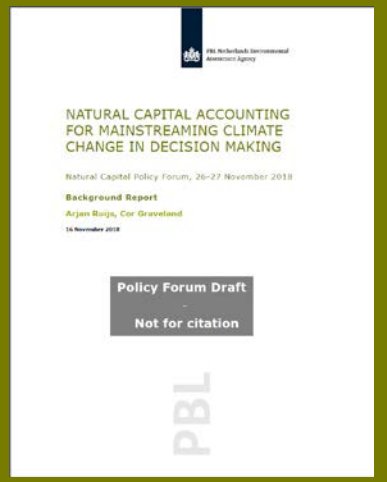
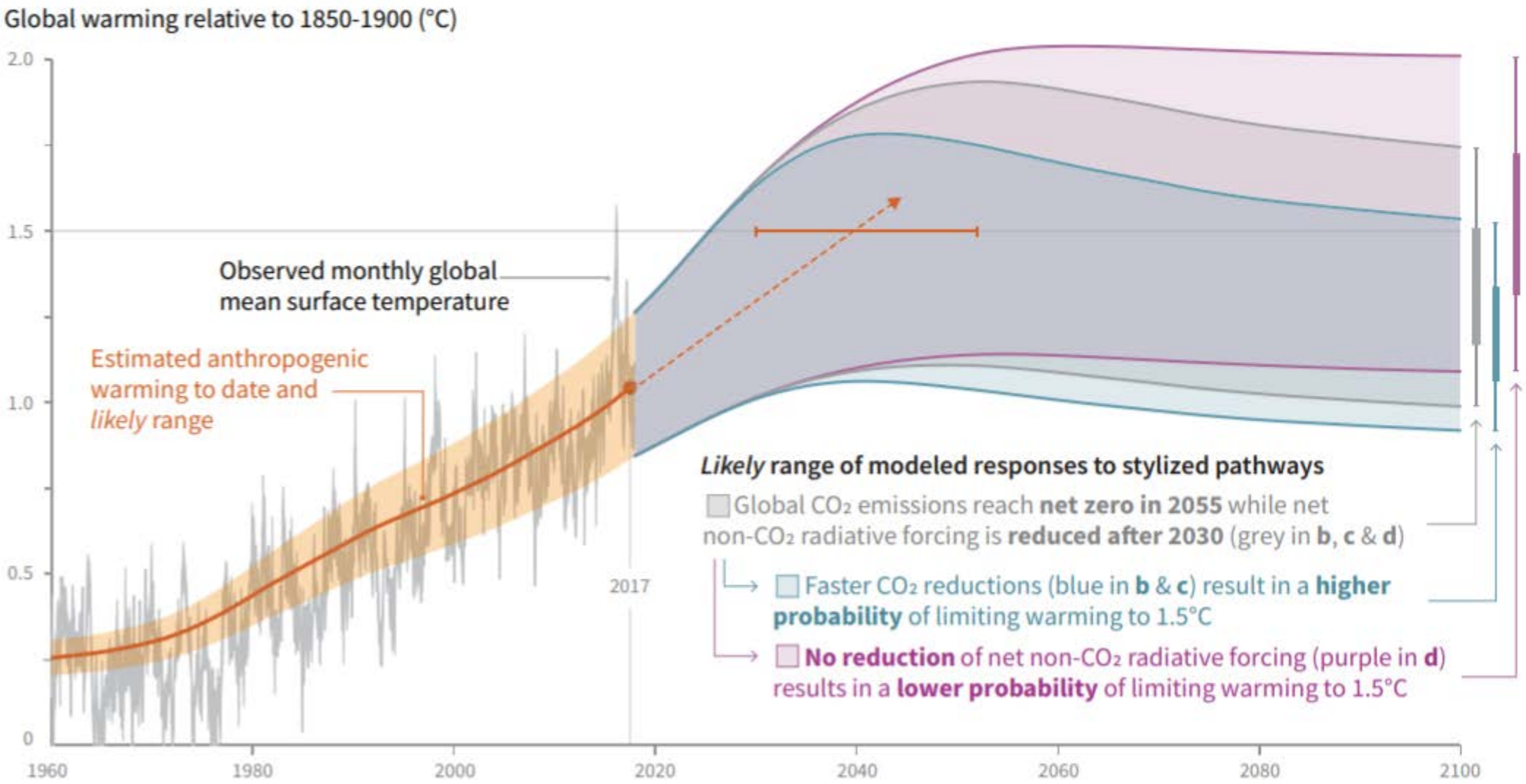
Natural Capital Accounting for mainstreaming climate change in decision making



