INTERGOVERNMENTAL PANEL ON climate change

FIFTY-THIRD (bis) SESSION OF THE IPCC
Electronic Session, 22 – 26 March 2021

IPCC-LIII(bis)/INF. 3
(3.III.2021)
Agenda Item: 4.4
ENGLISH ONLY

PROGRESS REPORTS

Synthesis Report of the Sixth Assessment Report

(Prepared by the Chair of the IPCC)

(Submitted by the Secretary of the IPCC)

IPCC Secretariat

c/o WMO • 7bis, Avenue de la Paix • C.P. 2300 • 1211 Geneva 2 • Switzerland
telephone : +41 (0) 22 730 8208 / 54 / 84 • fax : +41 (0) 22 730 8025 / 13 • email : IPCC-Sec@wmo.int • **www.ipcc.ch**

WMO UNEP

PROGRESS REPORTS

Synthesis Report of the Sixth Assessment Report

1. Selection of the Core Writing Team

On 16 March 2020, the Chair of the IPCC invited IPCC Working Group Co-Chairs to send recommendations for possible candidates of the Synthesis Report (SYR) Core Writing Team (CWT). The invitation was for each Working Group to recommend six authors who are involved in the preparation of the main Sixth Assessment Report (AR6) or those who were involved in the AR Special Reports, and two Review Editors (REs) taking into consideration the IPCC required criteria for selection of authors and the necessary balances. It was subsequently decided to increase the number of recommended authors to ten and REs to three per Working Group (WG). After receiving the recommendations from the WGs, the Chair held a teleconference with the WG Co-Chairs on 16 May 2020 to identify possible gaps in the proposed CWT members. On 18 May 2020, the final list of nominated candidates was compiled and sent to the Bureau.

The IPCC Bureau at its 58th Session agreed to the IPCC Chair's nomination of 30 authors and 9 review editors for the SYR CWT, reflecting the balance in geographical distribution, gender, and representative of a range of expertise (see Annex 1 of this document for composition of the CWT). It agreed that imbalances and gaps that remain would be addressed when the extended CWT is formed.

The CWT members also include the Chair, the IPCC Vice-Chairs, the Working Group Co-Chairs, the Heads of the Working Group and Synthesis Report Technical Support Units, and the Secretary of the IPCC. The Chair will lead the CWT as per the IPCC procedures.

2. Establishment of a Scientific Steering Committee (SSC) for the SYR, and First meeting of the SYR SSC

At the 58th Session of the IPCC Bureau, the Chair also formed a Scientific Steering Committee (SSC) for the SYR comprising the Bureau members, except those selected as RE, to support the scientific quality and integrity of the SYR. The role of the SYR SSC is to support the development of the Synthesis Report in accordance with paragraph 4.6.1 of Appendix A to the Principles Governing IPCC Work, "Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports".

The IPCC Chair convened the First meeting of the Scientific Steering Committee of the SYR (SYR SSC) on 30th November 2020, where the high-level outcomes of the informal preliminary SYR meetings were discussed as well as preparations for the First Core Writing Team (CWT-1) meeting.

3. Replacement of Review Editors (RE).

Four Bureau members who had been appointed as Synthesis Report (SYR) Review Editors (REs) at the 58th Session of the Bureau (BUR-58) resigned to be part of the SYR Scientific Steering Committee instead. The Chair sent nominations to the Bureau for replacement after consulting the Working Group Co-Chairs, and the Bureau agreed to those nominations as replacements of the four REs (Annex 1).

4. The Technical Support Unit (TSU) for the AR6 Synthesis Report.

At the 81st meeting of the IPCC Executive Committee (ExCom), the IPCC Chair announced the selection of Ms Noemie Leprince-Ringuet as Head of the SYR Technical Support Unit (TSU). This selection was the outcome of a selection process where 4 final candidates were interviewed during the first week of May 2020. The interview panel comprised the IPCC Chair and high-level officials representing the two Korean Ministries overseeing the funding and climate agenda. She took office on 1st July 2020.

