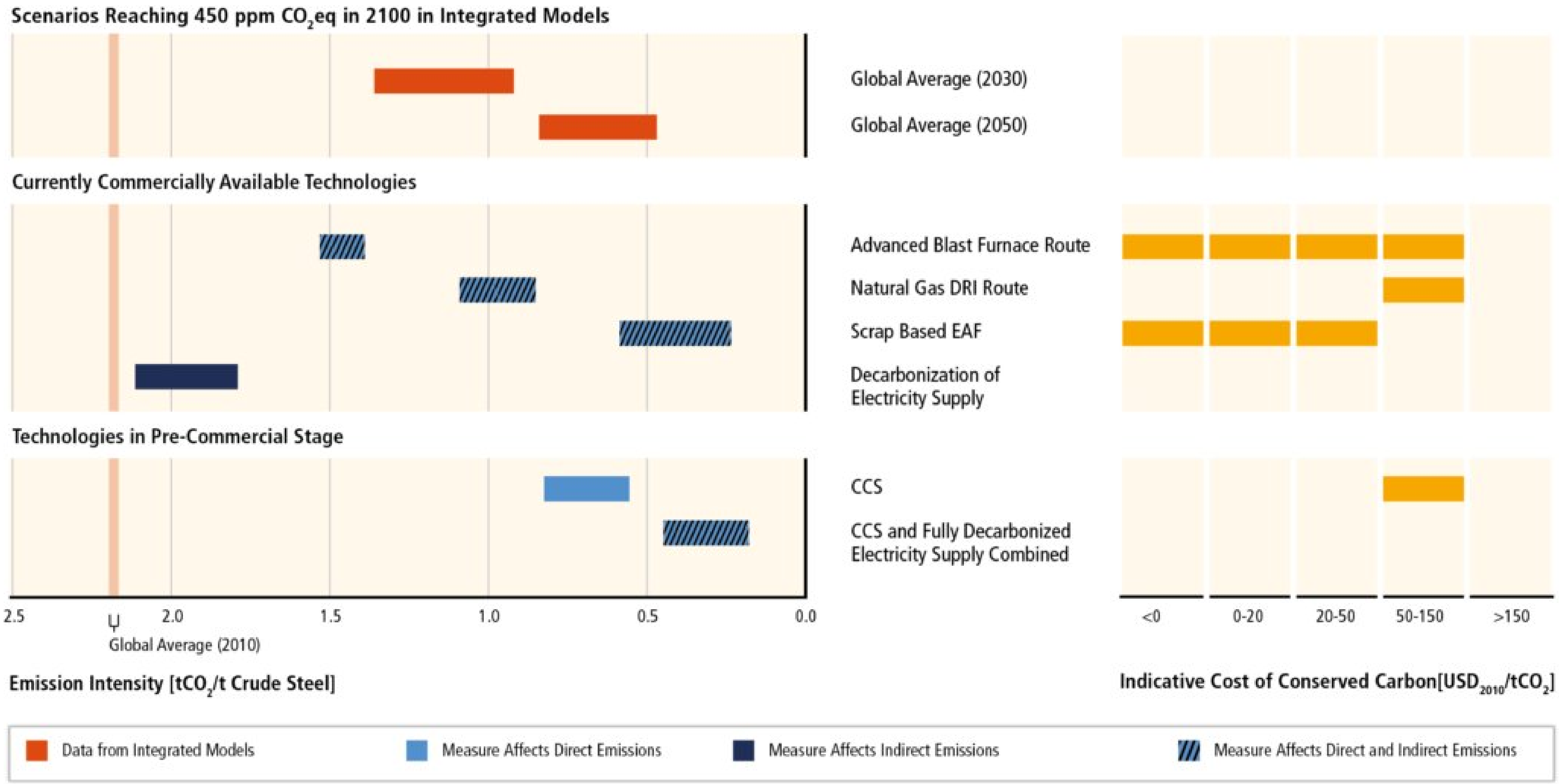


Figure 10.8, IPCC report

Attractive mitigation potentials exist in all areas

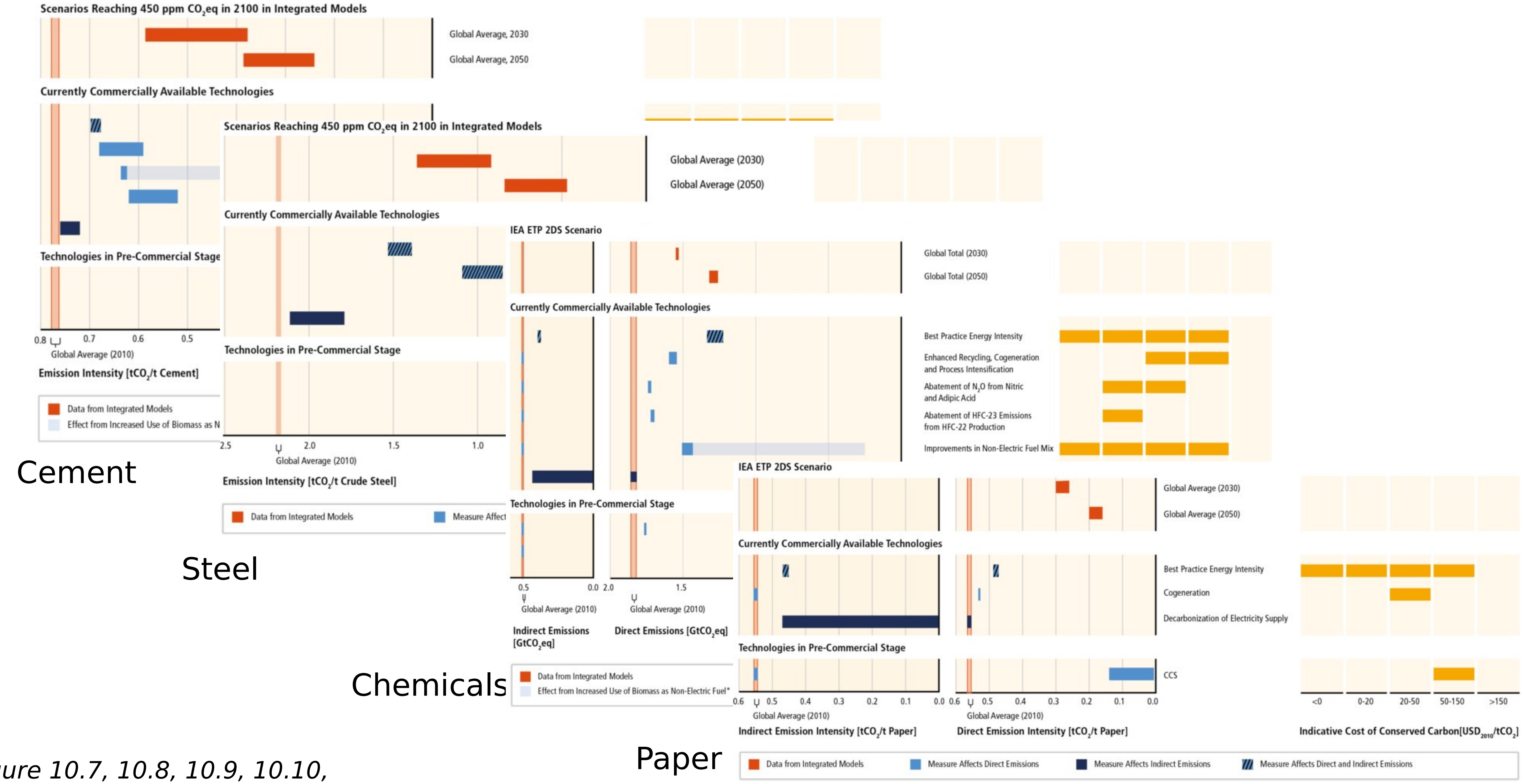