Arjan Ruijs – PBL Netherlands Environmental Assessment Agency

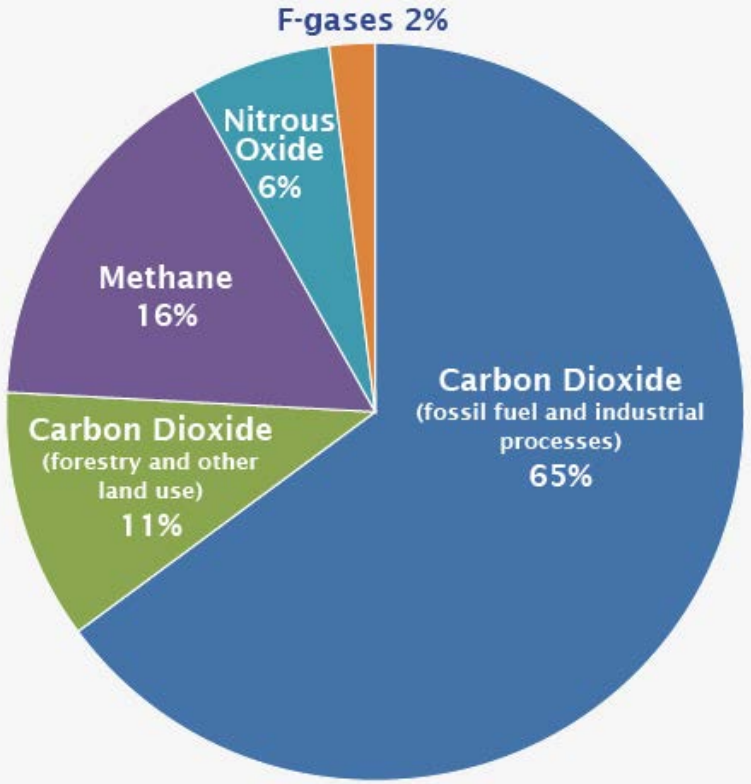
26 Nov. 2018

a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways

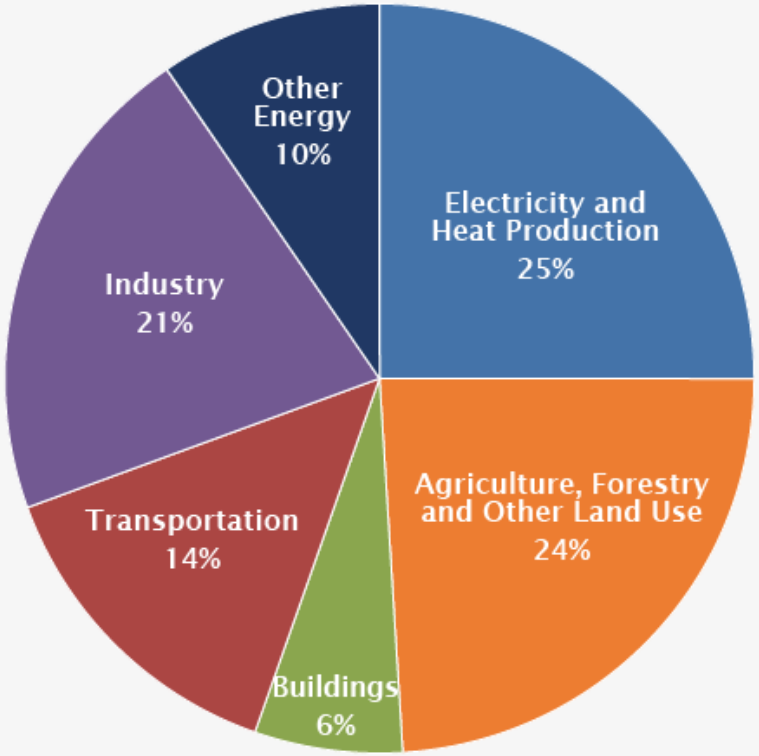


Source: IPCC

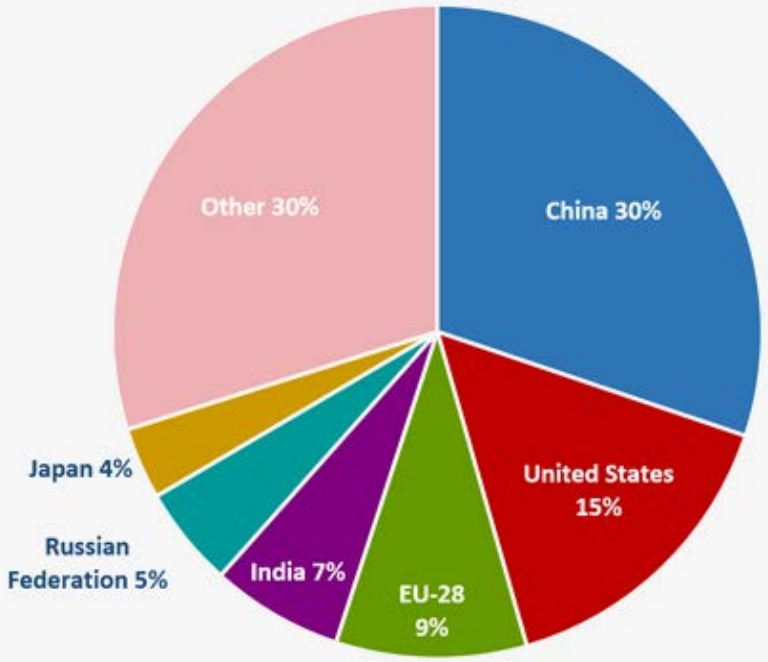
Global Greenhouse Gas Emissions by Gas



Global Greenhouse Gas Emissions by Economic Sector



2014 Global CO_2 Emissions from Fossil Fuel Combustion and Some Industrial Processes



Source: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

THE PARIS CLIMATE AGREEMENT: KEY POINTS

Temperatures
2100

- Keep warming 'well below 2C'
- Continue efforts to limit the rise in temperatures to 1.5C

Financing
2020-2025

- Rich countries must provide $US100bn from 2020, as a 'floor'
- Amount to be updated by 2025

Burden sharing

- Developed countries must provide financial resources to help developing countries
- Other countries are invited to provide support on a voluntary basis

Climate-related losses

- Vulnerable countries have won recognition of the need for 'averting, minimising and addressing' losses suffered because of climate change

