



**The WG III Outline of the
5th IPCC Assessment Report**
10th Session of the IPCC WG III, October 26th, 2009

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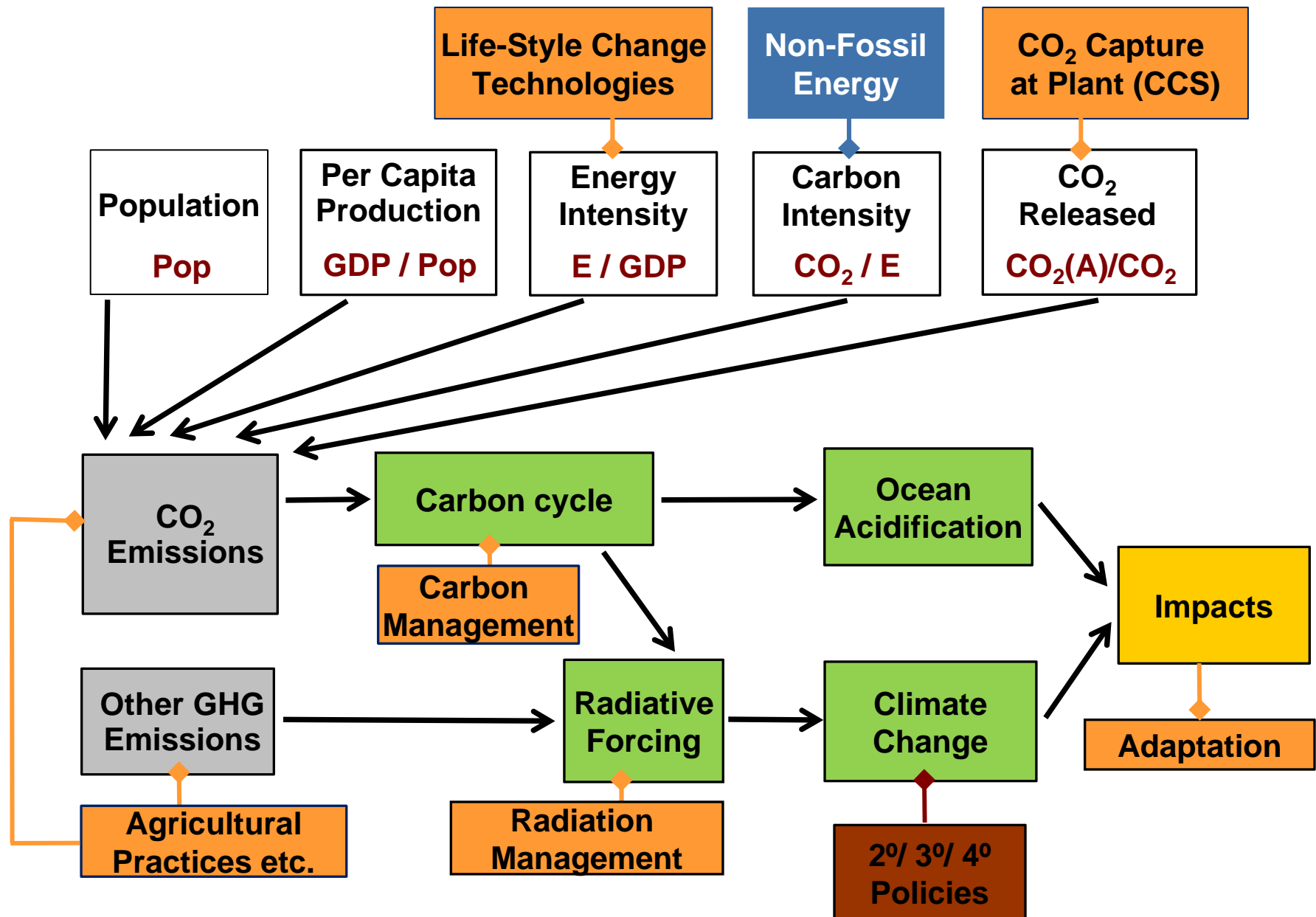
Table of Contents

