



Report on the 46th IPCC Plenary and the Sixth Assessment Cycle

Prepared by Kaela Slavik, Thorsten Kiefer, Paula Monroy and Brenna Walsh
11 October 2017

Introduction	1
46th IPCC Plenary	1
Future Earth	2
Delegation	2
CitiesIPCC side event	2
Evolution of AR6 from AR5	2
Increased integration across the three Working Groups	2
Loss and damage	3
Geoengineering	3
Global Stocktake	3
Emphasis on human and social sciences	4
Regions	4
Risk	5
Upcoming opportunities to engage in AR6	6
Quick Facts:	
Special Report on Global Warming of 1.5°C (SR1.5)	8
Special Report on Climate Change and Land (SRCCL)	9
Special Report on Oceans and the Cryosphere in a Changing Climate (SROCC)	10
Assessment Report 6	11
Working Group I	11
Working Group II	12
Working Group III	14

Introduction

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body responsible for assessing the science related to climate change and providing policymakers with regular scientific assessments of our knowledge of climate change, its implications and risks, and adaptation and mitigation strategies. Currently during its sixth assessment cycle, the IPCC will produce a Special Report on Global Warming of 1.5°C (SR1.5), a Special Report on Climate Change and Land (SRCCL), a Special Report on Oceans and the Cryosphere in a Changing Climate (SROCC) and the Sixth Assessment Report (AR6), including a Synthesis Report (SYR), by 2022. As with previous assessment cycles, three Working Groups, each with a different focus, will contribute to AR6. Working Group I is responsible for providing the physical science basis of the climate system and climate change, whilst Working Group II aims to address impacts, adaptation and vulnerability in the context of climate change and Working Group III considers mitigation options. Table 1, below, summarises the status of the reports of the IPCC’s sixth assessment cycle.

Table 1: Overview of the status of the different reports of the IPCC’s sixth assessment cycle.

Report	Status (early Oct 2017)	Publication date
SR1.5	Review of first order draft	September 2018
SRCLL	Authors selected	September 2019
SROCC	Authors selected	September 2019
WGI	Call for authors	April 2021
WGII	Call for authors	July 2021
WGIII	Call for authors	October 2021
SYR	-	First half of 2022

46th IPCC Plenary

The IPCC’s 46th Plenary Session took place in Montréal from 6-10 September 2017. Representatives from member countries and various observer organisations, including Future Earth, were present along with the IPCC Working Groups.

The [agenda](#) covered key topics, including the funding situation and the approval of the chapter outlines for each Working Group. Some topics outside the original agenda were also discussed, such as enhancing the gender balance in the IPCC, which was initially highlighted at a side event hosted by the Canadian Delegation, and regional (under)representation, not only in the context of the Global South but also from an intra-regional perspective, with the example given of eastern Europe.

Future Earth

Delegation

Future Earth was represented at the Plenary by a strong delegation, bringing together representatives from the Future Earth Secretariat, the City of Edmonton, the Human Impact Lab, Ouranos, the Inter-American Institute for Global Change Research, the International Global Atmospheric Chemistry (IGAC) and local universities. The full participant list can be viewed [here](#).

Interventions

Future Earth made three interventions during the Plenary,

- 1) supporting and proposing expansion of the inclusion of short-lived climate forcers during the Working Group I Plenary,
- 2) supporting the inclusion of a coherent risk framework across the Working Groups, encouraging the inclusion of short-lived climate forcers and supporting the inclusion of local and indigenous knowledge in Working Group II, and
- 3) highlighting the potential weakening of the IPCC's scientific basis if resources were to be diverted from scientific research to the IPCC organisation as a strategy to improve financial stability.

CitiesIPCC side event

On 9 September 2017, Ben Henderson, Edmonton City Councillor, moderated a panel to engage delegates in the upcoming Cities and Climate Change Science Conference, co-sponsored by the IPCC at a side event held during the lunch break.