Specialisation

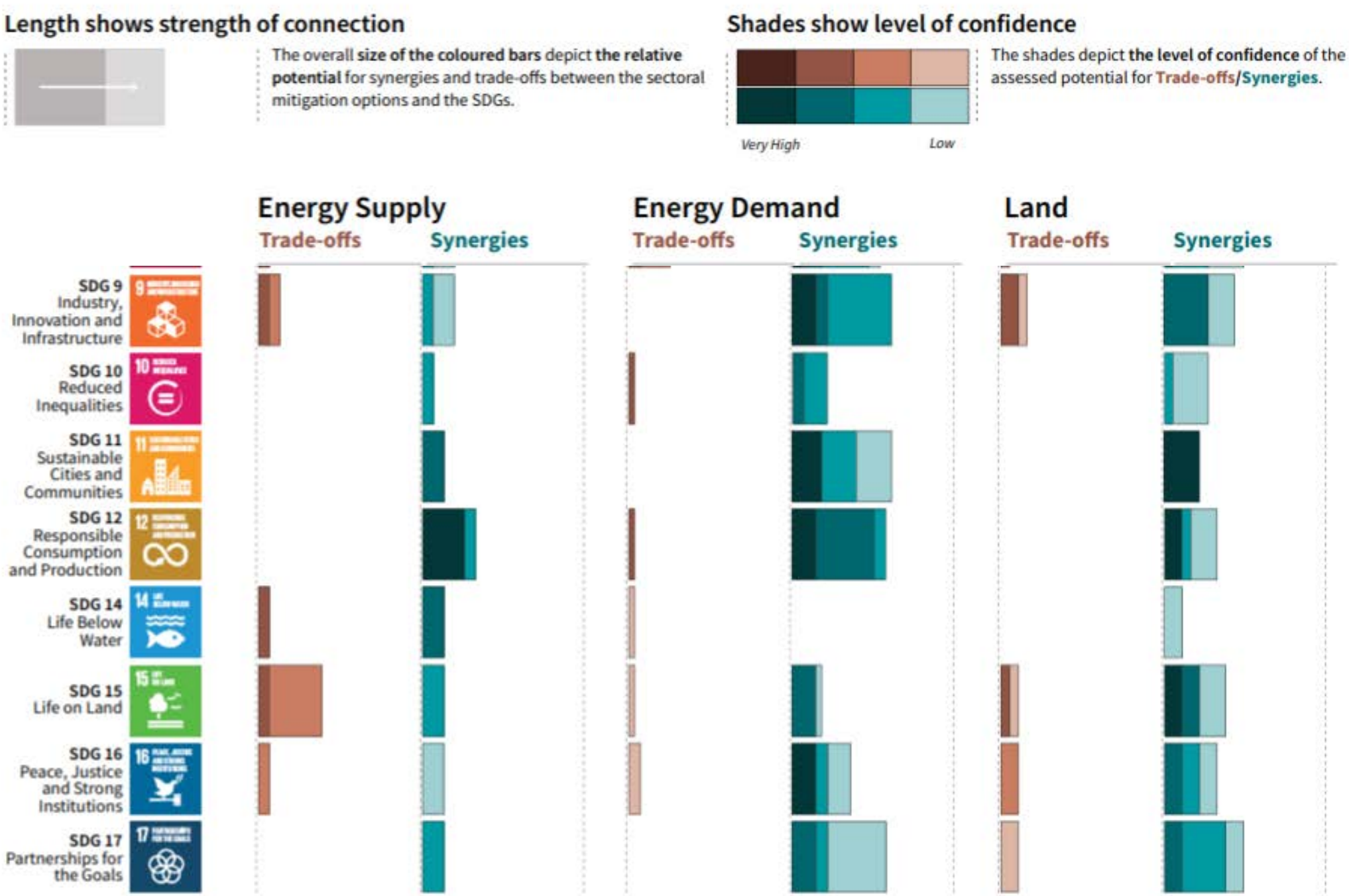
- Developed countries must continue to 'take the lead' in the reduction of greenhouse gases
- Developing nations are encouraged to 'enhance their efforts' and move over time to cuts