- AR5 WG III: Structure & Philosophy
- Part III
 - Underlying Philosophy
 - The Chapters: Changes & Key Topics

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Explore and Assess the Solutions Space



The Parts of the WG III AR5 Outline

Part I
Introduction

Part II
Framing Issues

Part III
Pathways for Mitigating Climate Change

Part IV
Assessment of Policies, Institutions and Finance

Part V: Financing Transformations

The Chapters of the WG III AR5 Outline

Part I

1. Introductory Chapter

Part II

2. Sustainable Development – Common and Specific Regional Aspects
3. Ethics & Equity & Climate Policy
4. Integrated Risk and Uncertainty Assessment of CC Response Policies
5. Economic Analyses of Climate Policy

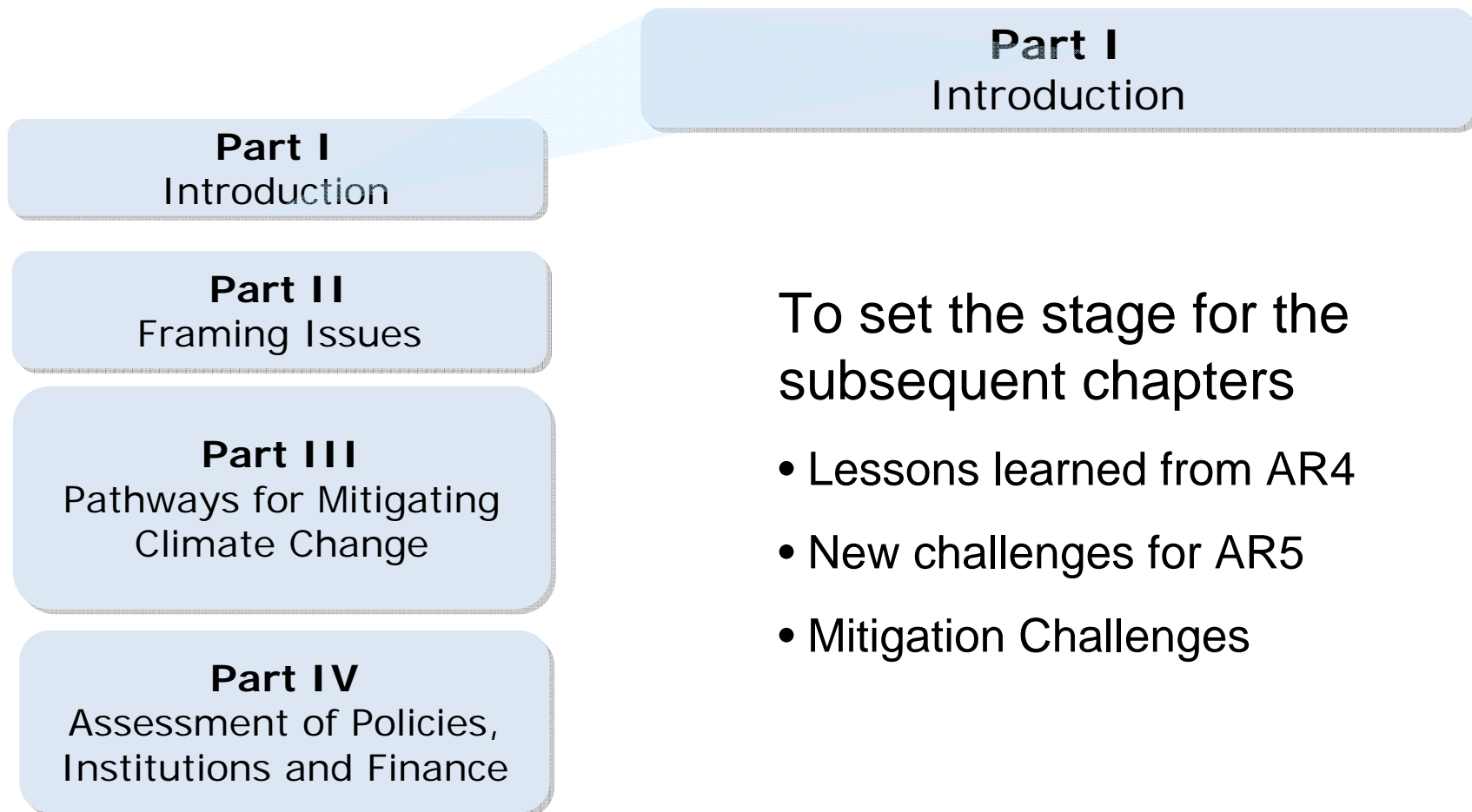
Part III

6. Mitigation Options and Pathways in Context
7. Energy Systems
8. Transport
9. Buildings
10. Industry
11. Agriculture, Forestry and Other Land Use
12. Human Settlements, Infrastructure and Spatial Planning
13. Assessing Transformation Pathways

