INTERGOVERNMENTAL PANEL ON climate change

The IPCC's first virtual Lead Author Meeting:

An evaluation by the Technical Support Unit of Working Group III of the Intergovernmental Panel on Climate Change

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This report was prepared by the WG III Co-Chairs and Technical Support Unit based on an evaluation questionnaire and documentary materials linked to the meeting. They alone are responsible for the contents. No endorsement or approval by the IPCC of any recommendations or conclusions is implied. The report has not been subjected to IPCC review.

This report was written prior to the changes that were made in July 2020 to the Working Group III schedule.

Contents

Executive Summary

Working Group III (WG III) of the Intergovernmental Panel on Climate Change (IPCC) had scheduled its third Lead Author Meeting (LAM) of the Sixth Assessment Cycle (AR6) to be held in Quito, Ecuador from 15-19 April. Due to the emerging Covid-19 pandemic, the decision was taken on 9 March to cancel the physical meeting and transition to holding a virtual meeting (eLAM 3). Such a meeting was unprecedented for the IPCC. WG III had one month to plan and execute the meeting. {1.1}

This report sets out the actions taken by WG III and implemented by the Technical Support Unit (TSU) and provides an evaluation of the benefits and trade-offs of hosting a virtual, rather than physical, meeting, including lessons learnt from the experiences gained by holding eLAM 3 and the implications for future IPCC meetings.

The activities and ambition of eLAM 3 were scaled back, with an increased focus placed on cross-chapter issues. However, none of the overall LAM objectives were dropped. Noting that meeting participants were spread out across the globe, careful consideration was given to time zones with the aim of maximising participation at key meeting events and achieving diversity and inclusivity. Roles and responsibilities for eLAM 3 were assigned to members of the TSU and a range of guidance materials was developed to support participants. {1.2, 1.3}

The TSU identified technological requirements to simulate the activities carried out during a physical LAM and assessed the suitability of various technology solutions. Zoom was selected as the videoconferencing platform to enable meeting discussion; the IPCC in-house document management system would be used to share primary meeting documentation; MS Teams would be introduced as a means to enable interpersonal and intersocial interactions between participants; and a Mailchimp group email would be used to provide a daily newsletter to participants and to meet internal communications requirements. {2.1, 2.2}

A total of 287 people participated in eLAM 3, which was considerably higher than the 215 people who had accepted RSVPs for the physical meeting. This higher attendance included increased attendance from other IPCC Working Groups. The high attendance for eLAM 3 compared favourably to LAM 1 (206 attendees) and LAM 2 (221 attendees). There was no significant variation across the three Lead Author Meetings in terms of WMO Region, development status or gender. Eleven Break Out Groups (BOGs) were held and these sessions were well attended; the percentage of participants attending BOGs from developing countries and countries with economies in transition varied depending upon the theme of the BOG, but across all BOGs attendance reflected the make-up of the AR6 WG III author team. The organisation of Chapter Meetings was left to each chapter's Coordinating Lead Authors (CLAs). While many CLAs elected to hold meetings during the week of eLAM 3 (e.g. nine chapters held more than ten hours of chapter meetings), some chapters did not hold any, scheduling them after the week of the eLAM 3. {3.1, 3.3, 3.4, 3.5}

A feedback questionnaire was circulated to all eLAM 3 invitees and received 175 responses. Responses indicated that 86% of eLAM 3 participants ranked their overall experience as 'Excellent' or 'Good'; this compared to 97% of respondents for LAM 1 and 88% of respondents for LAM 2. The percentage of participants who felt that they were not fully able to participate in eLAM 3 increased compared to earlier LAMs (LAM 1: 7.2%; LAM 2: 11%; eLAM 3: 29%). More respondents from developing countries felt they were not able to fully participate in the meeting (36%) than those from developed countries (25%). Significant factors cited as hinderances to participation in the meeting included: (i) competing domestic commitments and competing work commitments (the two largest barriers to participation regardless of region or gender); (ii) difficulties with remote access and limited access to computers (a larger problem for participants from developing countries); (iii) the timing of live meetings (the largest barrier to participation

from those regions for whom the selected time zone was unfavourable); and (iv) other people dominating discussions (identified as a barrier to participation for more women than men). {4.1, 4.2}

The TSU has assessed a range of perceived impacts experienced by switching LAM 3 from a physical to a virtual setting. Authors held a variety of views on the impact on the science. While no single conclusion can be drawn, there was a general view that a virtual meeting could not completely substitute for a physical meeting. Participants missed a variety of elements, including building rapport in person, being able to ensure that there was agreement across all participants, the ability to have spontaneous interactions to discuss scientific elements, and the opportunity for more informal interactions. There was a sense that eLAM 3 was successful in what it set out to achieve, but that from the outset its ambitions were lower and its objectives more limited. The virtual setting worked well for conveying information (e.g. the business of Plenaries) but less well for more substantive scientific issues where more in-depth discussion was required, especially the activities of chapter meetings. While a virtual meeting brought trade-offs, participants also cited its benefits, including that virtual Plenaries were more productive, the BOGs worked well, the chat functionality was welcomed and facilitated more democratic participation and shorter interventions, and the virtual setting allowed greater participation from both authors within WG III and other IPCC Working Groups. {5}

The virtual setting provided new opportunities for extending the reach of planned outreach events, with the online event attended by 607 people, significantly higher than the 80-250 attendees expected at an in-person event. {6}

The virtual event resulted in other benefits, including a reduced carbon footprint from avoiding air travel (an estimated saving of 368 tonnes of CO_2 emissions), benefits to participant health and wellbeing from avoiding travel, and financial savings (an estimated saving of approximately $1m USD). There were, however, other trade-offs from a virtual setting, including the negative implications to health and wellbeing from participants having to balance meeting requirements with domestic and work commitments, restrictions on some planned activities that required a face-to-face setting, such as media training, and lost economic benefits to the host country from direct IPCC investment and ancillary travel and tourism revenue. {7.1, 7.2, 7.3, 7.4, 7.5}

A range of recommendations are made relating to whether and how to hold future IPCC meetings in virtual, physical or hybrid settings. Some of these apply to Lead Author Meetings specifically; others could apply to other types of meeting.

There are three initial considerations that determine the suitability of a meeting for a virtual setting:

(i) **The meeting's position within a cycle of a meetings:** Have participants had the opportunity to build trust and mutual understanding through earlier meetings? Will a virtual setting allow the fullest possible discussion that may be needed in the final meeting of a cycle?

(ii) **The meeting's objectives:** Are the objectives well-suited to a virtual setting? A virtual setting may be effective at sharing information, considering high-level strategic matters, and/or engaging a range of participants to address cross-cutting issues. It may be less effective at enabling discussion of the science at a detailed level and/or enabling collaborative working.

(iii) **Whether opportunities can be exploited to adopt hybrid approaches that take the best from both physical and virtual meetings:** Is there scope to hold each element of a meeting in the setting that best suits it? For example, holding Plenaries, BOGs and outreach events online and reserving physical meetings for Chapter meetings. Might restrictions on travel (for example, due to Covid-19) also present scenarios where a physical meeting becomes a hybrid meeting as significant numbers of planned participants are only later able to attend a physical meeting through virtual means?