The IPCC Chair will be assisted by the TSU of the AR6 SYR. Its mandate is to manage all aspects in preparation, approval and production of the Synthesis Report, under the responsibility of the IPCC Chair. The SYR TSU is funded by the Government of the Republic of Korea and located in the IPCC Chair office in Seoul, Republic of Korea.

5. SYR informal preliminary virtual activities

Even though the COVID-19 pandemic has delayed the Working Group (WG) schedules, and so the SYR schedule, the SYR TSU informally initiated the SYR process with the aim of kick-starting activities in a timely fashion, and in order to lay the grounds for a productive First Core Writing Team meeting (CWT-1). In early September 2020, the Chair held a series of informal virtual dialogues with the CWT authors in order to get to know each one of them and to hear their perspectives on the SYR, as framed in the SYR outline that was agreed by the Panel at its 52nd Session. In October 2020, the SYR TSU organized a second informal preliminary meeting to explore options for maximizing the policy relevance of the SYR, designed to allow for two different worlds – scientists and practitioners – to interact in an exercise of mutual learning. In November 2020, the SYR TSU organized an informal preliminary meeting to discuss the overarching scope of sections 2, 3 and 4 of the SYR**.** This exercise was to lay the grounds for the SYR authors to start developing an overall understanding of the SYR document, before diving into the drafting officially starting at CWT-1. Authors were invited to share their perspective on their understanding of the scope of the sections; the potential for integrated synthesis; the sections' uniqueness and value-add; potential gaps, overlaps, and interlinkages with other sections; as well as their visions for overarching narratives of the sections.

6. First Meeting of the Core Writing Team

The first Meeting of the Core Writing Team (CWT-1) was held virtually from 25 to 29 January 2021. It included the involvement of the CWT members -- 30 authors from 19 countries, the IPCC Vice-Chairs, Working Group Co-Chairs, the IPCC Secretary and the heads of the Working Group TSUs, as well as the Scientific Steering Committee of the SYR (SYR SSC) who provided guidance to the CWT throughout the meeting. The Working Group TSUs and the IPCC Secretariat provided invaluable support to the meeting. CWT-1 was split in 2 groups in order to allow for the full, productive and inclusive participation of all regardless of their time zones. Day 1 of CWT-1 was dedicated to the familiarization with underlying material from the WG AR6 contributions and the AR6 Special Reports. On days 2 and 3 the CWT split into section meetings, where the narrative structure, key messages and cross section topics were discussed. On Day 4, the two groups came together to merge their discussions and produce the deliverables. On Day 5, the deliverables were discussed in the closing plenaries, and next steps until delivery of the SYR pre-draft were outlined. In spite of the difficult virtual circumstances under which CWT-1 was operated, thanks to the tireless and outstanding work of all those involved, CWT-1 was able to produce the outcomes expected from the meeting, including a narrative structure for the SYR sections, fully based on the agreed topic headings and the list of indicative bullets provided by the 52nd Session of the IPCC (Annex 2); identification of cross section topics (Annex 2); an internal workplan for the SYR until CWT-2; and a compendium of very preliminary potential key messages for each section of the SYR.

7. Section Team kick off meetings

Following CWT-1 the section teams were constituted and Section Facilitators appointed by the Chair. Section team kick-off meetings were held shortly after CWT-1 to organize the section teams for the drafting. A tight work plan until delivery of the SYR pre-draft (21st May 2021) was outlined, as well as details on the mode of work.

8. Cross section topics

Six cross section topics (CSTs) were identified during CWT-1, with guidance from the SYR SSC, and with the recognition that the development of the SYR will be iterative and other topics may arise and require consistent treatment throughout the SYR. The CSTs identified were those which the SSC recommended as needing to be addressed early. These are:

- Emergence of Regional/Human system/Ecosystem scale findings
- Scenarios and Global Warming Levels
- COVID_19 (other surprises?)
- Development Pathways, climate resilience and sustainability
- Equity and just transitions
- Carbon budgets, Net zero and negative emissions

Small contact teams comprised of CWT members were constituted on each topic, with volunteer members from the SYR SSC to act as advisors to the CWT on each topic.