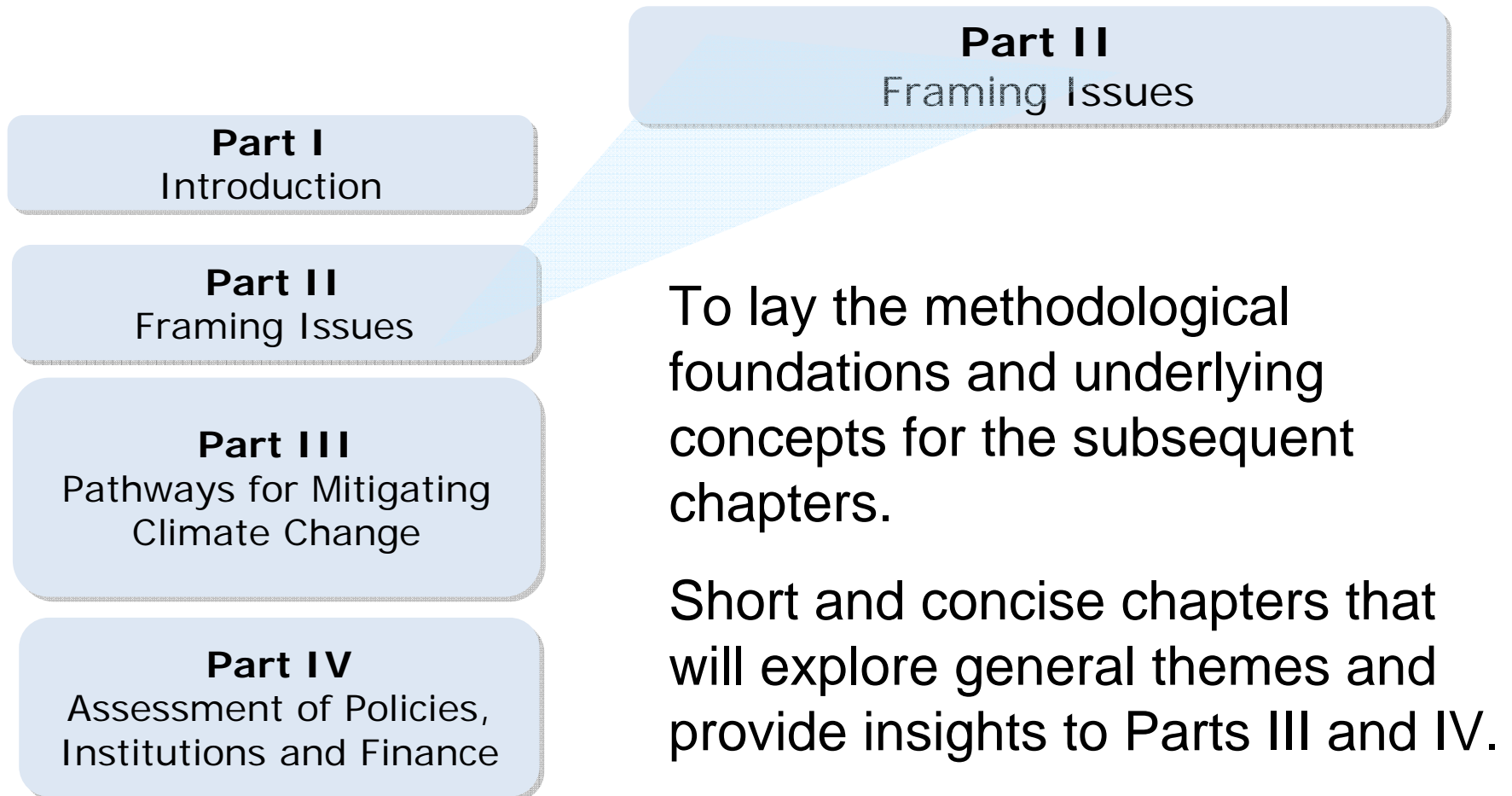
Part IV

14. International Cooperation: Agreements & Instruments
15. Regional Development and Cooperation
16. National and Sub-national Policies
17. Investment and Finance

The Philosophy of the WG III AR5 Outline



The Philosophy of the WG III AR5 Outline



The Philosophy of the WG III AR5 Outline

Part I
Introduction

Part II
Framing Issues

Part III
Pathways for Mitigating
Climate Change

Part IV
Assessment of Policies,
Institutions and Finance

Part III
Pathways for Mitigating Climate
Change

To provide an integrated assessment of sectors (from a bottom-up perspective) and transformation pathways (from a top-down perspective).

The Philosophy of the WG III AR5 Outline

Part I
Introduction

Part II
Framing Issues

Part III
Pathways for Mitigating
Climate Change

Part IV
Assessment of Policies,
Institutions and Finance

Part IV
Assessment of Policies, Institutions
and Finance

To assess policies on all scales,
from international to sub-national,
and the role of investment and
finance for mitigation.

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The Philosophy of the WG III AR5 Outline

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Part IV
Assessment of Policies,
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Part III
Pathways for Mitigating Climate
Change