Where a virtual meeting – or a hybrid meeting using virtual elements – is selected, there are two further considerations:

(iv) **Practical approaches to minimise the trade-offs of a virtual meeting:** How can effective meeting design and execution replicate those most missed features from physical meetings? For example, could better rules around use of chat improve participation and interaction? Could a virtual meeting substitute the social and interpersonal interactions of a physical meeting through, for example, organising virtual 'coffee breaks'?

(v) **Appropriate actions to ensure that a virtual meeting is run effectively, including to minimise or remove barriers to participation:** What measures should be taken in planning, designing and delivering the virtual meeting? How can issues such as difficulty accessing technology or the challenges of attendance from different time zones be managed and their effects minimised? How can technology be best employed and when should new technology be introduced?

These five considerations, supported by more detailed lessons learnt set out in Annex C, could guide any organisation considering if, when, and how to best use virtual settings to deliver meeting outcomes. {8}

1. Objectives and context

1.1 Background

In January 2020 Working Group III (WG III) of the Intergovernmental Panel on Climate Change (IPCC) worked with the Ministry of Environment in Ecuador to organise its third Lead Author Meeting (LAM) in Quito scheduled for 15-19 April. During January and February, WG III's Technical Support Unit (TSU) and the host made good progress in making arrangements for a physical meeting. Contingency planning began in late February when it became apparent that the growing Covid-19 emergency might make the meeting in Quito impossible. On 9 March, the decision was taken to abandon plans for the physical meeting of LAM 3 in response to the Covid-19 pandemic. Given the imminence of the planned physical meeting, and noting that cancelling the meeting completely would close down options for the completion of the Sixth Assessment Cycle (AR6), the WG III Bureau decided to proceed with plans for a virtual Lead Author Meeting (eLAM 3). It was decided that this would take place over six days from 14 April to 19 April 2020, the same period as the original LAM but with one additional working day to take into account what would otherwise have been a travel day. Monday 20 April was set aside for a smaller workshop devoted to the Summary for Policymakers (SPM). The rationale for extending the duration was because, due to time zone differences, the number of hours in each day suitable for all participants were very limited and so expanding the number of days significantly increased the number of these most viable hours. Participants were asked to plan for a series of online meetings over that period.

At the time of organising eLAM 3 there was no precedent for running a virtual Lead Author Meeting. The TSU's contingency planning had included creating an eLAM 3 'feasibility plan' including technology solutions fit-for-purpose, managing communications over the seven days, and practicalities such as consideration of time-zones and internet connectivity. From the time the decision was taken, the WG III Bureau and TSU had roughly one month to plan and deliver WG III eLAM 3.

As the Covid-19 situation continued to evolve and many countries introduced lockdown mandates, it became clear that the capacity of authors would be reduced, with authors working from home rather than from their offices and being required to juggle work and family commitments. At the same time, the WG III TSU was also required to start working remotely.

1.2 Objectives and meeting design

A typical IPCC third Lead Author Meeting would have a number of scientific objectives for both chapters and the report as a whole. Specific objectives for WG III LAM 3 included:

- Chapter teams working together to develop the content of the chapter and respond to comments.
- Addressing issues that cut across the report, and across Working Groups.
- Planning the content, writing process, and production of the Summary for Policy Makers (SPM) and Technical Summary.
- Sharing best practice relevant to the production of a high quality, relevant, and insightful report.
- Co-ordinating the current and future workplan.

It was proposed that eLAM 3 would be scaled back in terms of both activities and ambition, with the focus during the eLAM week being primarily on cross-chapter issues and integration. It was also proposed that chapter activities might be spread out over a longer period. None of the overall objectives, however, were dropped.

As with a physical lead author meeting the building blocks of the meeting included:

- Plenaries
- Chapter meetings
- Break out groups (BOGs)
- Bilateral discussions
- The provision of guidance and training, including on communications
- Bureau and Bureau/Coordinating Lead Author (CLA) meetings

Because meeting participants were spread out geographically across the globe, in time zones ranging from +13 UTC (Tonga) to -10 UTC (Cook Islands), when organising the eLAM 3 the TSU had to address the question of at which times different meeting elements would take place. There were only two hours a day (UTC 12:00-14:00) where ~96% of participants could attend between 06:00 and 00:00 local time.

Time zone UTC	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
No. of participants	1	0	0	4	1	12	28	0	0	17	2	26	80	13	2	2	14	5	23	20	8	0	3	1

The TSU consulted CLAs on two alternative options for structuring the meeting. Option 1 included fixed times for Plenary sessions alternating the timing of BOGs to fit participants in the East and West. Option 2 proposed splitting the meeting in half, with the first three days running at times suitable to eastern time zones, and the second half to western time zones. Option 1 was preferred by CLAs, although a number of CLAs suggested that the optimum time (UTC 12:00-14:00) be reserved for chapter meetings rather than Plenaries.

In agreement with CLAs, the following organising principles were adopted for all sessions:

- All live meetings would be a maximum of two hours and would focus on critical discussions and decisions.
- Supporting materials would be circulated in advance where possible (including presentations, documents and pre-recorded presentations as appropriate).
- No one would be expected to attend a meeting between 00:00 and 06:00 local time.
- Chapter meetings would be organised by CLAs and could occur before, during, or after eLAM 3 week. The TSU would be able to help schedule meetings if required. For transparency, the TSU would request a list of all meetings due to take place.
- All live meetings would be held on Zoom (see 3.2.1). All supporting material would be uploaded on the IPCC Document Managent System (DMS) (see 3.2.2).

The table below shows the timing of major meetings during eLAM 3 week. These included plenaries, BOGs, and meetings between the WG III Bureau, CLAs, and Review Editors. It can be noted that:

- Plenaries were held between UTC 12:00-14:00 to allow 96% of attendees to attend between 06:00 and 00:00 local time.
- BOGs held between UTC 07:00 and 09:00 would allow 75% of attendees to attend between 07:00 and 22:00 local time and favoured authors in the Eastern hemisphere; BOGS between UTC 14:00-16:00 would allow 78% of attendees to attend between 07:00 and 22:00 local time and favoured authors in the Western hemisphere.
- Bureau/CLA and Bureau/Review Editor meetings were arranged at times to maximise overall participation.

Time	Tue. 14	Wed. 15	Thu. 16	Fri 17	Sat. 18	Sun. 19	Mon. 20
UTC	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
06:00 - 07:00							
07:00 - 08:00	Bureau CLA	BOG Grp. #1		BOG Grp. #3	BOG Grp. #4		
08:00 - 09:00	Bureau RE						
09:00 - 10:00							
10:00 - 11:00							
11:00 - 12:00							SPM
12:00 - 13:00	Plenary #1			Plenary #2		Plenary #3	
13:00 - 14:00							
14:00 - 15:00		BOG Grp. #2				WG III Bureau	
15:00 - 16:00							
16:00 - 17:00				Bureau CLA			
17:00 - 18:00		Bureau CLA		Bureau RE			

1.3 Organisation of the Technical Support Unit

This section covers the respective roles of the WG III Science Team and the WG III Operations Team.

The WG III Science Team developed the agenda for eLAM 3. They were also responsible for developing presentations to be given during plenary sessions and providing guidance to the chapter teams in terms of setting key milestones for the eLAM. The Science Team also oversaw the BOG process, including identifying which topics to address in the BOGs, liaising with the WG III Bureau on topic selection and refinement, and coordinating material with the BOG chairs.