9. Engagement with the WGs

The SYR TSU has engaged in Working Group activities, to familiarize itself with the WG reports content. Particularly, the SYR TSU was invited to participate in:

- WGI Pre-LAM virtual activities from 20th to 31st July 2020
- WGII AR6 Pre-SOD virtual activities from 17th to 28th August 2020
- WGI SPM-TS write shop from 4th to 6th November 2020

The CWT was also encouraged to participate in the Working Group I (WGI) internal review of its Summary for Policymakers (SPM) and chapters from 23rd November to 14th December; Working Group II (WGII) Expert and Government Review of its Second Order Draft (SOD) from 4th December 2020 to 29th January 2021; and Working Group III (WGIII) Expert and Government Review of its Second Order Draft (SOD) from 18th January 2021 to 14th March 2021.

The Working Group Co-Chairs and members of TSUs were fully involved in CWT-1 and provided the meeting with invaluable support.

10. Updating the SYR schedule

At the 52nd Session of the IPCC (IPCC-52) the Panel decided to take note of the provisional timetable for the production of the Sixth Assessment Report Synthesis Report (SYR), as follows:

• Selection of Authors 2 March – 03 May 2020
• Bureau Meeting 4 - 5 May 2020 (TBC)
• CWT-1: 7 - 13 December 2020
• CWT-2: 8 - 14 March 2021
• Government and Expert Review: 12 July – 5 September 2021
• CWT-3: 29 November – 5 December 2021
• Final Government Distribution (FGD): Period 14 February – 17 April 2022
• CWT-4 and Approval:16 - 22 May 2022

At the 76th meeting of the IPCC Executive Committee, the Chair noted that the SYR would be affected by changes to the WG schedule, and that there would be a knock-on effect of at least 4 months on the SYR schedule. This would take approval to October 2022, still within the mandated 12-18 months following the first WG report approval (WGI in August 2021).

The SYR TSU took note of the timetable decided by the 52nd Session of the IPCC (IPCC-52), and of adjustments to be confirmed to the WG schedules. In light of this, the SYR TSU made a proposal to the ExCom to shift CWT-1 to the week of 25-31 January 2021. The ExCom, in consultation with the Bureau, agreed to this change.

The detailed schedule of the SYR beyond CWT-1 is under discussion, and subject to developments in the WG schedules. A first option explored by the SYR TSU, with the least clashes with WG schedules leads to a government and expert review of the SYR taking place after the approval of WGII, and an approval of the SYR in November 2022. Following the 53rd Session of the IPCC (IPCC-53) and the request to include the Third Lead Author (CWT-3) meeting in 2021, the SYR TSU re-opened a second option leading to an approval of the SYR in September 2022. This option suggests to hold the government and expert review of the SYR from 15th November 2021 to 9th January 2022 (8 weeks), which overlaps by two weeks with the WGII Final Government Draft (FGD) review period. The SYR TSU is working in consultation with the WG TSUs to find the best schedule for the SYR, mindful of the timeliness of the SYR approval with regard to the Panel's needs, and mindful of author workload.

ANNEX 1

COMPOSITION OF THE CORE WRITING TEAM TO THE AR6 SYNTHESIS REPORT
As Agreed by the 58th Session of the IPCC Bureau, 19-20 May (electronic meeting)