Emissions goals
2050

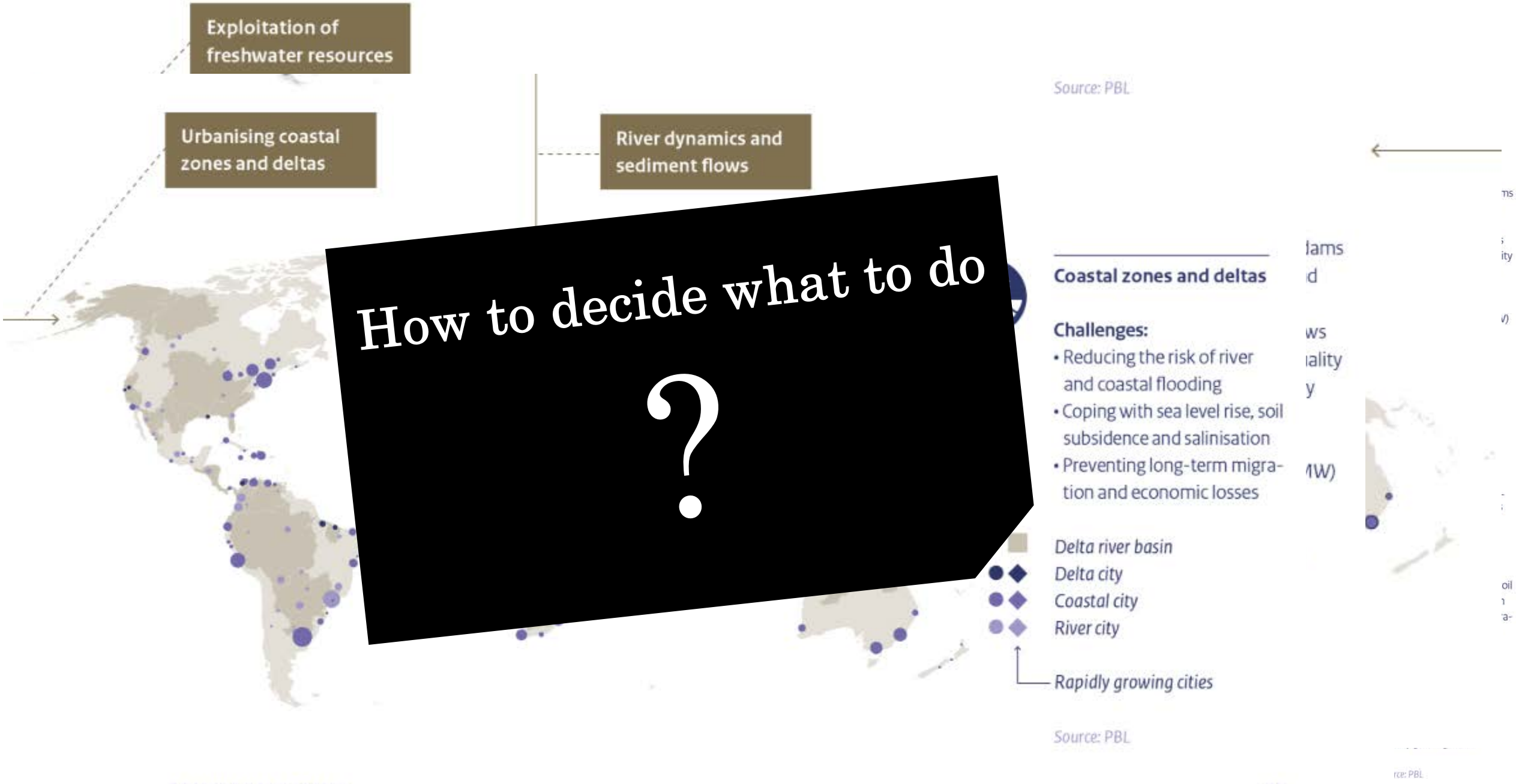
- Aim for greenhouse gas emissions to peak 'as soon as possible'
- From 2050: rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by 'sinks'

Review mechanism
2025

- A review every five years. First mandatory world review: 2025
- Each review to show an improvement compared with the previous period