The chair of the IPCC Hoesung Lee opened the side event, reiterating the importance of cities in the IPCC assessments. As Future Earth is one of the co-organisers of the CitiesIPCC conference, Anne-Helene Prieur-Richard, Global Hub Director for the Montreal Hub, took a seat as a panelist alongside Working Group II Co-Chair Debra Roberts, Seth Schultz of the C40 Cities Climate Leadership Group and Working Group III Vice-Chair Diana Ürge-Vorsatz.

Evolution of AR6 from AR5

Increased integration across the three Working Groups

AR6 is aiming to increase cohesion between the three Working Groups as compared to AR5, through (1) the establishment of a common glossary across the three Working Groups to ensure consistency in the use of terms, (2) a stronger emphasis on regional aspects at the interface between climate response and impact and (3) consideration of cross-cutting issues such as co-benefits, risks and co-costs of mitigation and adaptation, including interactions and trade-offs, technological (e.g. carbon capture storage, solar

radiation management, geoengineering) and financial (e.g. public-private partnerships) challenges and options.

Multiple countries supported plans for the establishment of cross-Working Group task forces to support the increased coordination and cohesion across the Working Groups in terms of scenarios, risks, references and terminology. The fourth decision in the chapter outline of each Working Group reflects this, stating that the IPCC decides *“to invite the Co-Chairs of Working Group I and the Co-Chairs of WGII and WGIII to develop appropriate mechanisms to ensure the effective co-ordination of Working Group contributions to the IPCC Sixth Assessment Report, to oversee the treatment of cross-cutting themes, and to prepare a Glossary common to Working Groups I, II and III.”*

Working Group II reiterates this desire for coordination across the Working Groups by proposing the inclusion of a summary table and/or figures, which will combine information from Working Groups I and II with risk assessment for some highlighted regions.

Loss and damage

Building on earlier attempts to reference the concept of loss and damage, Chapter 1 of Working Group II aims to address the *“scientific, technical and socioeconomic aspects of current and future residual impacts of climate change, including residual damage, irreversible loss, and economic and non-economic losses caused by slow onset and extreme events.”* This statement goes further than the approved outlines for SROCC and SRCCL, which refer to *“vulnerability assessments, adaptation limits and residual risks”*.

Geoengineering

Working Group I will consider climate responses to solar radiation management and greenhouse gas removal scenarios, such as carbon capture and storage, expanding and updating the assessment of the current body of knowledge started in AR5, whilst Working Group III will look at the ethics and governance of solar radiation management and its associated risks. In AR5, adaptation and mitigation options were predominantly considered by Working Groups II and III, concluding that while carbon capture and storage plays a role in many mitigation scenarios and could potentially reduce greenhouse gas levels, solar radiation management is untested and not currently included in any of the mitigation scenarios. Solar radiation management does however have the potential to offset global temperature rise to some degree, although with numerous uncertainties, side effects, risks and shortcomings. AR6 will attempt to address these uncertainties and answer questions of costs, risks, governance and the ethical implications of development and deployment.

Global Stocktake

A key mechanism of the Paris Agreement, which was adopted at 21st Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change, is the Global Stocktake. The Global Stocktake is *“an assessment of collective progress towards achieving the purpose of the Agreement and its long-term goals”*, which will be conducted every five years, beginning in 2023, by all member countries. In addition to checking progress towards the goals of the Paris Agreement, the Global

Stocktake allows countries to identify what still needs to be done and thereby strengthen their actions and submit new national climate commitments. All three Working Groups refer to the Global Stocktake in their first chapter to frame their contribution in the changing policy context.

The potential alignment of AR7 with the Global Stocktake led to some debate during the Plenary, with options including reducing the assessment cycle to five years, increasing it to 10 years with short intermediate reports every 5 years or maintaining the current seven-year assessment cycle with Special Reports when the Global Stocktake and IPCC cycles are out of sync. A resolution was not reached and instead a task force was established to address this issue, co-chaired by France and Mexico. Its mandate will be agreed at IPCC's next plenary meeting (IPCC-47).