The Science Team also provided essential assistance to each of these meetings by:

- Taking detailed scientific notes of discussions during BOGs and Plenary sessions.
- Giving presentations during BOGs and Plenary sessions (either as live presentations or as pre-recorded videos) on the scientific direction of the session, as well as providing guidance on scientific matters, such as topics cutting across chapters or the use of figures.
- Providing additional guidance material (hosted on the Document Management System – see 3.2.2 below), including on figures, cross-cutting issues, and documentation relating to the AR6 glossary.

The WG III TSU Operations Team (including the Head of TSU (Operations), Senior Administrator and Administrator) worked closely with the WG III IT/Web Manager to help set up the virtual platforms for the meeting. This included testing various platforms, running feedback questionnaires with authors and Chapter Scientists, and assessing results to inform the final proposal for technology to be used.

The Administrator organised 'drop-in' sessions for the WG III Co-Chairs with the chapter teams. The Senior Administrator organised meetings between the WG III Bureau, CLAs, and Review Editors throughout the eLAM 3.

The WG III Operations Team took on important roles during each of the Plenaries and BOGs:

- Chair's Assistant – providing direct support to the meeting Chairs by monitoring questions raised in the chat function and keeping track of participants raising hands to make an intervention.
- General support – checking the list of participants to ensure all who are on the call are invited participants of the LAM, and asking participants to identify themselves where necessary; muting microphones and turning off videos of participants when they are not presenting or making an intervention; monitoring the Chat and responding to any logistical or technical queries; taking note of all participants for BOGs; uploading and sharing presentation materials for BOGs.
- IT support – assisting those who have difficulty joining or have technical problems once joined (e.g. sending advice on connecting microphones/headphones).

The WG III TSU Communications Manager developed and implemented the communications activity for the event, including the introduction of a daily email newsletter to all participants, which was used by the TSU to provide updates on progress made so far and to share links to upcoming meetings (see 3.2.4 for more detail). The Communications Manager organised and ran (in association with the consultancy of Escott-Hunt) 30-minute sessions with the chapter teams across the report to consult them on the direction and contents of the communications messaging. A feedback form was also developed and completed by authors for textual feedback. Daily updates were provided to the secretariat for social media and a promotional video was developed to encourage authors in their virtual work and publicly spread the word about the eLAM 3. A bi-lingual outreach event featuring IPCC and external speakers, as well as a virtual Q&A session, was planned and delivered (in partnership with the original hosts in Ecuador).

The WG III TSU was supported by WG I and WG II TSU members, who provided helpful support and guidance regarding the technical setup for the meeting, as well as being actively involved in the sessions on both the operational and scientific sides.

More detail on the roles and responsibilities of the TSU and IPCC staff in managing the eLAM 3 is provided in Annex A.

2. Technology considerations

2.1 Requirements overview

Based on assessment of the needs of the planned meetings and their agenda, together with consideration of the other interpersonal and intersocial activities that enable a successful LAM, the following functions were identified as necessary and technology solutions were considered for the eLAM 3 against their ability to deliver these functions:

1. Videoconferencing facilities to enable meetings that could involve large numbers of participants (such as the plenaries where the TSU needed to plan for more than 300 participants at one time)
2. Document sharing to participants of agenda, meeting materials, etc.
3. Interpersonal and intersocial interactions between participants, such as through chat functions
4. Internal communications to ensure that participants understood the programme of events, could be informed of any changes to plans, and could access the various technologies employed

Prior to the meeting, the TSU surveyed all eLAM 3 invitees to assess which technologies they could or could not access. The results of this survey were important in influencing the decision ultimately made on technology platforms to be used.

2.2 Technology criteria and selection

This section covers criteria used to assess and select solutions in respect of: videoconferencing; document sharing; social interaction and internal communications. More details on the implementation of the technology solutions are provided in Annex B.

2.2.1 Videoconferencing facilities

The TSU needed to plan for large numbers of participants (>300) and select platforms which minimised the exclusion of specific countries that may be denied access.

The TSU were required to rapidly assess the various virtual conferencing platforms that existed to determine which platform best met the needs of the meeting. This work was led by the WG III TSU Web and IT Manager with support from the TSU and Web Officers of the WG I and WG II TSUs, as well as the Secretariat IT support team. The eLAM 3 required sufficient licenses to enable one large meeting for each plenary that would accommodate 300 participants or more, meetings of the 17 chapters, plus possible meetings for the two Annexes, and up to six BOGs, possibly running simultaneously. In addition, one webinar license was required for the outreach event with ability to stream to YouTube and Facebook.

The technology had to be accessible to as many participants as possible and the evaluation took into account geographic restrictions. However, it was inevitable that some participants would struggle to participate in the meeting regardless of the choice of software. This was due to either software access restrictions in some countries (such as Cuba or Sudan) or poor internet connection. This occurred most often, but not exclusively, in developing countries. Given the limited time to organise the eLAM 3 there were no measures that could be taken to mitigate these circumstances, only to select a platform that the majority of participants could access in theory if not practice. More on lessons learnt can be found in Annex C.

The chosen platform needed to provide sufficient functionality to allow the TSU to monitor and manage all meetings.

After enquiries, research and testing, Zoom was deemed the best solution to fit all requirements. Although most requirements would be achievable with other solutions, Zoom proved to be the solution that would address all the identified requirements, including the extensive license requirements.

To summarise the desired functionality and capabilities:

- Zoom has a simple user interface, with especially quick and clear access to audio and video settings, which facilitates troubleshooting. It provides centralised controls through a security tab, like enabling/disabling waiting room, enabling/disabling screen sharing, and removing users.
- Zoom allows a host to make other users co-hosts, allowing TSU staff to exit the meeting while passing on their responsibilities as hosts without the meeting closing; this was especially helpful for avoiding disruption to the meeting if the host user had internet issues, thereby ensuring no meeting would be interrupted.
- Zoom has the "raise hand" functionality, which the TSU deemed essential given the large number of attendees. Zoom also places people who have raised their hand to the top of the participants list, which aids smooth chairing. Microsoft Teams, for example, lacked this functionality at the time.
- The "rename user" option for both participants and hosts was helpful to ensure that participants used full names (and, optionally, chapter number) and ensured that any uninvited participants could be quickly identified.
- Zoom allows downloading of the Chat transcript during as well as at the end of the meeting, and has a variety of reports, one of which is a participant list, which was very useful for quick collection and assessment of attendance and participation, and also for producing and sharing chat discussion from the meetings.
- Zoom allows recording of meetings to the cloud, supporting note-taking by providing an additional audio recording of the meeting. The easy ability for hosts to record back-up copies locally was an additional benefit.
- A major factor was the inability of other platforms to meet all requirements for the large number of participants at plenaries and the outreach event: BlueJeans (maximum 100 participants), WebEx (200) and Microsoft Teams Meetings (250) cannot accommodate 300 participants, and GoToMeeting could only do so with an enterprise license (otherwise 250 maximum). The webinar option offered via Microsoft Teams Meetings Live allows 10,000 attendees but did not allow video to be played and presenters could not be guests and would require their own MS Teams license, which would have had to be purchased separately.

The selection of the core virtual conferencing platform and its functionality informed the choice of what other technologies were still required to meet the overall eLAM 3 requirements.