Figure 10.7, 10.8, 10.9, 10.10, IPCC report

Hierarchy of waste management

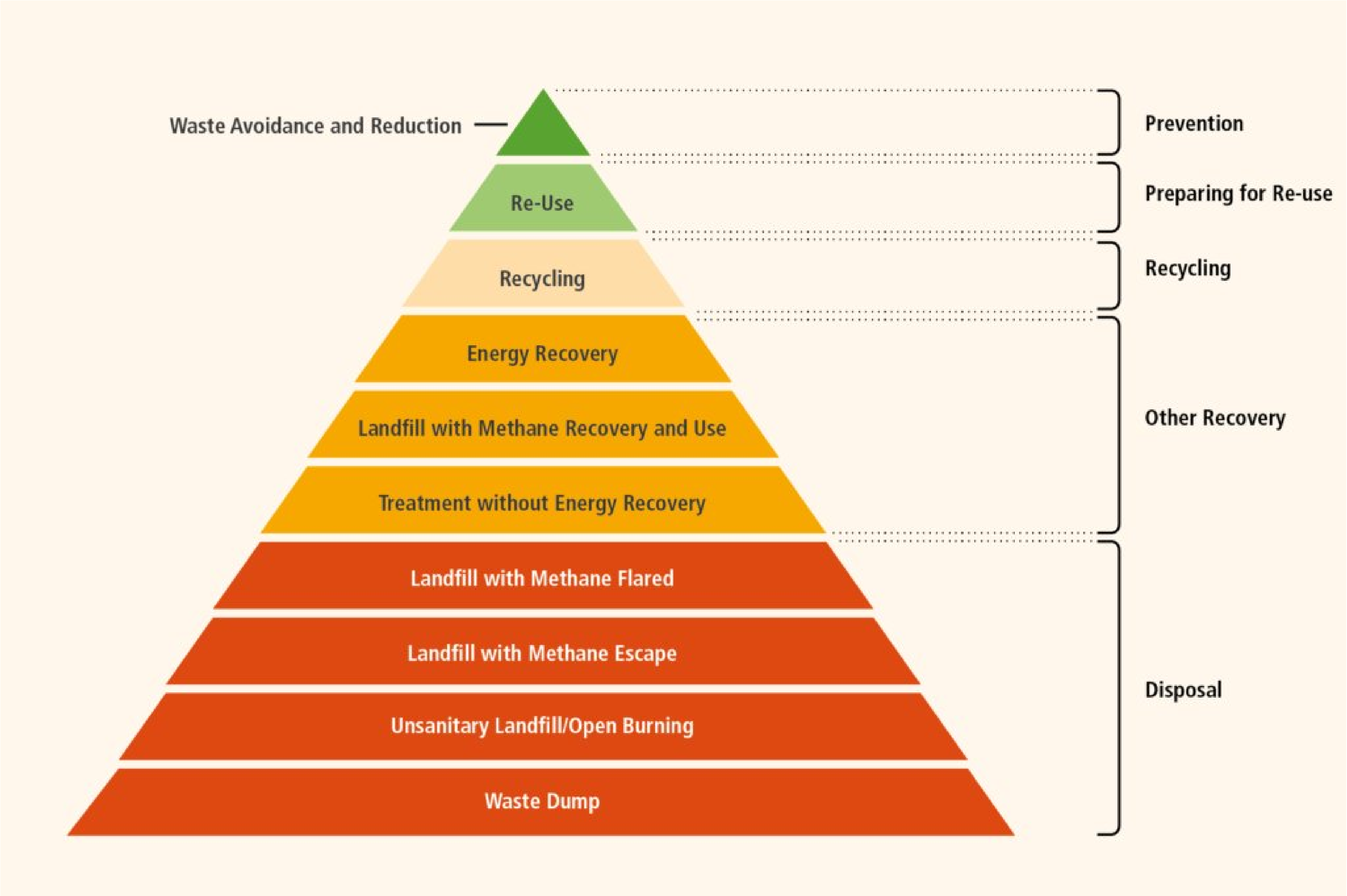
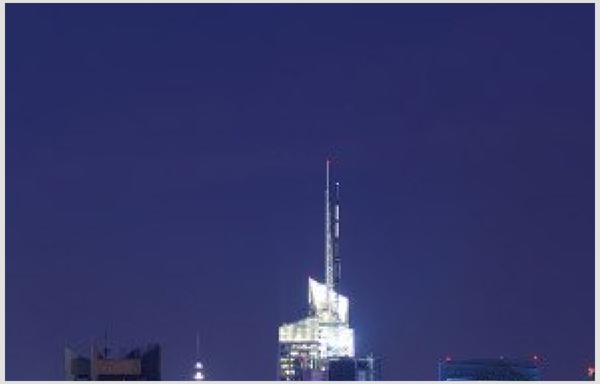