Emphasis on human and social sciences

Working Groups II and III are increasingly emphasising the human dimension of climate change, by considering the perception of risks and benefits of climate change, adaptation and mitigation options, and societal responses, including psychological and sociological aspects. For example, Working Group II's section on regions transitions into the human and social sciences, with each considering cultural and psychological dimensions, including values, attitudes, ethical aspects, identity, behaviours and different types of knowledge systems, and governance and economic aspects including legal, institutional, financing, price responses and trade. In Working Group II, Chapter 5, "*Demand, services and social aspects of mitigation*," embodies this transition by considering the role of social acceptability, behavioural and lifestyle change and culture in mitigation solutions, as well as sustainable consumption, human needs, access to services, affordability and indicators of wellbeing in sustainable development pathways.

Regions

AR6 will place a much larger emphasis on the effects of climate change at the regional scale as compared to AR5, as evidenced by the approved chapter outlines. The Working Groups will address cross sectoral, intra- and inter-regional issues, along with current sectoral climate risks, including specific regional and sub-regional considerations related to land, coasts and regional oceans. In Working Group I, Chapter 9 explicitly refers to regional sea level changes, whilst Chapter 10 is dedicated to linking global to regional climate change and Chapter 12 aims to provide climate change information for regional impact and risk assessment. The chapter outline for Working Group II emphasises the regional scale in relation to risk and adaptation options for food production.

Working Group II, as in AR5, has a section dedicated to regions, although polar regions are now considered in a cross-chapter paper and oceans addressed separately by the Special Report on Oceans and the Cryosphere in a Changing Climate. Each regional chapter will cover regional and sub-regional climate characteristics and zones, detection and attribution of observed impacts and region-specific information on exposure and vulnerability as well as diverse adaptation options. The Mediterranean region, which was not explicitly considered in AR5, will be addressed in a cross-chapter paper. Working Group III refers extensively to regions and the regional scale, with only four chapters not containing a reference.

Risk

Working Group II is liaising with Working Groups I and III to ensure a common risk approach, as while there is a strong reference to risk throughout Working Group II, risk is much less emphasised in Working Groups I and III. Working Group II places climate change into a perspective of framing, quantification and expression of risk, which is needed to guide decision making. There is a recognised need to develop a common definition of risk (see Figure 1) and a risk framework to compare climate impacts across the different sectors and Working Groups.