2.2.2 Document sharing to participants of agenda, meeting materials, etc.

IPCC authors and the TSU were familiar with the IPCC's document management system (DMS) and so it was decided that this would be the best platform to share primary meeting documentation with participants. In addition, MS SharePoint was the documentation management system already in use internally by the WG III TSU and during eLAM 3 this was used for organising content prior to upload to DMS and also to provide extra resilience as a potential back-up document storage system should DMS fail (of increased importance noting that ICT support for DMS would be limited due to lockdown circumstances).

2.2.3 Interpersonal and social interactions between participants

To enable communication between authors, editors, bureau members, IPCC secretariat, and TSU staff, and as an alternative to what would be otherwise anticipated high email traffic, a range of platforms for interpersonal and intersocial interactions were considered, including MS Teams and Slack. Given that the WG III TSU already had access to the paid MS Teams platform at Imperial College London with the ability to give Guest access to all participants, and considering its high integration with file storage and a SharePoint website integration with the ability to create web pages with a variety of content, MS Teams was selected. The restrictions of the free Slack option played a part as well. MS Teams was tested with the Chapter Scientists and received an initial positive response and so this was extended to all participants ahead of the meeting.

2.2.4 Internal communications

To ensure all participants understood the programme of events, could be informed of any changes to plans throughout the course of the eLAM 3, and could access the various technologies employed (especially those participants with restricted access to Zoom and Teams), an eLAM 3 newsletter was designed and distributed on a daily basis at the end of each day. Given that no event-specific functionality was required and noting that the WG III TSU already used this mailing solution for a Working Group III newsletter, Mailchimp was adopted for the newsletter.

3. Participation

3.1 Overall participation

The TSU had received 215 acceptances to RSVPs, and 76 not attending responses, to the invitation to attend the physical Third Lead Author Meeting to be held in Quito. Overall, 291 participants were invited to the original physical meeting.[1] However, by the end of March, out of the 215 that had confirmed attendance 19 were unsure of being able to secure a visa to Ecuador, and so the actual number of participants at a physical meeting may likely have been lower. In total, 325 people expressed an interest in attending a virtual meeting and were invited to eLAM 3. The additional attendees were primarily an increased number of authors, Vice-Chairs, Co-Chairs, and TSU staff from the other IPCC Working Groups. Before it was known that LAM 3 would be a virtual meeting, only 12 people from the other Working Groups had confirmed attendance at the meeting in Ecuador; at eLAM 3 there were 26 participants from other Working Groups.

From the 325 invitees, there were a total of 287 participants in eLAM 3, with a participant being defined as any individual who took part in at least one Breakout Group (BOG) or plenary session.

3.2 Plenaries

The eLAM 3 had three plenary sessions, held at the start, middle and end of the meeting schedule. Plenary presentations were made using pre-recorded videos, including PowerPoint where appropriate. This helped with time management and provided insurance against IT failures, as more than one TSU member was able to run the videos. In the event, no back-up was ever required. The first plenary included speeches by the IPCC Chair and Ecuador's Minister for Environment and Water. All questions and comments in plenary sessions were managed through the chat and put to speakers via the session chair.

		Attendance		
		Plenary 1 14th April	Plenary 2 16th April	Plenary 3 18th April
Participants from:	Developing / in transition nations	97	99	87
	Developed nations	145	142	126
	Not recorded*	10	7	3
	Total participants	**252**	**248**	**216**

* Data was not available for country of origin for some WG I and WG II authors and TSU members.

3.3 Breakout Groups (BOGs)

Eleven Breakout Groups (BOGs) were successfully held during the eLAM 3 across four allocated sessions with parallel BOGs. Zoom was used to conduct all BOGs, with TSU members from both the Operations and Science teams on hand to take notes and assist with the technology if required. Links to all BOGs were circulated via Outlook calendar invitations and the daily eLAM 3 newsletter, ensuring everyone had access to all BOG links.

All BOGs were well attended. Interventions in discussions were made via the "raise hand" function in Zoom. Participants made good use of the chat function on Zoom to
constructive discussions, which were then recorded and made available to all via the DMS. The percentage of participants joining BOGs from developing countries varied greatly, depending on the BOG topic. 23% of participants attending the BOG on Scenarios were from developing countries, compared to 65% of those

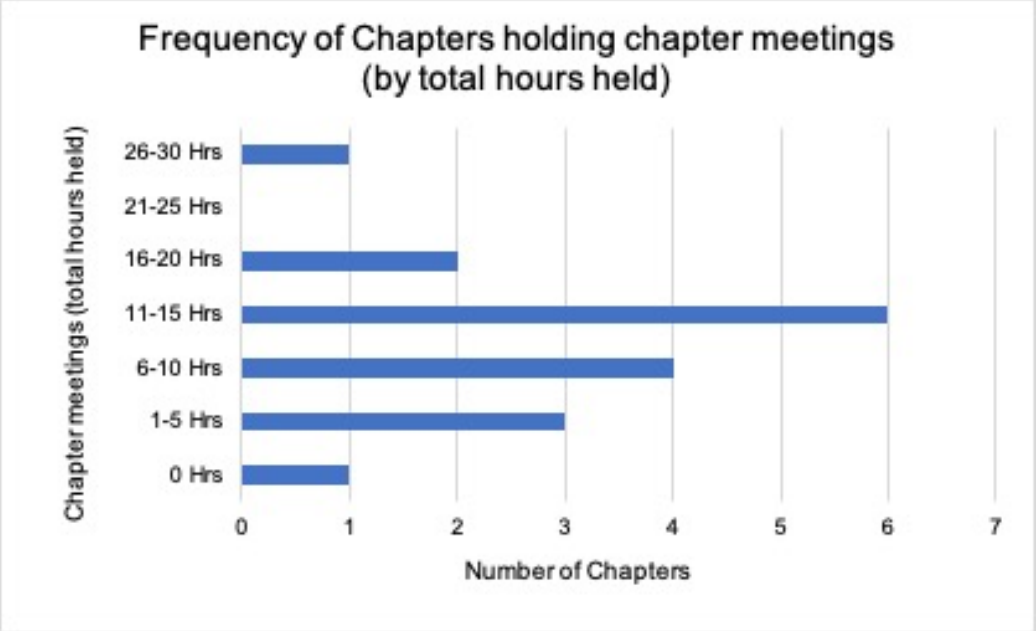
[1] Aside from WG III AR6 authors, this number included Bureau Members, TG Data Chairs, Secretariat, WG I and II selected authors, and TSU staff.

attending the BOG on Shifting Sustainable Development Pathways. The average percentage of developing country participants taking part across all BOGs was broadly representative of the overall proportion of developing country authors in the AR6 WG III author team. Holding BOGs via Zoom allowed for some Contributing Authors to participate, which would not have been the case at a physical LAM. Contributing Authors were permitted into a BOG only at the invitation of the BOG Chair(s), and with the understanding that they actively participate only at the invitation of the Chair or a Lead Author from their chapter.

Each BOG was assigned a Chair (or Chairs) and rapporteur, as would be done in a physical meeting. The rapporteur spoke to feedback slides presented during plenary sessions to share any outcomes or provisional decisions with all participants. It was made clear at the start of the eLAM 3 that any decisions made during a BOG would be provisional only, to allow those participants who were unable to attend the chance to review the BOG notes and provide feedback.