Working Group Authors WG	Nr	Nominated Authors for SYR CWT	Gender	Role in AR6	Ch.	Country
I	1	Sörensson Anna	F	AR6-WGI CLA	10	Argentina
I	2	Otto Friederike	F	AR6-WGI LA	11	United Kingdom
I	3	Krinner Gerhard	M	AR6-WGI LA	9	France
I	4	Chris Jones	M	AR6-WGI LA	4	United Kingdom
I	5	Lee June-Yi	F	AR6-WGI CLA	4	Republic of Korea
I	6	Armour Kyle	M	AR6-WGI LA	7	USA
I	7	Malte Meinshausen	M	AR6-WGI LA	1	Australia
I	8	Diongue Niang Aïda	F	AR6-WGI LA	1	Senegal
I	9	Thorne Peter	M	AR6-WGI CLA	2	Ireland
I	10	Alex Ruane	M	AR6-WGI CLA	12	USA
II	11	Paulina Aldunce	F	AR6-WGII LA	7	Chile
II	12	William Cheung	M	SROCC CLA	5	Canada
II	13	David Dodman	M	AR6-WGII CLA	6	Jamaica
II	14	Matthias Garschagen	M	SROCC LA/ AR6-WGII LA	1/16	Germany
II	15	Bronwyn Hayward	F	SR15 LA/ AR6-WGII CLA	5/8	New Zealand
II	16	Rodel Lasco	M	AR6-WGII CLA	5	Philippines
II	17	Aditi Mukherji	F	SROCC RE/ AR6-WGII CLA	2/4	India
II	18	Aromar Revi	M	SR15 CLA/ AR6-WGII CLA	4/18	India
II	19	Chris Trisos	M	AR6-WGII CLA	9	South Africa
II	20	Zinta Zommers	F	SRCCL LA/ AR6-WGII RE	7/17	Latvia
III	21	Gabriel Blanco	M	AR6-WGIII CLA	16	Argentina
III	22	Kate Calvin	F	AR6-WGIII LA	3	USA
III	23	Dipak Dasgupta	M	AR6-WGIII LA	15	India
III	24	Fatima Denton	F	AR6-WGIII CLA	1	Ghana
III	25	Oliver Geden	M	AR6-WGIII LA	12	Germany
III	26	Frank Jotzo	M	AR6-WGIII LA	13	Australia
III	27	Joyashree Roy	F	AR6-WGIII CLA	5	India
III	28	Detlef van Vuuren	M	AR6-WGIII LA	3	Netherlands
III	29	Yi-Ming Wei	M	AR6-WGIII CLA	6	China
III	30	Harald Winkler	M	AR6-WGIII CLA	4	South Africa

Review Editors to the SYR WG	Nr	Nominated Review Editors	Gender	Role in AR6	Ch.	Country
I	1	Greg Flato *	M	AR6 WGI RE SR15 RE SROCC RE	10 2 3	Canada
I	2	Maisa Rojas	F	AR6 WGI CLA	1	Chile
I	3	Xiao Cunde *	M	AR6 WGI CLA SROCC RE	9 3	China
II	4	Mark Howden	M	SR15 RE	4	Australia
II	5	Steven Rose *	M	AR6 WGII LA	18	USA
II	6	Roberto Sánchez-Rodríguez	M	SR15 RE	5	Mexico
III	7	Mercedes Bustamante	F	AR6-WGIII LA	7	Brazil
III	8	I.Elgizouli *	M	SR15 RE AR6 WGIII RE	1 1	Sudan
III	9	Yamina Saheb	F	AR6 WGIII LA	9	**France** (Algeria)

* Selected since the Bureau meeting

ANNEX 2

The narrative structures for Sections 2, 3 and 4 are the result of the CWT-1 deliverables. The CWT developed these narrative structures at CWT-1 fully based on the indicative bullets agreed on by the Panel at its 52nd Session (February 2020). They are still to be refined.

Title: AR6 Synthesis Report: Climate Change 2022

List of Contents
Front matter (2 pages)
Summary for Policy Makers (~10 pages)
Section 1: Introduction (~1/2 page)
Section 2: Current Status and Trends (~10 pages)
Section 3: Long term Climate and Development Futures (~10 pages)
Section 4: Near Term Responses in a Changing Climate (~10 pages)

Section 1: Introduction (~1/2 page)
• Context
• Setting the stage for the report
• Definition of time frames

Section 2: Current Status and Trends (~10 pages)

2.1. Introduction *[Might be moved and merged to Section 1]*

AR6 arrives in a new global climate change and development context:

- Paris Agreement, youth and other climate movements, climate emergency declarations, SDGs, Sendai, increased knowledge and public awareness, NDCs and other climate commitments, growing climate litigation context, new populations exposed to increasing risk (e.g. moving into urban areas).
- Window of opportunity shrinking but it exists (in terms of temperature (e.g.1.5), adaptation and carbon budget (to cover all three working groups).