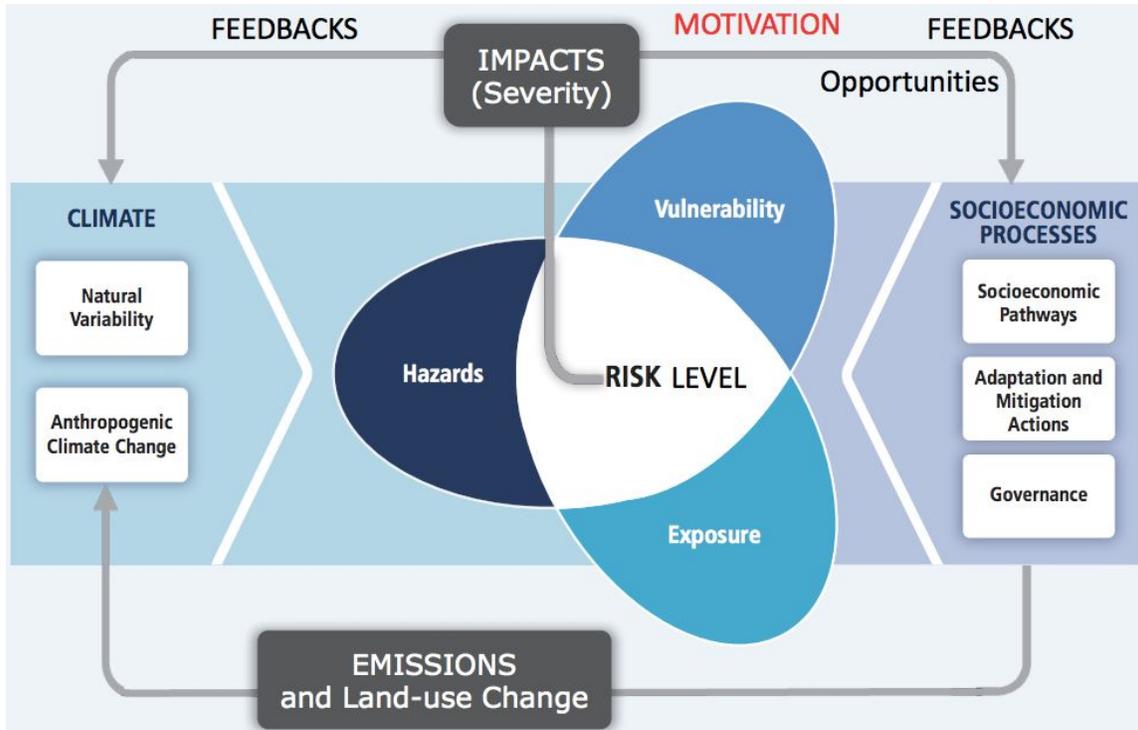


Figure 1: Working Group II views risk as a combination of hazards, vulnerability and exposure (based on a figure in IPCC WGII AR5 (2014)).

Working Group II aims to integrate other risk approaches, such as that of planetary boundaries, with its Burning Embers risk visualisation (introduced in AR5), and link it to the Intended Nationally Determined Contributions and the Global Stocktake introduced by the Paris Agreement. At a regional level, Working Group II will address the interaction of risks and responses to climate change with sustainable development pathways along with observed impacts and projected risks, including extremes and sea level rise.

Chapter 12 of Working Group I, “Climate change information for regional impact and for risk assessment” which was informed by the 2016 Future Earth-PROVIA-IPCC risks and solutions workshop held in Stockholm, is directly aimed at addressing risk assessment across the different Working Groups. The chapter covers the framing of physical climate system and hazards, region-specific methodologies and integration of information as well as information on and the relationship between changing hazards.

Upcoming opportunities to engage in AR6

There are many upcoming opportunities to engage with AR6 and the Special Reports, as highlighted in the table below.

Table 2: Upcoming opportunities and important dates to contribute to AR6 and the Special Reports.

Report	Capacity	Dates
SR1.5	Literature	Submission: 1 November 2017 Acceptance: 15 May 2018
	Expert Reviewer (second order draft)	5 January - 25 February 2018
SROCC	Expert Reviewer (first order draft)	4 May - 29 June 2018
	Literature	~October 2018 - ~May 2019
	Expert Reviewer (second order draft)	16 November 2018 - 11 January 2019
SRCLL	Expert Reviewer (first order draft)	4 June - 22 July 2018
	Literature	TBC
	Expert Reviewer (second order draft)	29 October - 23 December 2018
WGs I, II and III	Coordinating Lead Author, Lead Author, Review Editor	15 September - 27 October 2017
	Expert Reviewer (first order draft)	WGI: 29 April - 23 June 2019 WGII: 21 October - 16 December 2019 WGIII: 9 December 2019 - 21 January 2020
	Literature	TBC
	Expert Reviewer (second order draft)	WGI: 2 March - 26 April 2020 WGII: 7 August - 2 October 2020 WGIII: 1 June - 24 July 2020

The call for coordinating lead authors, lead authors and review editors is open for all three Working Groups until 27 October 2017. Future Earth, as an IPCC observer organisation, invites nominations from experts from a range of scientific, technical and socio-economic views and backgrounds. In the sixth assessment cycle, IPCC strives to include a mix of authors from different regions, from developed and

developing countries and a balance of men and women, as well as between those experienced with working on IPCC reports and those new to the process.

Author nominations for AR6 are particularly encouraged from non-academic experts and practitioners and experts from the Global South. Furthermore, as this assessment report aims to be more integrative across the Working Groups, people with a proven ability to operate across two or three of IPCC's Working Group areas are especially encouraged to apply. Finally, as AR6 (particularly Working Groups 2 and 3) will focus more on human-social aspects of climate change, experts in the social sciences should feel encouraged to apply.

The full list of selected authors for all reports of the sixth assessment cycle can be found [here](#).