To provide an integrated assessment of sectors (from a bottom-up perspective) and transformation pathways (from a top-down perspective).

Chapter

Part III

6. Mitigation Options and Pathways in Context

7. Energy Systems

8. Transport

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

12. Human Settlements, Infrastructure and
Spatial Planning

13. Assessing Transformation Pathways

Background and
Context for
Following Chapters

Part III

6. Mitigation Options and Pathways in Context

7. Energy Systems

8. Transport

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

Sectoral
Chapters

12. Human Settlements, Infrastructure and
Spatial Planning

13. Assessing Transformation Pathways

Part III

6. Mitigation Options and Pathways in Context

7. Energy Systems

8. Transport

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

Bottom-up

12. Human Settlements, Infrastructure and
Spatial Planning

13. Assessing Transformation Pathways

Part III

6. Mitigation Options and Pathways in Context

7. Energy Systems

8. Transport

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

12. Human Settlements, Infrastructure and
Spatial Planning

13. Assessing Transformation Pathways

Integrating Top-
down and
Bottom-up

Part III: Integration of Top-down and Bottom-up ¹⁷

6. Mitigation Options and Pathways in Context

7. Energy Systems

8. Transport

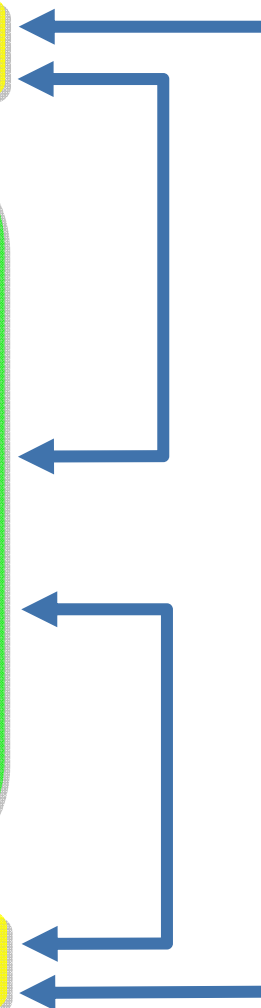
9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