2.2 Climate Change in a Changing and Unequal World

2.2.1 Drivers of climate change and socioeconomic development

- Climate change is occurring in the context of broader change and new development challenges – biosphere change, population growth, mobility, resource overexploitation, planetary limits, rapid urbanization.
  - Socio-economic and technological drivers that increase or decrease emissions.

2.2.2 Impacts of human climate influence on human and natural systems across regions

- Change across all components of the climate system and due to us (historic emissions etc.)
  - missed opportunities/choices that have led us here
  - regional aspects of climate change - differential impacts (e.g. PSIDS)
  - Table on regional hotspots
  - Attribution of causes - GHG, SLCF, exposure, vulnerability other risk drivers.
- Those climate changes are impacting all of us and ecosystems now both directly and indirectly but those least responsible are most impacted.
- Loss and damage, adaptation limits already experienced.
- 'Winners and losers' in the human and natural systems.

2.2.3 Climate change as a stress multiplier

- Interconnected world, system interdependencies.
- Inequalities
  - o choices and tools and finance are also unevenly distributed
  - o Implications for poverty, sustainable development, ecosystems
  - o emissions are extremely unequal, also within countries
  - o Exacerbated by COVID-19
- Cascading and complex risk/impacts (materialised risks)

2.3 Recent developments in climate action

2.3.1. Recent milestones in climate policy and financing

- Paris Agreement, NDCs, net zero goals
- Other key national policies and commitments such as towards climate neutrality
- Subnational (e.g. urban), regional and other policy and action highlights
- Inequality in climate actions

2.3.2 Recent highlights in tools and strategies for adaptation, mitigation and risk management

- Changes in technology, public engagement, capacity, tools, and knowledge progress (climate services?)
- Improved data, tools, awareness, literacy, knowledge, innovation, increasing region and sector specific information, climate services to support adaptation and mitigation
- Major progress in innovation, mitigation technology roll-out and costs (especially solar, batteries, etc.)
- New adaptive and mitigation capacity built, but very different regionally (anything relevant on adaptation)

2.3.3 Resulting changes in emissions and other climate forcers and adaptation

- Historic and current emissions, non-CO2 forcers, including short-lived climate forcers, by sources, removals and sinks, annual and cumulative, also on consumption basis, regional insights
- Highlighting best practices where the emission trends have been radically changed, peaked emissions or fossil use
- Major inequalities in emissions, also within countries
- Implications for poverty and sustainable development

2.4. The climate action gaps and present-day commitments

2.4.1 Committed changes and lock-in *[Handshake to section 3]*

- Committed emissions from present infrastructure, investments and practices (still very far from zero emissions – cannot switch overnight, stranded assets, equity and equality etc.)
- Committed change yet to be realized from historic emissions
- Maladaptation

2.4.2 Challenges to effective action

- Inadequacy of many present adaptation responses and plans
  - financing
  - technology access
  - governance and leadership
  - observational, information and knowledge gaps (incl. indigenous knowledge)
  - vested interests
- Socio-economic barriers to adoption including issues of inequalities, minorities, gender, culture
- lack of metrics for adaptation and Loss & Damage
- [Note: check with Section 4 on enablers]

2.4.3 The gap between ambition and current actions, commitments *[Handshake to Section 4]*

- Emission trajectories and commitments still far from Paris Ambitions
- Need for sense of urgency

Section 3: Long term Climate and Development Futures (~10 pages)

3.1. Global and regional risks [arising from different global warming levels and different adaptation, mitigation and development pathways]

3.1.1 RFCs and how these change in different pathways

- Global and regional impacts, costs and benefits, and risks for natural and human systems, dependence on warming levels, and implications for socio-economic development
- Deep uncertainty, tipping points, irreversibility, compound events, high-impact events, and implications for society.
- Include regional risks

3.1.2 Representative key risks in these worlds

- Include regional risks

3.1.3 Scenarios and projections, regional and global climate change, rate of change, and dependency on forcing characteristics.