Quick Facts: Special Report on Global Warming of 1.5°C (SR1.5)

With publication in September 2018, SR1.5 will be the first of the sixth assessment cycle reports to be published. Prepared under the joint leadership of the three Working Groups, SR1.5 is supported by the [Working Group I Technical Support Unit](#), which is based at [Université Paris Saclay](#) in France. SR1.5 will consist of six chapters, focusing on the impacts of a global warming of 1.5°C above preindustrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty.

The six chapters are:

- Chapter 1: Framing and context
- Chapter 2: Mitigation pathways compatible with 1.5°C in the context of sustainable development
- Chapter 3: Impacts of 1.5°C global warming on natural and human systems
- Chapter 4: Strengthening the global response to the threat of climate change
- Chapter 5: Approaches to implementing a strengthened global response to the threat of climate change
- Chapter 6: Sustainable development, poverty eradication and reducing inequalities

There are still a lot of opportunities to get involved with SR1.5, either as an Expert Reviewer or through the submission of relevant literature, up until its publication in September 2018. The important dates for these activities are given by Figure 2 below.



Figure 2: Important dates for involvement in activities related to SR1.5.

Quick Facts: Special Report on Climate Change and Land (SRCCL)

SRCL is one of two Special Reports to be published in September 2019, along with SROCC, as part of the sixth assessment cycle. Prepared under the joint leadership of the three Working Groups, SRCCL is supported by the [Working Group III Technical Support Unit](#), which is jointly hosted by Imperial College London’s [Centre for Environmental Policy](#) and the [Indian Institute of Management](#). SRCCL will consist of seven chapters, focusing on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.

The seven chapters are:

- Chapter 1: Framing and Context
- Chapter 2: Land-Climate Interactions
- Chapter 3: Desertification
- Chapter 4: Land Degradation
- Chapter 5: Food Security
- Chapter 6: Interlinkages and Integrative Response Options
- Chapter 7: Emergent Risks, Decision Making and Sustainable Development

There are still a lot of opportunities to get involved with SRCCL, either as an Expert Reviewer or through the submission of relevant literature, up until its publication in September 2019. The important dates for these activities are given by Figure 3 below.



Figure 3: Important dates for involvement in activities related to SRCCL.

Quick Facts: Special Report on Oceans and the Cryosphere in a Changing Climate (SROCC)

SROCC is one of two Special Reports to be published in September 2019, along with SRCCL, as part of the sixth assessment cycle. Prepared under the joint leadership of Working Groups I and II, SROCC is supported by the [Working Group II Technical Support Unit](#), based at the [Alfred-Wegener Institute](#) in Germany. SROCC will consist of six chapters, addressing climate change and oceans and the cryosphere, as well as an Integrative Cross-Chapter Box on Low-Lying Islands and Coasts.

The six chapters are:

- Chapter 1: Framing and Context
- Chapter 2: High Mountain Areas
- Chapter 3: Polar Regions
- Chapter 4: Sea Level Rise and Implications for Coasts and Communities
- Chapter 5: Changing Ocean, Marine Ecosystems, and Dependent Communities
- Chapter 6: Extremes, Abrupt Changes and Managing Risks

There are still a lot of opportunities to get involved with SROCC, either as an Expert Reviewer or through the submission of relevant literature, up until its publication in September 2019. The important dates for these activities are given by Figure 4 below.



Figure 4: Important dates for involvement in activities related to SROCC.

Quick Facts: Assessment Report 6

There are many upcoming opportunities for involvement in the contribution of Working Group I, II and III to AR6 (Figures 5, 6 and 7), not limited to author nominations, which are open until 27 October 2017. The cut-off dates for literature submission and acceptance are yet to be finalised.

Working Group I

Working Group I focuses on the physical science basis of climate change and is supported by the [Working Group I Technical Support Unit](#), which is based at [Université Paris Saclay](#) in France. The [chapter outline](#) for the contribution of Working Group I to AR6 was approved at the 46th Plenary of the IPCC, which was held in Montreal from 6 to 10 September 2017. The important dates for activities involving Working Group I are given by Figure 5 below.



Figure 5: Important dates for involvement in activities related to WGI.