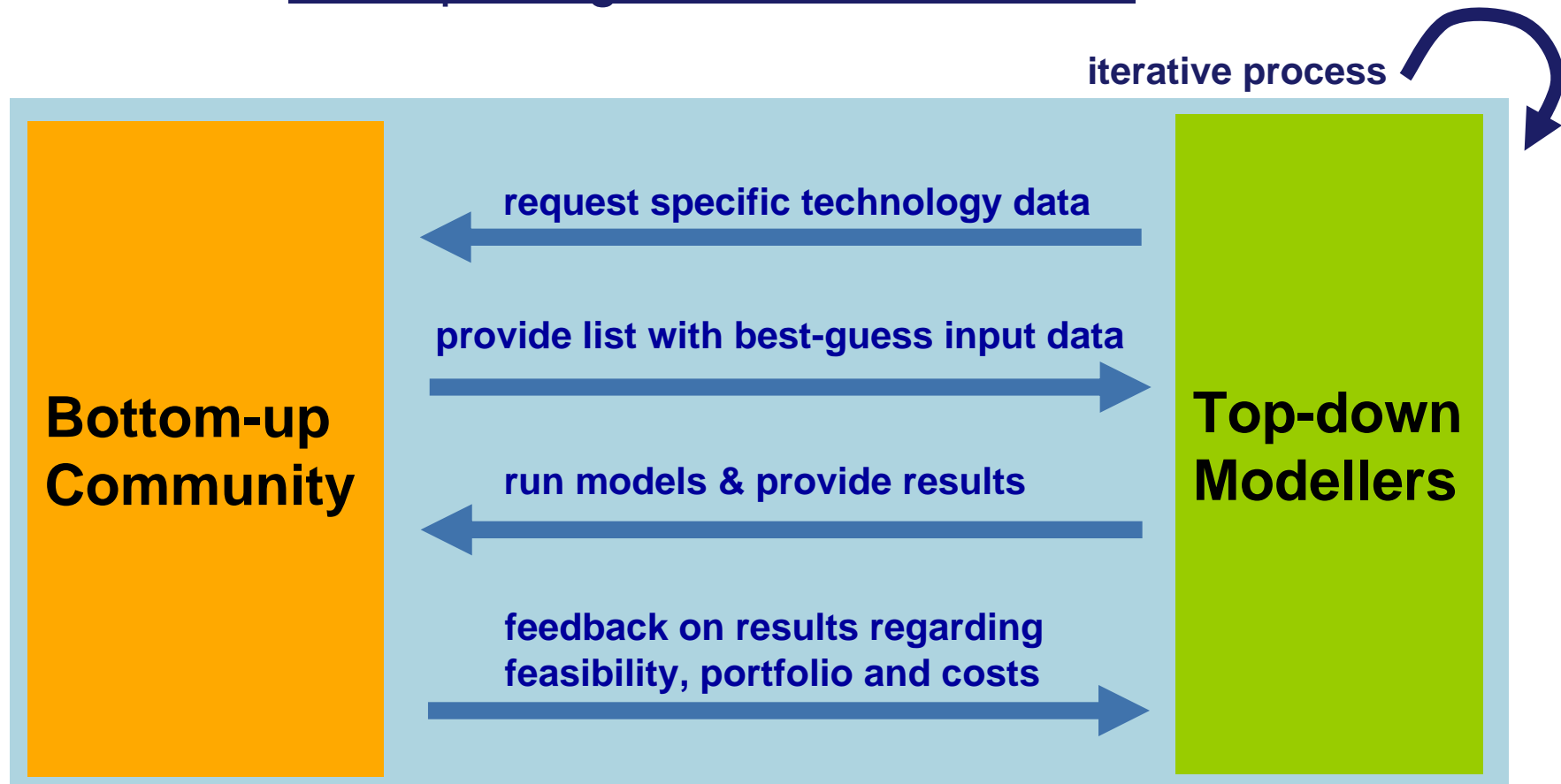
12. Human Settlements, Infrastructure and Spatial Planning

13. Assessing Transformation Pathways



Process for Integrating Top-down and Bottom-up

Based on Memorandum from WG III Expert Meeting on Scenarios: www.ipcc-wg3.de/scenario-memo



Goal: More realistic representation of policy space.
Added value compared with AR4!