- Introduction of different “future worlds”
- Link to GWLs
- (committed long-term impacts including SLR, ocean and ocean ecosystems)
- Impacts
- Clarify regional approach

3.2 Mitigation and development pathways to reach different global warming levels

3.2.1 What is needed in terms of [mitigation] pathways [to enable equity and implications for socio-economic development], cumulative emissions / net-zero for different futures global warming levels?

- include development considerations that relate to mitigation

3.2.2 Aspects of net-zero / global balance between anthropogenic greenhouse gas emissions, removals and sinks

3.2.3 Total and remaining carbon budgets and the link to past cumulative emissions, [equity and implications for socio-economic development]

3.2.4. Overshoot pathways, CDR, SRM and their implications.

3.3 Adaptation options and opportunities, limits, residual risk and loss and damage over time

3.3.1 Adaptation options and opportunities, feasibility and effectiveness

- What is an option? What is a non-option? Over time.

3.3.2 Maladaptation

- and metrics of adaptation for climate resilience (success, effectiveness), gaps - or 3.4

3.3.3 Limits, residual risks and loss and damage

- Adaptation in the face of uncertainties and risks in the long term (tipping points, irreversibility, compound events, deep uncertainty)

3.3.4 Direct and indirect costs, benefits, co-benefits of adaptation, and cost of inaction

3.4. Synergies and guardrails for long-term interactions between adaptation, mitigation and sustainable development -- to deliver Paris and SDG compliant futures

3.4.1 Adaptation, mitigation, and sustainable development and their interactions

- including implications for socio-economic development and equity, and dependence on warming levels and uncertainty

3.4.2. Uncertainty, tipping points, emergence, potential for abrupt changes, including beyond 2100

- what we don't know and how careful we need to be

3.4.2 Adaptation guardrails depending on warming levels

- To address tipping points, uncertainty, etc.

3.4.3 Synergies between adaptation, mitigation, and sustainable development

3.4.4. Implications of the long-term on near-term for implementing sustainable development and climate action

- including risks, economics

Section 4: Near Term Responses in a Changing Climate (~10 pages)

4. 1 Introduction: urgency and opportunities

Section 2 has shown that emissions are still increasing, but also that more climate policies are being formulated; rapid technology progress for renewables and electrification. Increasing awareness. We are also living in a time of crisis: impacts of the COVID-19 crisis, SDGs climate. Section 3 shows the importance of rapidly reducing emissions to meet the Paris goals. The Paris agreement was a choice (or is about continued choices as update NDCs). Unpack NDCs and choices.

4.2 Shifting socioeconomic pathways now for a climate resilient and sustainable future

4.2.1 Near-term socio-economic trajectories consistent with limiting warming to different levels and [shifting] development pathways [consistent with] [resulting in] [towards increased] sustainable development and enhancing adaptation [and resilience].

- Physical and political feasibility, emissions related to achieving 1.5°C // missed opportunities
- System transitions and sectoral information
- Emissions (GHGs and SLCFs); how action needs to be accelerated and scaled up if we are to achieve the Paris goals, magnitude of scale up in next 10 years to 2050
- NDCs as a benchmark of level of action that is happening (building on Section 2)
- Long term pathways and implications of short-term policies (link to Section 3); definitions of near term - 10 years for scale up of action, up to 2050 for climate implications
- Sustainable development and shifting development pathways // adaptation
- Note local context will make a difference in choices
- Lessons and limitations from COVID-19?
- Consequences of choices - avoiding unintended negative consequences? Maladaptation?
- Sufficiency and focus on well-being
- Development paradigm based on fossil fuels
- Inertia
- Uncertainty - not only about climate but events such as COVID-19, volcanic eruption, etc.
- Stranded assets/ lock-in

4.2.2 [Timing] Potential for benefits and costs of and barriers to early action, implications of delayed action, including lock-in, residual risks, spill over and irreversible changes in a changing climate.