Figure 10.16, IPCC report



Energy supply

Agriculture, Forestry and Other Land Use (AFOLU)

Human settlements, infrastructure, and spatial planning

Energy supply

- Largest contributor to global GHG emissions.
- Rapid growth is expected by 2050 **from 14.4 $GtCO_2$ / yr O2 in 2010 to 24 – 33 $GtCO_2$ / yr in 2050"**
- The energy supply sector offers a multitude of options to reduce GHG emissions - **It is necessary to limit CO_2eq concentration to levels such as 450 ppm, 550 ppm, or 650 ppm.**
- The stabilization of GHG concentrations at low levels requires a fundamental transformation of the energy supply system, however i**n most integrated modelling scenarios, decarbonization happens more rapidly in electricity generation than in the buildings, transport, and industry sectors.**

Share of low-carbon electricity supply must increase from the current share of around 30 % to more than 80 % by 2050

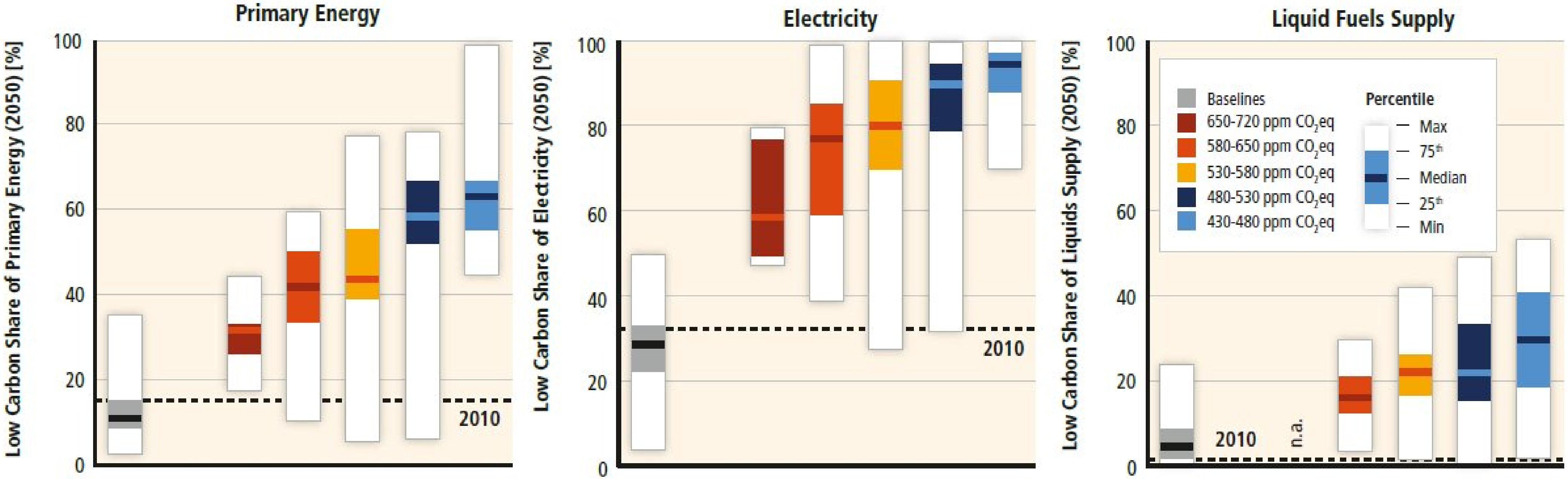


Figure TS.18 | Share of low-carbon energy in total primary energy, electricity and liquid fuels supply sectors for the year 2050. Dashed horizontal lines show the low-carbon share for the year 2010. Low-carbon energy includes nuclear, renewables, fossil fuels with carbon dioxide capture and storage (CCS) and bioenergy with CCS. [Figure 7.14]

Renewable energy

- Many RE technologies have demonstrated substantial performance improvements and cost reduction
- Some technologies are already economically competitive in various settings
- Decentralized RE to meet rural energy needs has also increased

- Many RE technologies still need direct support(e. g., feed-in tariffs (FITs), RE quota obligations, and tendering / bidding) and / or indirect support (e. g., sufficiently highcarbon prices and the internalization of other externalities)
- Infrastructure and integration challenges vary by RE technology and the characteristics of the existing energy system

Nuclear energy

Nuclear energy is a mature low-GHG emission source of baseload power

New fuel cycles and reactor technologies addressing some of these issues are under development and progress has been made concerning safety and waste disposal.

Share of global electricity generation has been declining (since 1993).

Barriers and risks associated with an increasing use of nuclear energy:

- operational risks and the associated safety concerns
- uranium mining risks, financial and regulatory risks
- unresolved waste management issues
- nuclear weapon proliferation concerns
- adverse public opinion

Excluding nuclear power from the available portfolio of technologies would result in only a slight increase in mitigation costs compared to the full technology portfolio

Combined heat and power (CHS)

In mitigation scenarios reaching about 450 ppm CO2eq concentrations by 2100, natural gas power generation acts as a bridge technology

Carbon dioxide capture and storage (CCS)

CCS could reduce the lifecycle GHG emissions of fossil fuel power plants

Barriers to large-scale deployment of CCS technologies:

- concerns about the operational safety and long-term integrity of CO2 storage
- risks related to transport and the O2
- required up-scaling of infrastructure -Beyond economic incentives, well-defined regulations concern
- Ing short- and long-term responsibilities for storage are essential for a large-scale future deployment of CCS

Bioeneegy combined with CCS (BECCS):