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6. Mitigation Options and Pathways in Context

Overview

As an introductory chapter to Part III, Chapter 6 will provide the context for the subsequent sectoral chapters and will be written in close cooperation with WG I and WG II.

Chapter 6: Mitigation Options and Pathways in Context

- Global trends in stocks and flows of greenhouse gases and short-lived species
- Consumption patterns across countries
- Human settlements and infrastructure
- Food systems
- Related issues in terms of co-benefits and co-costs
- Trends in technologies
- Carbon and radiation management and other geoengineering options
- The system perspective: linking sectors, technologies and consumptions patterns

Update on

aerosols

Chapters 7-12: The Sectoral Chapters and Chapter 12

7. Energy Systems

8. Transport

Human Settlements
and Buildings

9. Buildings

10. Industry

11. Agriculture, Forestry and Other Land Use

12. Human Settlements, Infrastructure and
Spatial Planning

Chapters 7-11: The Sectoral Chapters



- 7. Energy Systems
- 8. Transport
- 9. Buildings
- 10. Industry
- 11. Agriculture, Forestry and Other Land Use

Sector chapters will incorporate a bottom-up approach (following a similar format across chapters) and will be integrated with the top-down perspective presented in Chapter 13. They will also evaluate information from models and scenarios.

Sector chapters are of similar structure. Differences between Chapters 7 through 10 are indicated in *italics*.

Part III: **Chapter 7: Energy Systems
Overview**

Focus of the chapter:
Energy production, conversion, transmission and distribution

Will include insights from SRREN where applicable

Special Report on Renewable
Energy Sources and Climate
Change Mitigation

- Energy production, conversion, transmission and distribution
- New developments in emission trends and drivers
- *Resources and resource depletion*
- Mitigation technologies and practices
- Infrastructure and systemic perspectives
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, and social acceptability
- Co-benefits, co-costs, spillover effects
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

Part III: Chapter 7: Energy Systems

and Transformation ²⁶

- Energy production, conversion, transmission and distribution
 - New developments in emission trends and drivers
 - *Resources and resource depletion*
 - Mitigation technologies and practices — **infrastructure**
 - Infrastructure and systems perspectives
 - Climate change
 - Technological, economic uncertainties, and
 - Co-benefits, co-
 - Barriers and op institutional, cultural
 - Sustainable dev
 - Costs and potentials
 - Gaps in knowledge
- incl. technology maturity, diffusion & deployment rates, Demand Side Management (DSM), Combined Heat Power (CHP), hydrogen routes to decarbonization, super smart grids
 - synergies/tradeoffs/interactions with adaptation and other mitigation options

Part III: Chapter 7: Energy Systems

and
Transformation ²⁷

- *Energy production, conversion, transmission and distribution*
- New developments in emission trends and drivers
- *Resources and resource depletion*
- Mitigation technologies and practices — **infrastructure**
- Infrastructure and systemic perspectives
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, and social acceptability
- Co-benefits, co-costs, spillover effects — **disbenefits**
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

Part III: Chapter 8: Transport

Humand Settlements²⁸ and Buildings

- Freight and passenger transport (land, air, sea)
- New developments in emission trends and drivers
- Mitigation technologies and practices
- Infrastructure and systemic perspectives
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, social acceptability
- Co-benefits, co-costs, spillover effects
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

infrastructure
(including life style
changes and efficiency)

disbenefits

(including
settlement
structures
and lifecycle
assessments)

Part III: Chapter 9: Buildings

- Commercial, residential and public buildings
- New developments in emission trends and drivers
- Mitigation technologies and practices
- Infrastructure and systemic perspectives
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, social acceptability
- Co-benefits, co-costs, spillover effects
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