3.4 Participation at Chapter Meetings

It was agreed with CLAs of chapters that they should consider how best to manage their chapter meetings over the course of the week as best reflected their authors' availability. Not all chapters held their chapter meetings within the week of the eLAM 3 and instead chose to arrange their meetings over a more extended period. It should be noted that for most physical LAM meetings chapters would be holding chapter meetings extensively during those working hours where other LAM events (Plenaries, BOGs) were not already being held. In most instances at the eLAM 3 there was a significantly lower number of chapter meetings held when compared to a physical LAM.



3.5 Comparison of participation with other LAMs

Overall participation at eLAM 3 was higher than either previous WG III LAMs. Based on those categories where full data was available, there was no significant variation (>3% difference) across the three LAM meetings in terms of WMO Region, development status or gender.

		Attendance		
		LAM 1	LAM 2	eLAM 3
	Total	206	221	287*
WMO Region:	Africa	25	29	31
	Asia	46	51	59
	South America	15	17	29
	South-West Pacific	17	16	23
	Europe	73	74	97
	North America, Central America and the Caribbean	29	34	37
	Not recorded	1	0	11
Country development status:	Developed	127	134	170
	Developing	75	84	103
	In transition	3	3	3
	Not recorded	1	0	11
Gender information:	Male	133	139	179
	Female	73	81	107
	Not recorded	0	1	1

*Data for eLAM 3 sessions recorded against attendance at one or more Plenary or BOG. Attendance numbers for LAM 1 and LAM 2 recorded against RSVP responses.

3.6 Cross-Working Group participation

In total, 10 participants from WG I and 16 from WG II attended the eLAM 3. This included Lead Authors, Bureau Members and TSU members. In comparison, only two WG I and 11 WG II participants were expected to join the physical LAM. This highlights the opportunity for greater cross-Working Group collaboration during a virtual LAM, where participants are able to join only for those meetings that they are able to contribute to, rather than having to commit to attend a full week of meetings.

4. Feedback questionnaire analysis

The TSU circulates a feedback questionnaire after each Lead Author Meeting (LAM). This questionnaire was adapted to apply to a virtual meeting. Everyone *invited* to the eLAM was asked to complete relevant sections of the feedback questionnaire.

- There were 175 respondents to the eLAM 3 questionnaire, which is more than in any previous LAM feedback questionnaire circulated by the WG III TSU.
- 149 respondents (86%) had attended an IPCC meeting before. For 25 respondents (14%) this was their first meeting as an IPCC author/editor.
- Of contributors to the WG III AR6 report, 83% of CLAs, 53% of LAs, 65% of Review Editors, and 62% of Chapter Scientists responded to the questionnaire (a further 19 responses were received from Bureau Members, non-WG III contributors, or TSU staff).

A summary of findings follows below. Where appropriate, other findings are shared in later sections of the report. This report focuses on those evaluation criteria with relevance to evaluating a virtual, rather than physical, lead author meeting of the IPCC. Feedback on the benefits and trade-offs of activities during the virtual meeting necessarily reflect the views of those who could actually attend, rather than the views of those who could not.

4.1 Experience at the meeting

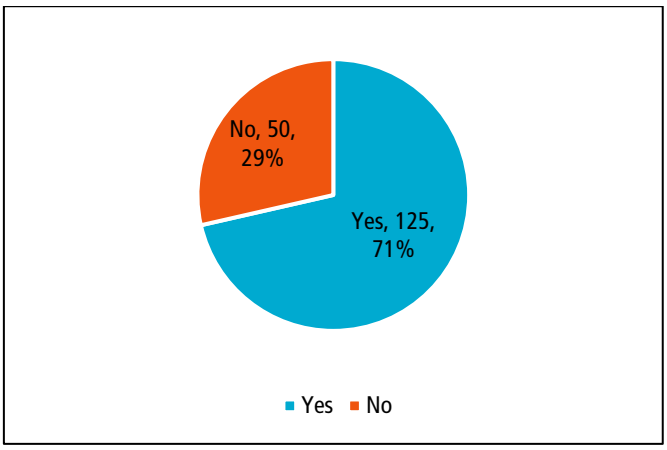
Question: How do you rank your overall experience at the meeting?

86% of eLAM 3 participants ranked their overall experience at the meeting as 'Excellent' (23%) or 'Good' (63%). 11% of participants ranked their overall experience as 'Neutral', 2% as 'Not very good, and 1% as 'Poor'.

- For LAM 1, 97% of respondents ranked their overall experience at the meeting as 'Excellent' (51%) or 'Good' (46%), 3% ranked their overall experience as 'Neutral' and no respondents ranked their experience as 'Not very good' or 'Poor'.
- For LAM 2, 88% of respondents ranked their experience at the meeting as 'Excellent' (37%) or 'Good' (51%), 6% ranked their overall experience as 'Neutral', 3% rated it 'Not very good' and 3% 'Poor.

4.2 Barriers to participation

Question: Did you feel that you were able to fully participate in the meeting?



The percentage of participants who felt they were not able to fully participate in the meeting increased compared to LAM 2 and LAM 1, where 11% and 7.2% of participants felt they were not able to fully participate in the meeting, respectively.

Evaluation of this question indicated that 27 (36%) developing country respondents felt they were not able to fully participate in the meeting, compared to 23 (25%) of developed country respondents. Participation also varied between regions, with South-West Pacific the most affected (56% not able to fully participate), followed by North America, Central America and the Caribbean (52%), South America (42%), Africa (41%), Asia (28%), and Europe (10%).

Question: Did any of the following hinder your participation in the meeting?[2]

	Major problem		Minor problem		Not a problem	
	#	%	#	%	#	%
English language barrier	6	4%	24	16%	120	80%
Other people dominating discussions	23	14%	52	31%	92	55%
Competing work commitments	42	24%	78	45%	53	31%
Competing domestic commitments	58	34%	72	42%	42	24%
Timing of live meetings (e.g., being held at unsocial hours)	50	29%	51	30%	69	41%
Difficulties with remote access	7	4%	40	24%	122	72%
Limited access to computers in domestic environment	6	4%	28	17%	132	80%
Other	12	21%	12	21%	33	58%

This is the first time the survey included the criteria 'competing domestic commitments', 'timing of live meetings', 'difficulties with remote access' and 'limited access to computers in domestic environment'.

[2] Only those criteria relevant to evaluating a virtual, rather than physical, meeting are noted here.

- Competing domestic commitments (34% major problem; 42% minor problem) and competing work commitments (24% major problem; 45% minor problem) were the two of the largest barriers to participation, regardless of the background of the participant (i.e. region or gender).
- Difficulties with remote access and limited access to computers in domestic environments were identified as a larger problem by developing country participants (41% experiencing difficulties with remote access; 29% having limited access to computers in domestic environment) than developed country participants (17% and 13%, respectively).
- Timing of live meetings was the largest barrier to participation in the North America, Central America and Caribbean regions, with 95% of respondents indicating this was a major or minor problem, as well as in South America (89%), South-West Pacific (89%), and Asia (77%). This compares to 48% for participants in Africa and 26% in Europe.
- Other people dominating discussions was identified as a barrier to participation for 54% of women and 41% of men.