Currently, no large-scale projects have been financed

Energy Supply	Effect on additional objectives/concerns			
	Economic	Social	Environmental	Other
Nuclear replacing coal power	↑ Energy security (reduced exposure to fuel price volatility) **(m/m)** ↑ Local employment impact (but uncertain net effect) **(l/m)** ↑ Legacy cost of waste and abandoned reactors **(m/h)**	Health impact via ↓ Air pollution and coal mining accidents **(m/h)** ↑ Nuclear accidents and waste treatment, uranium mining and milling **(m/l)** ↑ Safety and waste concerns **(r/h)**	Ecosystem impact via ↓ Air pollution **(m/h)** and coal mining **(l/h)** ↑ Nuclear accidents **(m/m)**	Proliferation risk **(m/m)**
RE (wind, PV, concentrated solar power (CSP), hydro, geothermal, bioenergy) replacing coal	↑ Energy security (resource sufficiency, diversity in the near/medium term) **(r/m)** ↑ Local employment impact (but uncertain net effect) **(m/m)** ↑ Irrigation, flood control, navigation, water availability (for multipurpose use of reservoirs and regulated rivers) **(m/h)** ↑ Extra measures to match demand (for PV, wind and some CSP) **(r/h)**	Health impact via ↓ Air pollution (except bioenergy) **(r/h)** ↓ Coal mining accidents **(m/h)** ↑ Contribution to (off-grid) energy access **(m/l)** ? Project-specific public acceptance concerns (e.g., visibility of wind) **(l/m)** ↑ Threat of displacement (for large hydro) **(m/h)**	Ecosystem impact via ↓ Air pollution (except bioenergy) **(m/h)** ↓ Coal mining **(l/h)** ↑ Habitat impact (for some hydro) **(m/m)** ↑ Landscape and wildlife impact (for wind) **m/m)** ↓ Water use (for wind and PV) **(m/m)** ↑ Water use (for bioenergy, CSP, geothermal, and reservoir hydro) **(m/h)**	Higher use of critical metals for PV and direct drive wind turbines **(r/m)**
Fossil CCS replacing coal	↑↑ Preservation vs. lock-in of human and physical capital in the fossil industry **(m/m)**	Health impact via ↑ Risk of CO_2 leakage **(m/m)** ↑ Upstream supply-chain activities **(m/h)** ↑ Safety concerns (CO_2 storage and transport) **(m/h)**	↑ Ecosystem impact via upstream supply-chain activities **(m/m)** ↑ Water use **(m/h)**	Long-term monitoring of CO_2 storage **(m/h)**
BECCS replacing coal	*See fossil CCS where applicable. For possible upstream effect of biomass supply, see Table TS.8.*			
Methane leakage prevention, capture or treatment	↑ Energy security (potential to use gas in some cases) **(l/h)**	↓ Health impact via reduced air pollution **(m/m)** ↑ Occupational safety at coal mines **(m/m)**	↓ Ecosystem impact via reduced air pollution **(l/m)**	

Agriculture, Forestry and Other Land Use (AFOLU)

- Since 1990 to 2010 total emissions from AFOLU for high income countries decreased while those of low-income countries increas
- AFOLU emissions from high-income countries are dominated by agriculture activities while those from low-income countries are dominated by deforestation and degradation
- Uncertainty in net AFOLU emissions is larger than for other sectors.
- The economic mitigation potential in the AFOLU sector is estimated to be 7.18 to 10.6 GtCO2eq / yr

Opportunities for mitigation in the AFOLU sector

Supply sector

Land-use change:

- afforestation
- sustainable forest managemen
- reducing deforestation

Livestock management

Demand sector

Dietary change

Waste reduction in the food supply chain

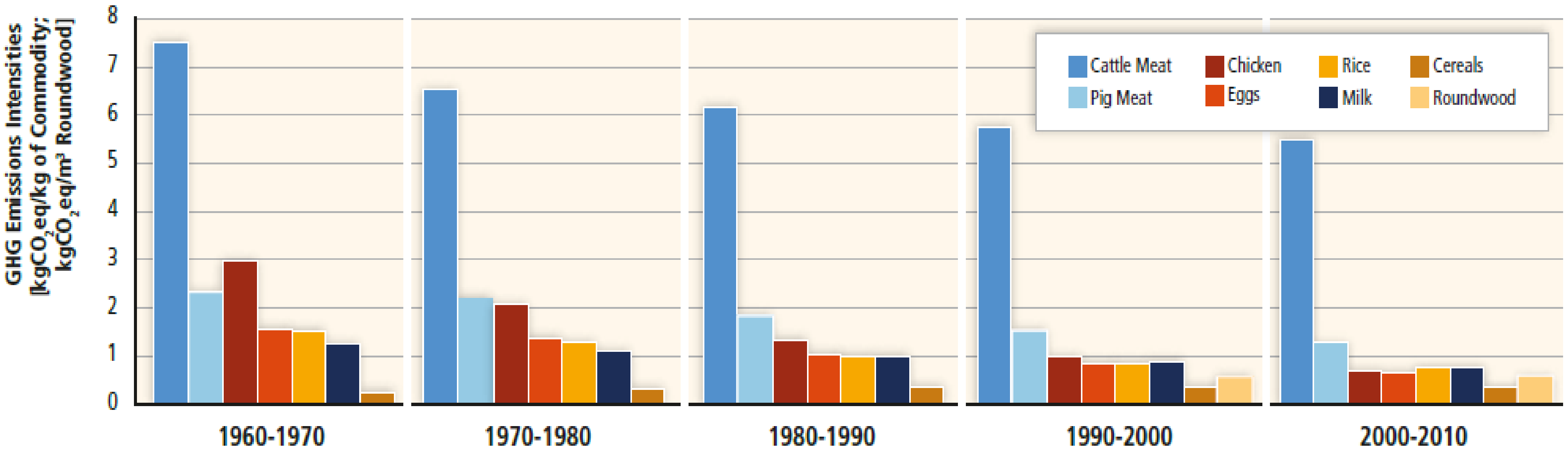


Figure TS.30 | GHG emissions intensities of selected major AFOLU commodities for decades 1960s–2000s. (1) Cattle meat, defined as GHG (enteric fermentation + manure management of cattle, dairy and non-dairy)/meat produced; (2) pig meat, defined as GHG (enteric fermentation + manure management of swine, market and breeding)/meat produced; (3) chicken meat, defined as GHG (manure management of chickens)/meat produced; (4) milk, defined as GHG (enteric fermentation + manure management of cattle, dairy)/milk produced; (5) eggs, defined as GHG (manure management of chickens, layers)/egg produced; (6) rice, defined as GHG (rice cultivation)/rice produced; (7) cereals, defined as GHG (synthetic fertilizers)/cereals produced; (8) wood, defined as GHG (carbon loss from harvest)/roundwood produced. [Figure 11.15]

The mitigation potential of AFOLU is highly dependent on broader factors related to land-use policy and patterns

Main barriers to mitigation in AFOLU sector

- institutional (lack of tenure and poor governance)
- accessibility to financing mechanisms
- availability of land and water
- poverty