The contribution of WGI to AR6 is to cover 12 chapters, as given below:

- Chapter 1: Framing, context, methods
- Chapter 2: Changing state of the climate system
- Chapter 3: Human influence on the climate system
- Chapter 4: Future global climate: scenario-based projections and near-term information
- Chapter 5: Global carbon and other biogeochemical cycles and feedbacks
- Chapter 6: Short-lived climate forcers
- Chapter 7: The Earth’s energy budget, climate feedbacks, and climate sensitivity
- Chapter 8: Water cycle changes
- Chapter 9: Ocean, cryosphere, and sea level change
- Chapter 10: Linking global to regional climate change
- Chapter 11: Weather and climate extreme events in a changing climate
- Chapter 12: Climate change information for regional impact and for risk assessment

Working Group II

Working Group II focuses on assessing the scientific, technical, environmental, economic and social aspects of adaptation and vulnerability to climate change. Furthermore, Working Group II considers the impacts, both positive and negative, for ecological systems, socio-economic sectors and human health, with an emphasis on regional and cross-sectoral issues, and the adaptation needs, options, opportunities and constraints to reduce current and future risks. They are supported by the [Working Group II Technical Support Unit](#), based at the [Alfred-Wegener Institute](#). The important dates for activities involving Working Group II are given by Figure 6 below.



Figure 6: Important dates for involvement in activities related to WGII.

The [chapter outline](#) for the contribution of Working Group I to AR6 was approved at the 46th Plenary of the IPCC, which was held in Montreal from 6 to 10 September 2017. The contribution of WGII to AR6 will span 18 chapters, which are divided into three sections. In addition to the chapters, WGII will also include seven cross-chapter papers on (1) biodiversity hotspots (land, coasts and oceans), (2) cities and settlements by the sea, (3) deserts, semi-arid areas, and desertification, (4) Mediterranean region, (5) mountains, (6) polar regions, and (7) tropical forests.

An overview of the chapter outline is given below:

Chapter 1:	Point of departure and key concepts
Section 1:	Risks, adaptation and sustainability for systems impacted by climate change
Chapter 2:	Terrestrial and freshwater ecosystems and their services
Chapter 3:	Oceans and coastal ecosystems and their services
Chapter 4:	Water

- Chapter 5: Food, fibre, and other ecosystem products
- Chapter 6: Cities, settlements and key infrastructure
- Chapter 7: Health, wellbeing and the changing structure of communities
- Chapter 8: Poverty, livelihoods and sustainable development

Section 2: Regions

- Chapter 9: Africa
- Chapter 10: Asia
- Chapter 11: Australasia
- Chapter 12: Central and South America
- Chapter 13: Europe
- Chapter 14: North America
- Chapter 15: Small Islands

Section 3: Sustainable development pathways: integrating adaptation and mitigation

- Chapter 16: Key risks across sectors and regions
- Chapter 17: Decision-making options for managing risk
- Chapter 18: Climate resilient development pathways

Working Group III

Working Group III focuses on scientific, technical, environmental, economic and social aspects of the mitigation of climate change and is supported by the [Working Group III Technical Support Unit](#), which is jointly hosted by Imperial College London’s [Centre for Environmental Policy](#) and the [Indian Institute of Management](#). The [chapter outline](#) for the contribution of Working Group III to AR6 was approved at the 46th Plenary of the IPCC, which was held in Montreal from 6 to 10 September 2017. The important dates for activities involving Working Group III are given by Figure 7 below.



Figure 7: Important dates for involvement in activities related to WGIII.

The contribution of WGIII to AR6 is to cover 12 chapters, as given below:

- Chapter 1: Introduction and framing
- Chapter 2: Emissions trends and drivers
- Chapter 3: Mitigation pathways compatible with long-term goals
- Chapter 4: Mitigation and development pathways in the near- to mid-term
- Chapter 5: Demand, services and social aspects of mitigation
- Chapter 6: Energy systems
- Chapter 7: Agriculture, forestry and other land uses (AFOLU)
- Chapter 8: Urban systems and other settlements
- Chapter 9: Buildings
- Chapter 10: Transport
- Chapter 11: Industry
- Chapter 12: Cross sectoral perspectives