Question: If you checked 'other' please specify.

Below is a summary of the open-text responses received.

- Limited time slots to develop topics – not possible to address big topics in BOGs in just one session
- Unable to participate from certain regions (e.g. Cuba) due to Zoom access
- Time zone issues for scheduled meetings
- Connection issues: unable to access internet at home; had to purchase fuel and data to participate; electricity shortages; issues accessing Zoom and Teams due to connectivity or privacy issues
- Domestic interruptions, including caring for children and elderly family members
- Intensity of the meeting and number of virtual calls throughout the week
- Complicated logistics and technology (although recognising that it was necessary)

Question: If you checked 'difficulties with remote access', please specify which of the following applied

	Major problem		Minor problem		Not a problem	
	#	%	#	%	#	%
Difficulty accessing Microsoft Teams	11	15%	18	24%	45	61%
Difficulty accessing Zoom	1	1%	10	11%	80	89%
Difficulty accessing DMS	3	3%	14	16%	70	80%
Difficulty connecting to live events (e.g., Plenaries or BOGs)	5	6%	15	17%	69	78%
Poor internet connectivity	14	15%	43	46%	37	39%
Poor audio quality resulting in difficulty participating in discussions	5	5%	34	37%	52	57%
Lack of access to computers/equipment	3	4%	7	8%	75	88%

- Microsoft Teams posed the biggest problem to participants from both developed (35% had problems) and developing countries (40% had problems).

- 55% of developed country respondents had minor problems with 'poor internet connectivity', while 39% of developing country participants experienced minor problems with internet connectivity, and a further 25% faced major problems.
- 37% of developed country respondents had minor problems with 'poor audio quality resulting in difficulty participating in discussions', while 40% of developing country respondents had minor problems and a further 6% faced major problems.
- 29% of developing country respondents indicated having minor problems with difficulty connecting to live events such as the plenaries or BOGs, with a further 4% indicating major problems. This compares to 6% of developed country respondents.
- 10% of developed country participants had minor problems with accessing Zoom, compared with 9% of developing country participants. 16% of developed country respondents had problems accessing DMS, compared with 20% of developing country respondents.

To assess the usefulness of resources provided by the TSU, survey participants were asked:

Question: Did you use the material provided virtually?

	Yes		No	
	#	%	#	%
BOG feedback notes or other meeting notes	133	80%	34	20%
Guidance videos (e.g., uncertainty language, figures, glossary)	62	37%	106	63%
Microsoft Teams for announcements, help desk, chapter discussions etc	59	35%	109	65%
eLAM 3 Newsletter	141	83%	28	17%

The survey indicates that there was relatively low engagement with the guidance videos placed on DMS by the TSU. While some of this material was shown in Plenary, some of these videos provided additional information that would otherwise have been delivered in additional sessions during a physical LAM.

There was also low engagement with Microsoft Teams, which was used for announcements, help desk and provided as a resource for chapter discussions. Announcements were also provided in the eLAM 3 Newsletter to ensure participants were able to access material in multiple locations. Participants found that the multiple platforms used in the eLAM 3 were confusing at times, which could explain the low engagement with Microsoft Teams.

5. Impact on the assessment of the science

The post eLAM 3 feedback survey provides insight into the extent to which the meeting's objectives for the science were met.

- 90% of respondents (151) indicated that the scientific objectives were set at an appropriate level, and that the meeting had been successful in meeting these objectives.
- However, some respondents expressed uncertainty about the overall scientific objectives and others noted that, as the ambition had been set low, the objectives were easier to achieve.
- Others suggested that the objectives for eLAM 3 could have been set more ambitiously and it could have been spread over two weeks.

The feedback from authors provides a variety of views in terms of which aspects of the meeting were effective or less effective. However, the survey suggests that a virtual LAM is not a complete substitute for a physical meeting. Building rapport and finding out whether everyone is on the same page in a virtual meeting is particularly challenging. The eLAM 3, in part, worked well because authors had already built effective working relationships in the two previous face-to-face meetings and this should not be discounted when considering the feedback for this virtual meeting.

In responses to the evaluation questionnaire, there were aspects of a physical meeting that participants missed that had relevance to the assessment of the science. Aspects not missed had less relevance to assessment of the science and more to participant wellbeing (see 8.2).

Aspects of a physical meeting missed by participants included:

- the ability to have instant, spontaneous interaction to discuss scientific elements of the report, including overlaps between sections and chapters;
- the time available for chapter meetings, and the ability to break into smaller groups to discuss sections;
- informal interactions and corridor discussions, including coffee breaks, food breaks and huddles, noting that these informal chats help advance professional work, and establish new relationships; they missed "important discussions that naturally happen during IPCC meetings and are so inspiring and constructive" and that "much of the great progress is in fact made in informal conversations"; and
- the team-building and trust-building elements of a physical meeting and the ability to meet new authors.

In responses to the evaluation questionnaire, participants reported both positive and negative aspects in terms of the productivity of the meeting.

Aspects of a virtual meeting that participants found more productive included:

- Virtual plenaries, in that interventions were shorter, and the virtual setting forced participants to speak clearly and without interrupting each other; time was also saved as it was possible to move more smoothly between presentations in a virtual setting.
- BOGs, which were better prepared and had set outcomes allowing more focussed discussion.
- The chat function available in Zoom during the plenaries and BOGs, which allowed for more democratic participation and shorter interventions.
- The virtual setting, which meant that there was less time for meetings and this time pressure meant discussions were more focused and to the point.
- Meetings being kept more to time in a virtual setting.
- The possibility to include Contributing Authors.

Aspects of a virtual meeting that participants found less productive included:

- Virtual meetings being productive in terms of operational aspects, but less productive in terms of substantive issues; one respondent noted: "the virtual meetings were fine for discussing procedures, timelines, and brief status updates, but couldn't match the productivity and organic contributions that come with a four-day physical meeting".
- Authors (for chapter meetings) found it harder to support collective thinking and reach agreement on decisions; the inability to schedule side-discussions and informal meetings also limited productivity.
- Limited time for chapter meetings due to time zones and competing domestic commitments.
- Less in-depth discussions in a virtual setting compared to a physical setting.
- The electronic format, which meant it was harder to express nuances and to resolve personal tensions and misunderstandings (this was noted by several respondents).
- A need to schedule follow-up meetings to sort issues that otherwise would have been resolved in a physical meeting, applying both within chapters and on cross-cutting issues.

6. Impact on outreach

With a fully virtual LAM, it was decided to run the planned local outreach event online also. The existing partnership with Climate Development Knowledge Network (CDKN), Fundación Futuro Latinoamericano (FFLA) and the Ministry of the Environment, Government of Ecuador was maintained in order to develop and deliver a successful virtual event. The programme remained widely similar to that developed for an in-person meeting in Ecuador and was titled 'What do IPCC Findings Mean for Latin America'.

The virtual nature of the event made remote participation from other Latin American countries, and other regions in general, simpler. The event reached 957 registrations – significantly more than would be possible for an in-person event, opening the event to a larger audience. In total, 607 individuals joined the event, with a maximum of 472 viewers at any one time. This is significantly higher than the expected 80-250 individuals for an in-person event (dependent on venue and location).