Human settlements, infrastructure and spatial planning

- By 2050, the urban population is expected to increase to 5.6 – 7.1 billion, or 64 – 69 % of the world population
- Urban areas account for more than half of global primary energy use and energy-related CO_2 emissions
- No single factor explains variations in per-capita emissions across cities, and there are significant differences in per capita GHG emissions between cities within a single country -
- Currently, average per capita CO_2 emissions embodied in the industrialized countries is five times larger than those in developing countries
- Urban land cover is projected to expand by 56 – 310 % between 2000 and 2030
- **Thousands of cities are undertaking climate action plans, but their aggregate impact on urban emissions is uncertain**

Opportunities and key factors for mitigation in urban areas

Thousands of cities are undertaking climate action plans, but their aggregate impact on urban emissions is uncertain - the largest opportunities for future urban GHG emissions reduction might be in rapidly urbanizing countries

Key factors:

(1) institutional arrangements that facilitate the integration of mitigation with other high-priority urban agendas;

(2) a multilevel governance context that empowers cities to promote urban transformations;

(3) spatial planning competencies and political will to support integrated land-use and transportation planning

(4) sufficient financial flows and incentives to adequately support mitigation strategies.

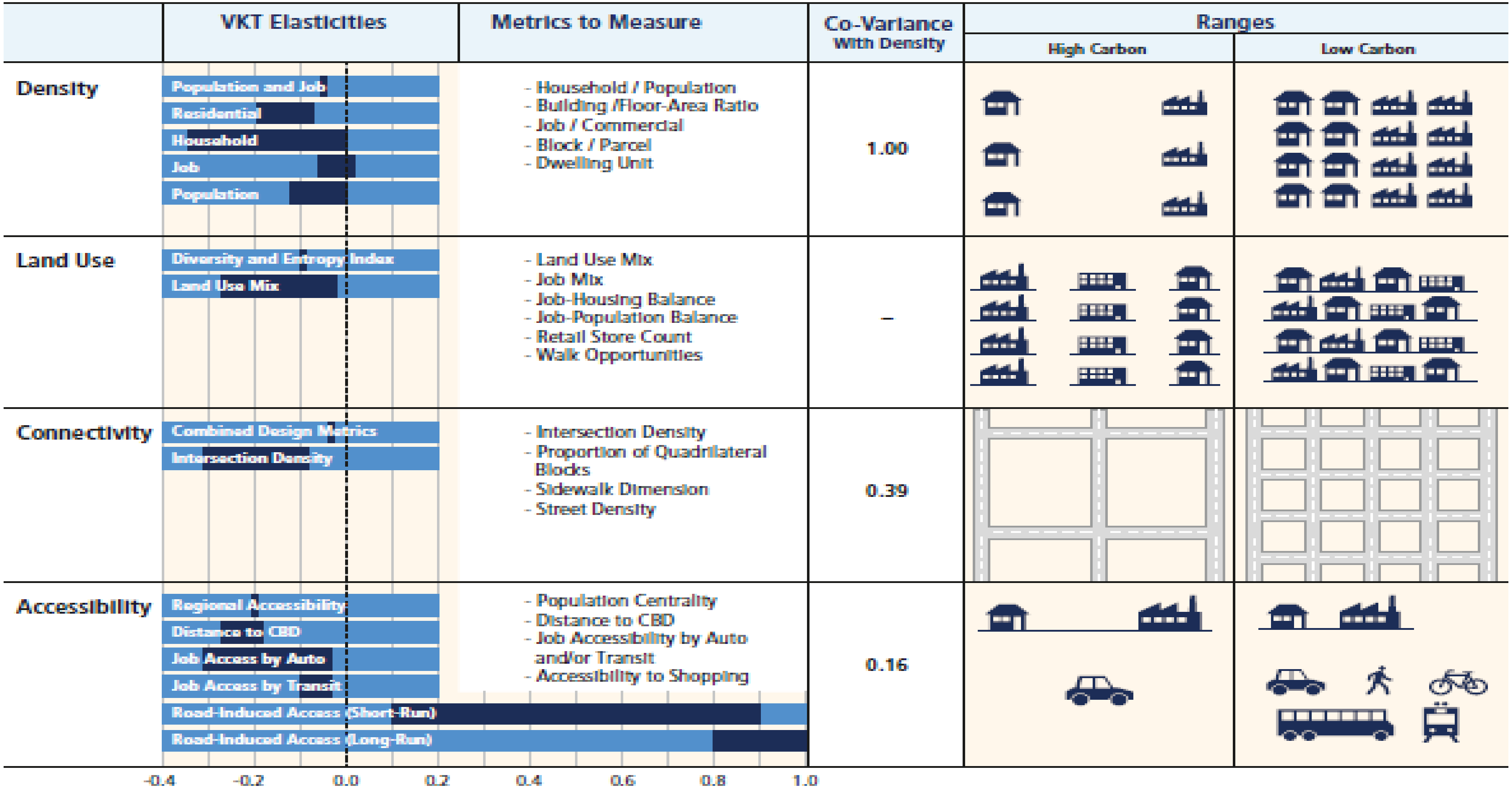


Figure TS.33 | Four key aspects of urban form and structure (density, land-use mix, connectivity, and accessibility), their vehicle kilometers travelled (VKT) elasticities, commonly used metrics, and stylized graphics. The dark blue row segments under the VKT elasticities column provide the range of elasticities for the studies included. CBD: Central business district. [Figure 12.14]

Sustainable Development, Equity and Mitigation

..Equity and common but differentiated responsibilities and respective capabilities relative needs, vulnerability, burdens in countries of differing wealth precaution and cost-effectiveness, so as to ensure global benefits at the lowest possible cost, sustainable development' , and cooperation.

Since the 1st Assessment report, IPCC considered the aspect of Sustainable Development in climate change policy making, and expanded it to the scope of

- the co-benefits of climate actions for SD and equity
- the relevance of lifestyle behavior
- the relevance of technological choices
- the relevance of procedural equity to effective decision making
- the relevance of ethical frameworks
- equitable burden sharing in assessing climate responses.