Part III: Chapter 10: Industry

- New developments in emission trends and drivers
- Material Reuse and Waste
- Mitigation technologies and practices (including efficiency improvements)
- Infrastructure and **industrial waste**
- **improved recycling of materials**
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, social acceptability
- Co-benefits, co-costs, spillover effects
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

Part III: Chapter 10: Industry

- New developments in emission trends and drivers
- Material Reuse and Waste
- Mitigation technologies and practices (*including efficiency improvements, household and industry waste*)
- Infrastructure and systemic perspectives
- Climate change feedback and interaction with adaptation
- Technological, environmental and other risks and uncertainties, social acceptability
- Co-benefits, co-costs, spillover effects
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

infrastructure

disbenefits

Part III: Chapter 11: Agriculture, Forestry and Other Land Use (AFOLU) (1 of 2)

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- Challenge: need for an integrated view of land-use sector mitigation
- Emission trends and agricultural productivity patterns
- Mitigation technologies and land-uses (incl. degradation rates) **incl. biofuel production, bottom-up & regional assessment, sustainable development implications**
- Mitigation effectiveness (short and long term, non-permanence, leakage, saturation)
- Systemic perspectives (including integrated land-use assessment)
- Competition of energy, food, livelihood, infrastructure, other land-uses
- Synergies / tradeoffs / interactions with adaptation and other mitigation options

(continued on next slide)

Part III: Chapter 11: Agriculture, Forestry and Other Land Use (AFOLU) (1 of 2)

- Challenge: need for an integrated view of land-use sector mitigation
- Emission trends and drivers, agricultural productivity patterns
- Mitigation technologies and practices in forestry, agriculture, other land-uses (including afforestation, reducing deforestation and forest degradation rates)
- Mitigation effects, land-use change, soil carbon management, including biochar
- Systemic perspectives, livestock agriculture in connection with mitigation options
- Competition of land-uses
- Synergies / tradeoffs / interactions with adaptation and other mitigation options

(continued on next slide)

Part III: Chapter 11: Agriculture, Forestry and Other Land Use (AFOLU) (1 of 2)

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- Challenge: need for an integrated view of land-use sector mitigation
- Emission trends and drivers, agricultural productivity patterns
- Mitigation technologies and practices in forestry, agriculture, other land-uses (including afforestation, reducing deforestation and forest degradation rates)
- Mitigation effectiveness (short and long term, non-permanence, leakage, saturation)
- Systemic perspectives (including integrated land-use assessment)
- Competition of energy, food, livelihood, infrastructure, other land-uses
- Synergies / tradeoffs / interactions with adaptation and other mitigation options

(continued on next slide)

Part III: Chapter 11: Agriculture, Forestry and Other Land Use (AFOLU)

(2 of 2)

(continued)

- Climate change feedback and natural disturbance
- Environmental and other risks and uncertainties, social access (on biodiversity).
- Co-benefits and trade-offs
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

Close coordination with WG I necessary

Part III: Chapter 11: Agriculture, Forestry and Other Land Use (AFOLU)

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(2 of 2)

(continued)

- Climate change feedback and natural disturbance
- Environmental and other risks and uncertainties, social acceptability (including impacts on biodiversity).
- Co-benefits, co-costs, spillover effects disbenefits
- Barriers and opportunities (technological, financial, institutional, cultural, legal, etc)
- Sustainable development aspects
- Costs and potentials
- Gaps in knowledge

12. Human Settlements, Infrastructure and Spatial Planning



An integrative summary of all sectoral chapters, Chapter 12 will include insights from the joint WG II and WG III Expert Meeting ‘Human Settlements and Infrastructure’.

Chapter 12: Human Settlements, Infrastructure and Spatial Planning

- Settlement structures, and lifecycle assessments
- Lifestyle changes and efficiency
- Waste
- Water-energy nexus

Assessment of the mitigation potential of waste (excluding industrial waste).