- Short lived climate forcers, methane mitigation, air quality and health
- Near term extension of current trends
- Synergies with wellbeing and SDGs
- Shifting pathways - degrowth, economic transition, starting points
- Shifting baselines
- Benefit of wider investment upfront (education, finance), sequencing of portfolio of action
- Uncertainty in carbon markets in relation to knowledge (not just education) on how advance on low carbon pathways, on opportunities and constraints
- Adaptation action, costs and benefits
- Lock in, delays or early action

4.3 Enhancing climate resilience and reducing vulnerabilities and risks

4.3.1 Near-term climate change and variability, vulnerability, exposure, impacts, costs and risks for natural and human systems.
+ element of 4.2.2

- Threshold crossing estimates for 1.5°C (WGI estimates early 2030s, with some scenarios dependence).
- Definitions of near term - 10 years for scale up of action, 2030 for SDGs, up to 2050 for climate implications and impacts
- For many countries the net zero goal is for 2050
- Delay of detecting mitigation action on climate of 20-25 years
- Potential surprises, including volcanic eruption, COVID-19
- Climate implication of mitigation actions

4.4 Strengthening System Transitions in the context of sustainable development

4.4.1 Diverse response options across and within sectors and geographic scales, benefits, co-benefits/synergies and direct and indirect costs, and trade-offs (adaptation, risk management, mitigation).

- Emergence of climate impacts and mitigation-adaptation benefits can be masked by SLCFs in the near term
- Relation to limits to adaptation and residual risks, loss and damage
- Adaptation, mitigation, feasibility
- Sectoral, regional specificities
- Interrelationship of sectoral actions and SDGs
- Importance of including nature-based solutions
- Knowledge – local/ ancient/ indigenous knowledge
- Locally led response and not just technocratic/ technological response

4.4.2 Supportive conditions and means, including finance and investment, capacity, institutional arrangements, international cooperation, technological innovation and technology transfer, and behavioural aspects across a range of actors.

- Enabling conditions, broadening opportunities
- Policy instruments and packages, innovation
- Shift in relative costs of technologies and growth of options
- System transition, and also incremental
- Socio-cultural change
- Education and climate literacy to implement ambitious change for both adaptation and mitigation
- Empirical experience with policy instruments and packages
- Prioritization/outline a hierarchy of instruments and options
- What are the ingredients of successful actions? Timing of actions/sequence?
- Criteria for setting priorities
- Need continued evaluation of actions, including adaptation actions
- Packages for action for systems transformation
- Just transitions and concepts of well-being

4.4.3 Strengthening and initiating just system transitions, including for adaptation and mitigation, in the context of sustainable development, poverty eradication, food security and equity.

- Mitigation-adaptation to meet Paris goals and intersection with sustainable development
- Improved CRDP narrative

- Compatibility with SDG implementation and COVID-19 recovery, implications for overshoot
- Trade-offs (and co-benefits), how nations and cities are addressing this, how policy choices are being implemented
- Quality of growth (fairness, just transition), including in context of COVID-19 pandemic
- COVID-19 recovery stimulus packages and equity implications (winners and losers)
- How will we make the choices under different constraints?
- Inequalities and poverty
- Entrenched interests, lack of agency and political will, or constraints in how democracies operate (?)

Cross Section topics identified in the AR6 SYR

The SYR SSC considered the following in distilling recommendations in order to identify cross section topics in the SYR:

- Avoid overlap with issues addressed by the Cross-WG teams unless required for specific SYR application
- Feed SYR questions about Cross-WG issues to existing teams where applicable.
- Recognize that development of the SYR will be iterative. Other topics may arise and need to be worked out. Focus for SSC recommended topics is on those that need to be addressed early.
- Number of topics should be limited in order to keep additional workload manageable for authors

The following CSTs were identified for the SYR:

- Emergence of Regional/Human system/Ecosystem scale findings
- Scenarios and Global Warming Levels
- COVID_19 (other surprises?)
- Development Pathways, climate resilience and sustainability
- Equity and just transitions
- Carbon budgets, Net zero and negative emissions