Equity as an Integral Dimension of SD: Intergenerational, Intragenerational

Intragenerational Equity

- Responsibility (for GHG emissions)
- Capacity (ability to pay for mitigation)
- The right to development
- equality (equal entitlement to emit)

Responsibility (for GHG emissions)

Capacity (ability to pay for mitigation)

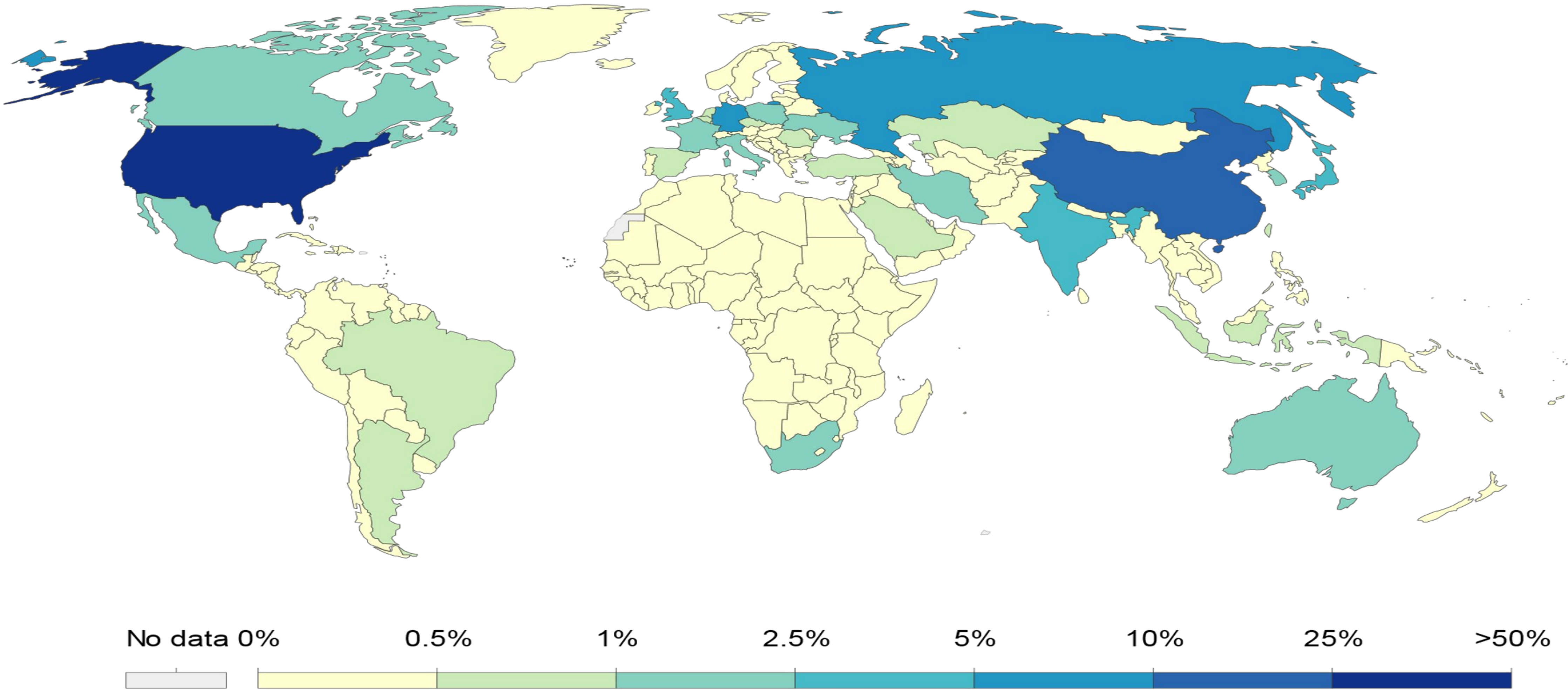
The right to development

equality (equal entitlement to emit)

- Polluters Pay Principle (PPP)
- “Common but differentiated responsibilities” UNFCCC
- Present & Past Emissions
- Emissions within the nation’s territorial boundary
- Exporting/Importing of emissions

Share of global cumulative CO_2 emissions, 2017

Each country or region's share of cumulative global carbon dioxide (CO_2) emissions. Cumulative emissions are calculated as the sum of annuals emissions from 1751 to a given year.



Source: OWID based on CDIAC & Global Carbon Project (GCP)

Responsibility (for GHG emissions)

Capacity (ability to pay for mitigation)

The right to development

equality (equal entitlement to emit)

- More one can afford to contribute, the more one should
- technological, institutional, and human capacity.

Responsibility (for GHG emissions)

Capacity (ability to pay for mitigation)

The right to development

equality (equal entitlement to emit)

- Is a right to an exemption from obligations for poor Parties
- Meeting basic needs as a priority over climate change mitigation

	Units	Developed/industrialized/Annex I countries[c]		Developing/Non-Annex I countries[d]	
		OECD	EIT	Developing	Least developed
Emissions profiles by gases, 2000[a]		100		100	100
CO_2 (fossil fuel)	%	81		41	4
CH_4	%	11		16	22
N_2O	%	6		10	12
LUC	%	*0*		33	62
High GWP gases	%	*2*		0	0
Human development profiles[b]					
HDI, 2003		0.892	0.802	0.694	0.518
Life expectancy at birth	years	77.7	68.1	65.0	52.2
Adult literacy	%	100.0	99.2	76.6	54.2
GDP_{ppp}/capita, 2003	US$/capita	25915	7930	4359	1328
Population growth rate (2003-2015)	%/yr	0.5	-0.2	1.3	2.3
GDP/capita growth rate (1990-2003)	%/yr	1.8	0.3	2.9	2.0
Electricity consumption per capita, 2002	kWh/capita	8615	3328	1155	106
CO_2 emissions per capita, 2002	tonnes/capita	11.2	5.9	2.0	0.2
Vulnerability assessment[e]					
Vulnerability scores		10-15	14-22	18->40	