Length shows strength of connection
The overall size of the coloured bars depict the relative potential for synergies and trade-offs between the sectoral mitigation options and the SDGs.
Shades show level of confidence
The shades depict the level of confidence of the assessed potential for Trade-offs/Synergies.
Very High
Low
Energy Supply
Trade-offs
Synergies
Energy Demand
Trade-offs
Synergies
Land
Trade-offs
Synergies
SDG 9 Industry, Innovation and Infrastructure
SDG 10 Reduced Inequalities
SDG 11 Sustainable Cities and Communities
SDG 12 Responsible Consumption and Production
SDG 14 Life Below Water
SDG 15 Life on Land
SDG 16 Peace, Justice and Strong Institutions
SDG 17 Partnerships for the Goals

Source: IPCC



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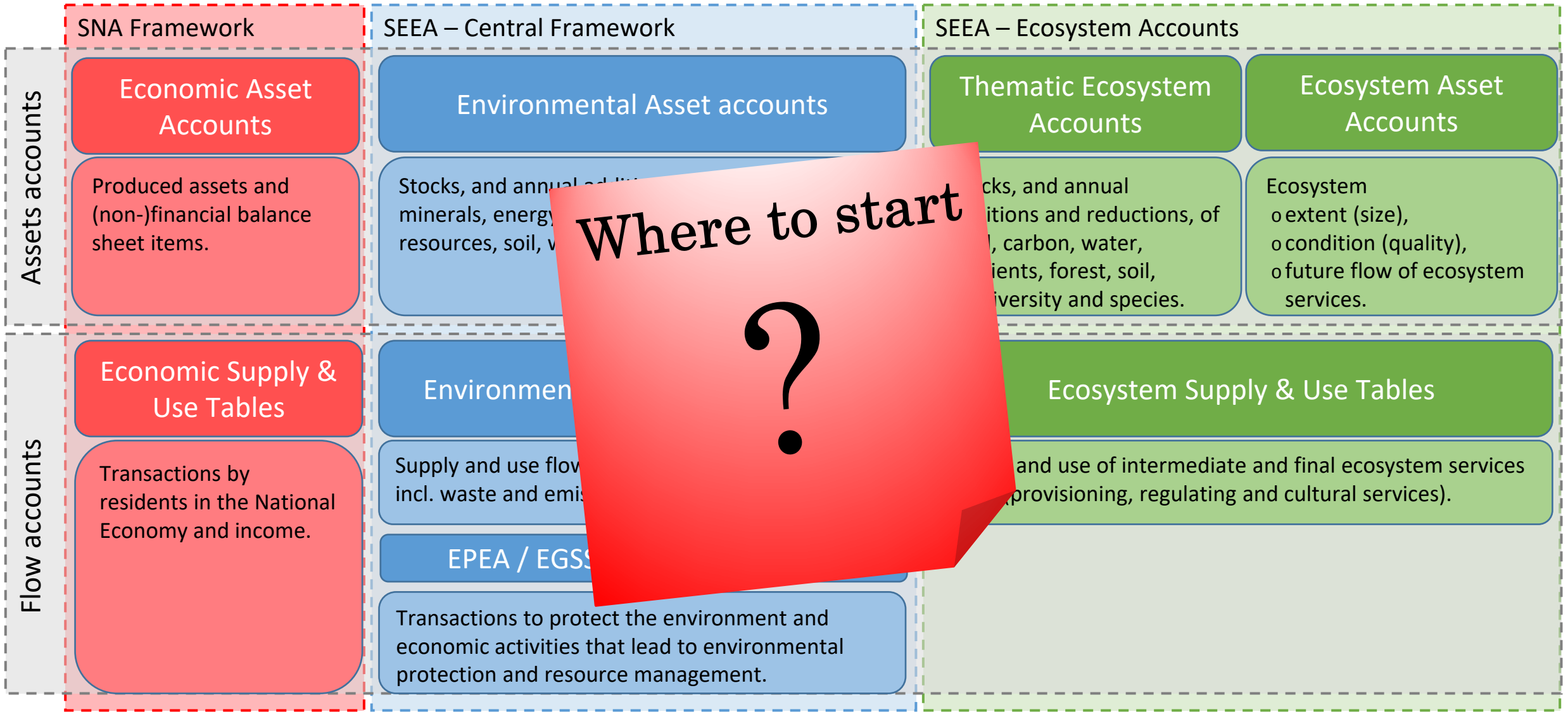
SNA Framework
SEEA – Central Framework
SEEA – Ecosystem Accounts
Assets accounts
Flow accounts
Economic Asset Accounts
Environmental Asset accounts
Thematic Ecosystem Accounts
Ecosystem Asset Accounts
Produced assets and (non-)financial balance sheet items.
Stocks, and annual
minerals, energy
resources, soil,
cks, and annual
itions and reductions, of
, carbon, water,
ients, forest, soil,
iversity and species.
Ecosystem
o extent (size),
o condition (quality),
o future flow of ecosystem services.
Economic Supply & Use Tables
Environmen
Ecosystem Supply & Use Tables
Transactions by residents in the National Economy and income.
Supply and use flow
incl. waste and emis
and use of intermediate and final ecosystem services
provisioning, regulating and cultural services).
EPEA / EGSS
Transactions to protect the environment and economic activities that lead to environmental protection and resource management.
Where to start
?