As with an in-person event, the public were encouraged to submit questions to the panel of speakers. An interactive submission platform (Slido) was used to moderate these. The Q&A sessions received heavy engagement, with 63 questions received in total. The event went into overtime in order to accommodate these.

A virtual outreach event did pose some challenges to the team in organising the event, particularly in preparing the speakers and programme to run smoothly and efficiently. Time keeping was more difficult than at an in-person meeting. However, several challenges/barriers were removed thanks to running the event online, including any need for significant monetary contributions on behalf of the hosts (e.g. for catering, printed materials etc.), the necessity of a large venue (and cost associated), as well as the time pressure on authors engaged in an already busy Lead Author Meeting. This outreach meeting was held five days after the close of the Lead Author Meeting, allowing authors some time to rest and return for the event. This would not be possible at an in-person meeting. Similarly, the break between the meeting and event gave members of the TSU (particularly the Communications and Operations teams) time to adequately prepare for the event while also being able to dedicate their time fully to the Lead Author Meeting, which otherwise may not have been possible (depending on the date and time of an in-person event). Finally, several additional support staff were able to join the event from alternative locations to provide help, including from the US (UN Foundation) and Argentina (CDKN).

7. Other impacts

The switch from a physical to a virtual setting had a number of impacts beyond the assessment of the science and the planned outreach activities.

7.1 Carbon footprint

The total CO_2 emissions avoided by eliminating the need for air travel was 368 tonnes. This figure was based on information available for 276 participants (Coordinating Lead Authors, Lead Authors, Chapter Scientists, Review Editors, and WG III, WG II and WG I TSU and Bureau members) who had either accepted the invitation to go to the physical LAM in Quito or had neither confirmed nor refused. Those who had declared they would not attend LAM 3 were not included in these numbers. This figure was calculated using the ICAO Carbon Emission Calculator and was based on information available for those tickets booked for TSU members and Chapter Scientists, and an online search to identify likely routes and flights that would have been taken by other attendees.

These do not include avoided emissions from other (non-air) travel to the LAM, participant accommodation, and running the event venue (including air conditioning, power and water).

7.2 Travel time and well-being

The avoidance of a physical meeting reduced pressures on eLAM 3 attendees in terms of changes in time zone and time spent travelling, including some extremely lengthy journeys. For example, a one-way trip from India to Ecuador would have involved a journey time of 43 hours 35 minutes, including 13 hours transit time in two airports, as booked through the IPCC Trust Fund.

Travel featured heavily when participants were asked in the evaluation questionnaire which components of a physical meeting they missed least, with responses including:

- the travel and jetlag, including staying in a hotel, acquiring a visa, associated costs and reimbursement processes, and being away from family; and
- the associated GHG emissions and pollution.

As previously noted, the evaluation questionnaire does highlight other pressures that holding a virtual meeting could cause on well-being. For example, competing domestic commitments and competing work commitments were cited as a 'major' or 'minor' problem by 76% and 69% respectively of respondents to the evaluation questionnaire. In some cases, this may be unique to the current circumstances associated with Covid-19 and the local lockdown regimes in place (e.g. closure of schools requiring participants to also manage childcare). However, for others, physically attending a LAM might allow a far greater separation from domestic and working duties, which a virtual LAM does not allow. The ability to concentrate fully, away from competing work and domestic commitments was noted in responses to the question as to what aspects of a physical meeting were missed by participants. However, as a corollary, respondents to the questionnaire also reported that an aspect of a physical LAM that was missed least included the long hours of a physical LAM, with one respondent noting that the eLAM 3 allowed for lighter scheduling due to the optionality of meetings.

7.3 Financial aspects

While the cancellation of a physical meeting may result in costs still incurred, if a virtual LAM was planned from the outset there would be considerable financial savings made as a result. For a developing country host, the IPCC Trust Fund would have contributed to the cost of hosting the meeting, alongside providing travel support to participants from developing countries. At the 52nd Session of the IPCC, the panel agreed a budget of $82k USD for the developing country host and $482k USD for the journeys of developing and in transition countries.[3] Presuming that travel for participants from developed countries was equal in cost, a total saving of 1,046,285 USD could have been made.

Expenditure area	Cost ($k USD)
Host country to hold the meeting	82
Developing and in transition country participant travel	482
Developed country participant travel	482
Total	**1,046**

In comparison to those costs saved from hosting and travel, new costs incurred for organising the virtual meeting were relatively minimal, with only $2,800 USD direct costs, which were attributable to online conferencing licences for 17 chapter teams and larger plenaries and BOGs.[4] It should be noted that the WG III TSU had technologies already in place via its host organisation, Imperial College London, including a Microsoft Teams licence. The costs of running a virtual LAM were noticeably modest. However, this in part could be contributed to the fact that the TSU did not have a considerable amount of time to plan the virtual meeting given the circumstances, and with more time further investment could have been made in support materials, additional activities requiring further licenses, the provision of additional ICT support, and costs for providing access to technology for participants (in particular to those from developing countries and countries with economies in transition).

Given that many of the flights were already booked prior to the decision to move from a physical to virtual LAM, and as the position regarding the recoverability via insurance of the costs of flights is not yet known, it is not possible at the time of writing to determine the financial impact of cancelling the physical LAM.

7.4 Impacts on communications

From a communications perspective, both positive and negative impacts were experienced. Holding a virtual outreach event was overall a very positive experience and provided a number of constructive impacts, making the outreach event more accessible for a wider variety of people across Latin America (see 7 above). However, some aspects of communications activity were negatively impacted, including the originally scheduled media training sessions, which could not have been adequately completed online. Media training requires some in-person/face-to-face contact in order to replicate realistic interview situations. While media training can be complemented with online sessions, it is not a substitute for in-person meetings where the trainer and scientist can speak in-person. It also does not allow the trainer to receive a complete picture of how the scientist/expert would perform in an interview situation. Therefore, media training did not go ahead at eLAM 3 and will need to be undertaken in-person at LAM 4 (or another in-person meeting with authors, prior to approval of the report).

[3] The budget adopted at P52 can be found in Annex 4 of the public decision document, link included: https://www.ipcc.ch/site/assets/uploads/2019/12/IPCC-52_decisions-adopted-by-the-Panel.pdf

[4] Please note that this number reflects the cost of running the eLAM 3, it does not take into account the financial costs attributed to cancelling the physical meeting, for instance non-refundable flights.

Communications messaging work did take place via online consultations with chapters. This is the first time this activity has been a part of a WG III Lead Author Meeting, and thus there is no comparison to how successful this would be in an in-person meeting. The communications team does feel they would have benefited further from in-person communication in this instance.

7.5 Impacts on the local host country

The Ministry of the Environment and Water, Government of Ecuador, was responsive, flexible and supportive in their response to the changes in plans for the LAM. As hosts, they engaged with the virtual Lead Author Meeting, including by contributing to the opening ceremony and partnering with WG III to host the virtual outreach event.

The cancellation of the event will have had a series of economic impacts, including lost revenue to the conference venue and accommodation providers (as noted in 8.3 an allocation of $82k USD was made by the IPCC Secretariat as a contribution to support the event but further costs would have been incurred by the host). Furthermore, the cancellation will have resulted in lost auxiliary economic benefits to the local area that would otherwise have been provided through the expenditure by LAM participants in travel and tourism; to provide an estimate, using the United Nations Daily Subsistence Allowance for Quito of $201 USD per person, for 230 people over five days a sum of $231k USD could have been spent over this period).