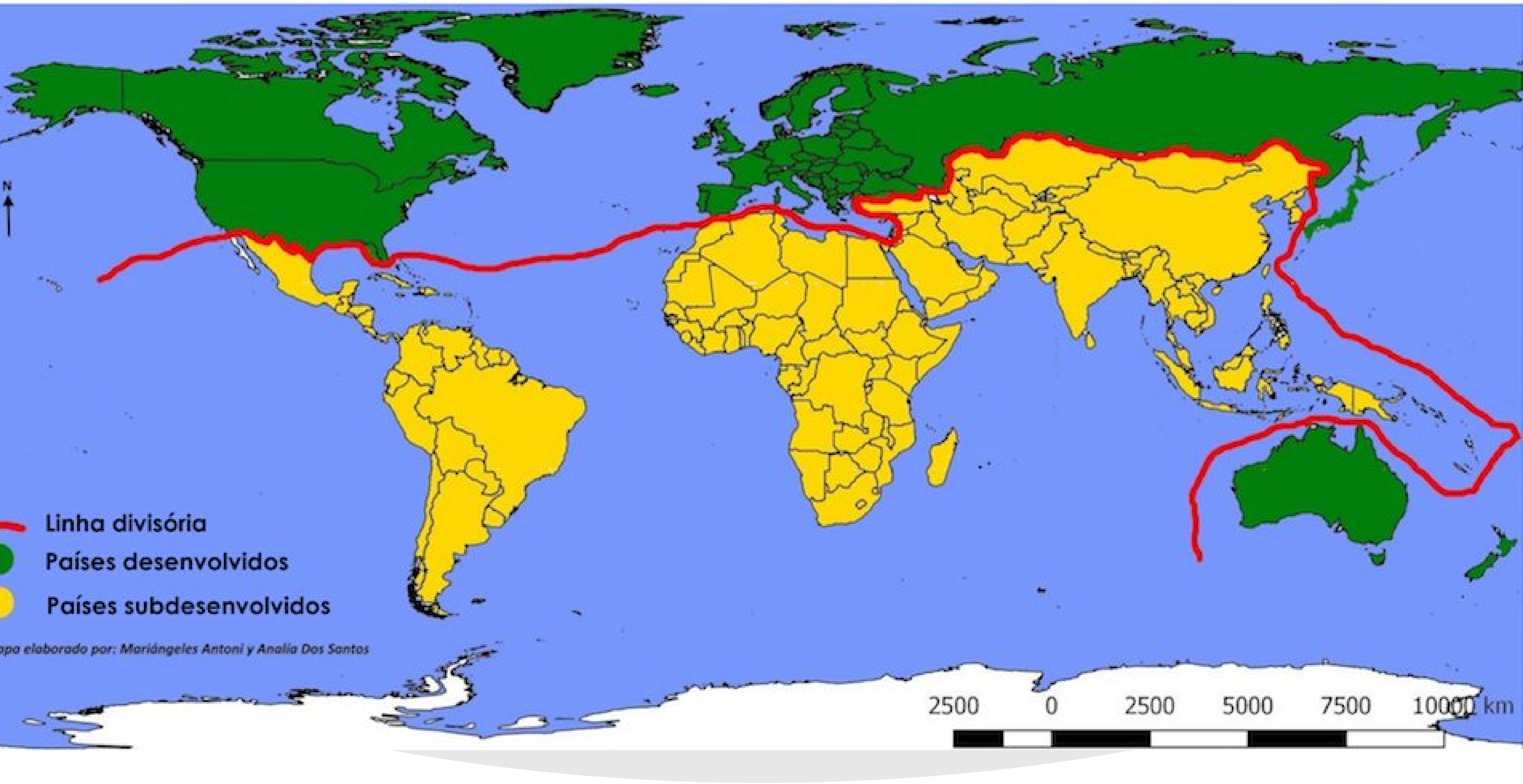
Responsibility (for GHG emissions)

Capacity (ability to pay for mitigation)

The right to development

equality (equal entitlement to emit)

- People in developing countries may have less access to alternatives to fossil fuels because of higher cost or less available technologies, and thus be entitled to a larger share of emission rights.


N
Linha divisória
Países desenvolvidos
Países subdesenvolvidos
apa elaborado por: Mariángeles Antoni y Analía Dos Santos
2500 0 2500 5000 7500 10000 km

Developing Countries Dilemma

- Via a sustainable development pathway that does not reproduce

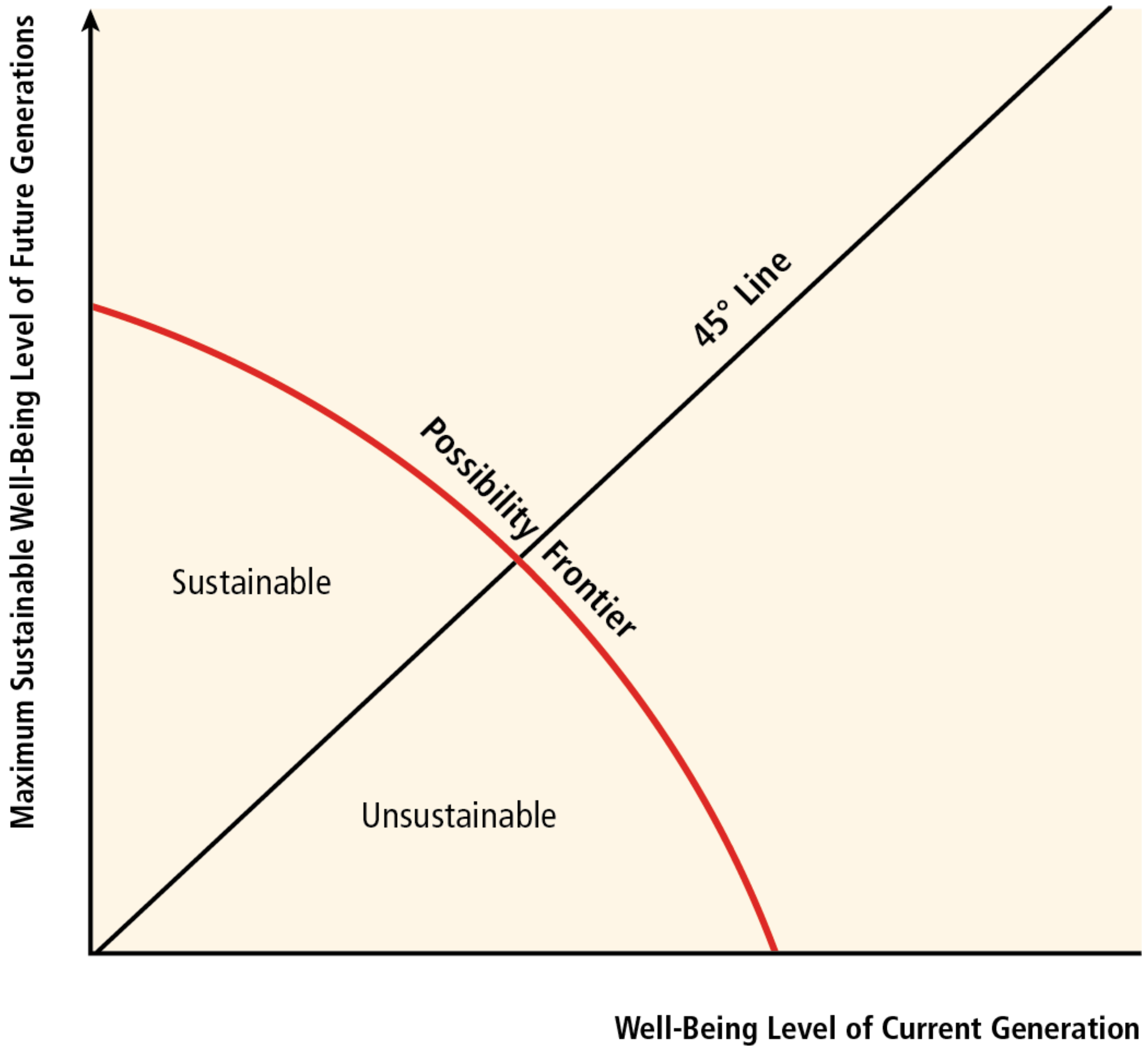
the fossil-fuel based and emissions-intensive conventional pathway