Incl. methane from landfills & incineration

aspects specific to developed countries

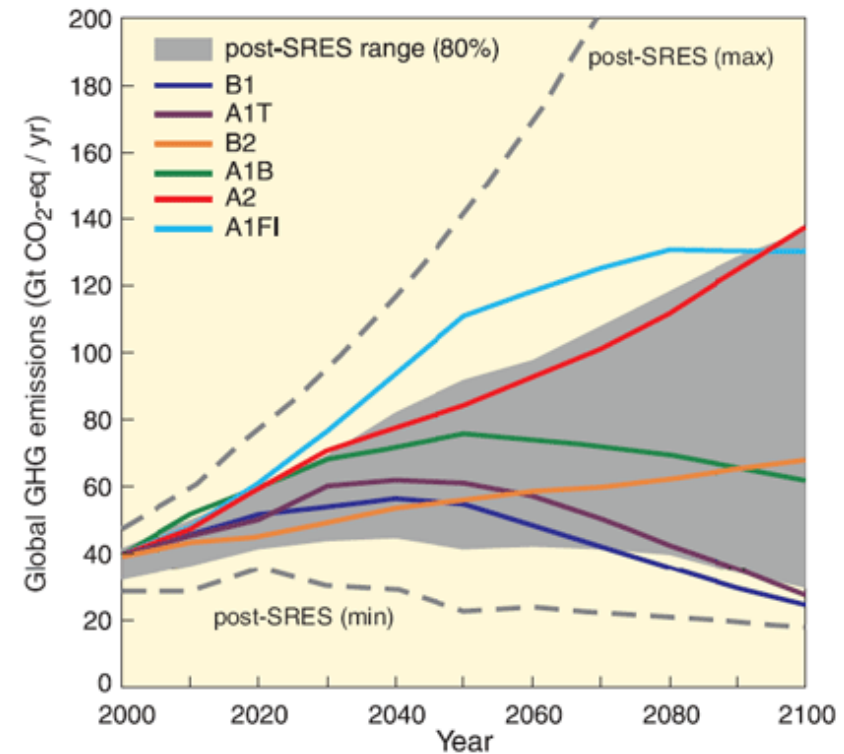
- Urban and rural development and climate: aspects specific to developing countries

Chapter 12: Human Settlements, Infrastructure and Spatial Planning

- Settlement structures, and lifecycle assessments
- Lifestyle changes and efficiency
- Waste
- Water/energy nexus
- Urban and rural development and climate: common experiences across countries
- Urban and rural development and climate: aspects specific to developed countries
- Urban and rural development and climate: aspects specific to developing countries

13. Assessing Transformation Pathways

Scenarios are the backbone of consistency between WG II and WG III.



This chapter

- uses top-down information to run transformation pathways
- brings together sectoral information (bottom-up) and dynamic perspectives in an overall assessment of transformation pathways.

- Tools of analysis
- Climate stabilization: concepts, costs and implications for sectors and technology portfolios, taking into account differences across regions
- Integrating long- and short-term perspectives
- Integrating technological and socio-economic perspectives
- Sustainable development and equity considerations, taking into account differences across regions
- Risks of transformation pathways
- Integrating sector analysis and scenario development

Storylines are defined here and/or in collaboration with WG II. Clustering of scenario results to derive policy relevant messages.

- Tools of analysis
- Climate stabilization: concepts, costs and implications for sectors and technology portfolios, taking into account differences across regions
- Integrating long- and short-term analyses
- Integrating technological analysis of 2nd best policies
- Sustainable development transition pathways, taking into account differences across regions
- Risks of transformation pathways
- Integrating sector analyses and transformation scenarios

includes
analysis of 2nd
best policies

- Tools of analysis
- Climate stabilization: concepts, costs and implications for sectors and technology portfolios, taking into account differences across regions
- Integrating long- and short-term perspectives
- Integrating technological and societal change
- Sustainable development and transformation pathways, taking into account differences across regions
- Risks of transformation pathways
- Integrating sector analyses and transformation scenarios

Final Remark

The IPCC is the honest broker between experts and decision makers in business, politics and civil society.

The IPCC should be policy relevant without being policy prescriptive.

Let's tackle the next big step on this path in a joint spirit this week!