Types

- Trends in greenhouse gas emissions?
- Trends in emissions embodied in trade?
- Trade-offs between LULUCF and emissions?
- Sectoral shifts due to emission policies?
- Synergies between climate and air quality policies?
- Impacts of fiscal greening?
- Impacts of landfill policies?

Mitigation

Emboddied

from fossil fuel use

- Trends in water availability, water use, flooding/drought probabilities?
- Trends in agricultural productivity?
- Relationships between soil erosion and climate change?
- Relationship between water availability and economic development?
- Impacts of water management policies?
- Effectiveness of urban adaptation programmes?

Adaptation

Water management

Agricultural productivity

SNA		Economic SUT & Labour, techn, agric., energy,…
SEEA Central Framework	EPEA/ EGSS/ Tax / Subs.	Activities and transactions to protect the environment and manage natural resources
	Supply and Use Tables	Flows of energy, water, materials
		Flows of waste and emissions to soil, air and water
	Asset Accounts	Stocks of minerals, (renewable) natural resources, timber, water
SEEA Ecosystem Accounts	Thematic Ecosystem Accounts	Land use and land cover
		Stocks of carbon, soils and nutrients
		Stocks of biodiversity and species
	Ecosystem Asset Accounts	Extent of ecosystems (size)
		Condition of ecosystems (quality)
		Future flow of ecosystem services (capacity to generate future flows)
	ESS Acc.	Supply and use of ecosystem services

Greenhouse gas emissions per sector and source

Climate related activities, expenditures, taxes, subsidies,…

Relation energy use – greenhouse gas emissions

Adapt agricultural policies

EU
- Air emission account
- Material flow account
- Environmental tax account
- Physical ene
- EPEA
- EGSS

Netherland
- Air emis
for forwa
National
- Water ac
planning at municipal and river basin level

Zambia
- Water accounts for identifying and monito
adaptation needs.

Indonesia
- Forward look System Dynamics Model, integrating resource scarcity, ecosystem services and carrying capacity
- Macro-economic model for Midterm Development Plan looking at sustainability

Colombia:
- Air emission accounts, EPEA, ReMEA to monitor emission

of
get
ts of
ssion
footprint

Lessons

- Current focus is on measuring emissions and energy use.
- Less focus on emissions from LULUCF, agriculture, waste and trade.
- Limited attention for using NCA for adaptation.
  - Is disaggregation sufficiently detailed?
  - Do subnational users have access to the data?
- Accounts also for broader sustainability assessments.

Lessons

- Choose your accounts wisely; for mitigation one normally needs other accounts than for adaptation.
- A snowball effect may lead to increased use. Accounting provides a basis for cooperation.
- Developed and developing economies can learn from each other.

Planbureau voor de Leefomgeving

Thank you

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