by which the developed world moved from poverty to prosperity.

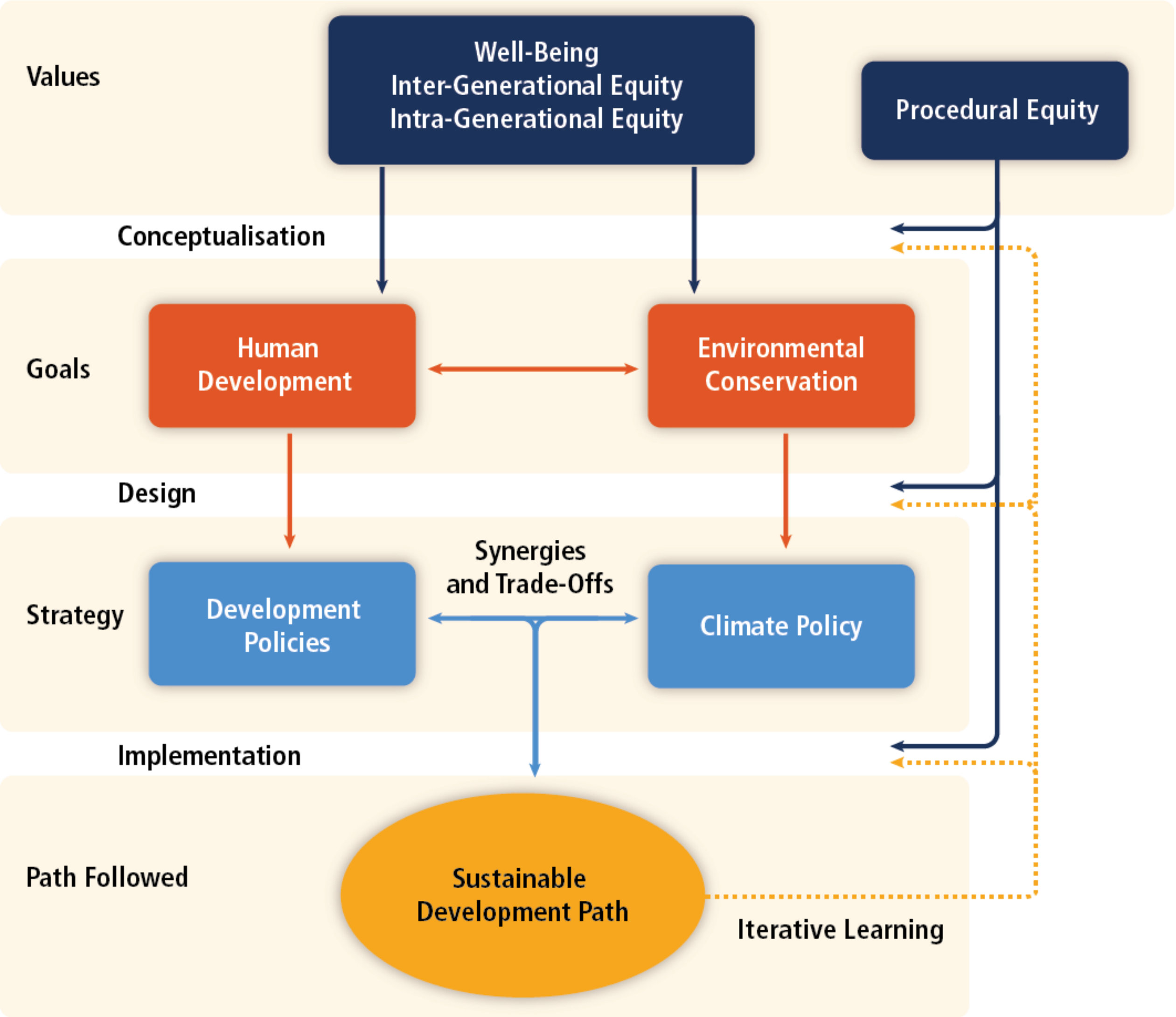
- Most of them are still in the process of building infrastructure, getting to energy satisfaction level
- Climate change policies
- Developed countries support
- Innovation in low-carbon technologies

Intergenerational Equity

For coming generations to get at least to the level of well-being as the current one


Maximum Sustainable Well-Being Level of Future Generations
45° Line
Possibility Frontier
Sustainable
Unsustainable
Well-Being Level of Current Generation


Choosing a Pathway -
Taking all Relevant Objectives
(Including Mitigation) Into Account at the Same Time
Looking at Mitigation -
Taking Into Account some Implications for
Other Aspects of SD and Equity (Cobenefits)
Looking at
Mitigation
Only


Values
Well-Being
Inter-Generational Equity
Intra-Generational Equity
Procedural Equity
Conceptualisation
Goals
Human Development
Environmental Conservation
Design
Strategy
Development Policies
Synergies and Trade-Offs
Climate Policy
Implementation
Path Followed
Sustainable Development Path
Iterative Learning


Thank you for your attention