7.6 Press coverage in relation to holding a virtual meeting

The cancellation of the Lead Author Meeting in Quito and move to a virtual meeting was covered by a number of news sites. Most articles examined the process and challenges of moving an in-person meeting online and considered the potential wider impacts to the creation and timeline of IPCC reports. A number of IPCC bureau, TSU, and authors were interviewed about the virtual Lead Author Meeting during March and April, including the following articles:

Nature - *Can the world's most influential climate report carry on?*
Jeff Tollefson interviews WG II Co-Chair Valérie Masson-Delmotte as she explains how the IPCC can learn from WG III's experience of holding a virtual Lead Author Meeting.

Scientific American - *Coronavirus Spurs Mass Cancellation of Climate Meetings*
Coverage of cancelation of WG III meeting in Quito.

Green Car Congress - *IPCC Working Group III holds first virtual Lead Author Meeting*

Dignited - *COVID-19: 6 Activities That Have Fully Gone Online*

8. Implications for future IPCC meetings

The evaluation of the WG III eLAM 3 provides findings and lessons learned that inform a range of considerations when deciding the appropriateness of using virtual meetings for the purposes of the IPCC or other similar organisations. Alongside IPCC Lead Author Meetings, virtual settings, or hybrid virtual/physical settings, could be considered for other types of IPCC meetings, including expert meetings and the "writeshop" for the Summary for Policymakers.

The decision to hold a meeting in a virtual, rather than physical, setting brings both benefits and trade-offs; the degree to which these benefits and trade-offs arise cannot be generalised as every meeting is unique. The three key considerations relating to the decision to hold a virtual meeting (or adopt virtual elements for a meeting) are:

- **Consideration 1:** the meeting's position within a cycle of a meetings;
- **Consideration 2:** the meeting's objectives; and
- **Consideration 3:** whether opportunities can be exploited to adopt hybrid approaches taking the best from both physical and virtual meetings.

Where a virtual meeting – or a hybrid meeting using virtual elements – is selected, meeting organisers should consider:

- **Consideration 4:** practical approaches to minimise the trade-offs of a virtual meeting; and
- **Consideration 5:** actions to ensure that a virtual meeting is run effectively, including to minimise or remove barriers to participation.

Careful attention to these considerations will support effective decision making as to when and how virtual meetings or aspects of virtual meetings can be used to meet IPCC objectives.

Annex C provides further detailed lessons relevant to the effective delivery of virtual meetings based on the eLAM 3 experience.

Consideration 1: the meeting's position within a sequence of meetings

The WG III virtual meeting held in April 2020 was the third Lead Author Meeting of the assessment cycle (eLAM 3). As a consequence, the majority of authors had attended two previous physical meetings, providing opportunities to work closely with colleagues in a physical setting, and build trust and mutual understanding through more informal interactions. The outcomes achieved from the eLAM 3 could have been far more limited if the virtual LAM had been the first Lead Author Meeting of the assessment cycle of four meetings. Responding to the evaluation questionnaire, some authors suggested the need for LAM 1 and LAM 4 to be held in a physical setting to allow, respectively, authors to get to know one another and to enable the fullest possible discussion to conclude their work. However, this provides scope for LAM 2 and LAM 3 to take place in a virtual setting.

Consideration 2: the meeting's objectives

All IPCC meetings need high-level objectives and criteria for success, and consideration should be given as to whether these can be achieved without a physical meeting. If the view is that they can, the planning phase should ensure that the meeting design seeks to maximise the benefits and minimise the trade-offs of a virtual setting. For example, virtual settings can be highly effective for sharing information and considering high-level strategic matters, such as the overall direction of a chapter; virtual settings can be less effective for enabling discussion of the detail of the science and/or enabling collaborative working. Virtual settings can also enable the participation of a far wider cohort of participants (e.g. authors from other Working Groups)

and this can enable wider input on those issues that have cross-cutting relevance across climate science – this can make BOGs particularly effective. What is less clear is whether, without the face-to-face contact of a physical setting, authors can successively delve into the detail of the science and address and overcome differences in opinions. Physical settings also provide the opportunity to achieve non-meeting outcomes, such as, in the case of the WG III eLAM 3, the delivery of media training, for which a virtual setting was not an adequate alternative to a physical setting.

Meeting planners also have to be cautious about allowing the additional scope for extending the meeting duration provided by a virtual setting to result in a meeting without clear boundaries. While lessons learned identify some benefits that could be found in extending the meeting beyond the six-day duration of WG III's eLAM 3 (e.g. increasing the number of most viable meeting hours in terms of time zones, providing lengthier time periods for chapter teams to read and review important documents), there was a risk of commitments extending beyond the expectations and capacity of IPCC's volunteer authors.

Consideration 3: whether opportunities can be exploited to adopt hybrid approaches taking the best from both physical and virtual meetings

Identification of the benefits and trade-offs from both virtual and physical settings presents the opportunity of adopting a hybrid approach – with some meeting elements virtual and others physical – to achieve the best from both settings. For example, as noted, those sessions that have the primary purpose of sharing information work well in a virtual setting; as a result, Plenaries could be held virtually prior to a physical meeting, which may also bring the additional benefit of allowing participants additional time to consider matters raised in Plenary and think about how to respond before meeting physically. The availability of participants matters also: for example, those BOGs with themes of greatest relevance across Working Groups could also achieve the benefits of a virtual setting, which allows more participation from other Working Groups, and so these could also be candidates for being held in a virtual setting. Chapter meetings, where the detail of the science is considered and where there may also be blockers to progress that are best dealt with through face-to-face discussions, would remain the best candidates for being held in a physical setting. To enable a hybrid approach, consideration would need to be given to running the meeting (virtual and physical elements) over a longer duration.

A virtual outreach event removes some of the organisational barriers of a physical meeting, such as the need to secure a large venue, support personnel to staff the event, tech and furniture setup for the event, and, importantly, adequate funding to cater the event. In future, virtual outreach events could replace some physical outreach events, providing access to a wider audience (e.g. from other regions, language groups or even countries), and making the event more accessible to people who would otherwise be unable to travel. Simultaneous interpretation means more engagement can take place in the host's native language, rather than the standard English, as a wider number of speakers and moderators could join virtually. A virtual outreach event will also open-up audience engagement with panel sessions, as digital submission of questions removes the barrier of speaking personally in public, and more questions can be answered by the panel when they are succinctly submitted online (rather than via microphone in-person, for example).

If contemplating holding IPCC Plenaries or Bureau meetings, the capabilities of different technologies for videoconferencing should be considered (e.g. Zoom now has the facility to include simultaneous interpretation across multiple channels).
Acknowledging the challenges currently posed by the Covid-19 pandemic, a physical meeting could be convened but then as the meeting date arrives, participation from countries under lockdown may be limited. The above approach of using some virtual elements would help minimise this impact, but meeting planners may also need to consider another hybrid approach, whereby provision is made for those authors from countries under lockdown to attend a physical meeting using virtual means (i.e. teleconference into the meeting). Proper provision would need to be made to ensure that those authors could participate fully in the

meeting (e.g. a nominated TSU staff member to monitor the teleconference facility for connection problems, ensure that the Chair is aware of when they wish to contribute, etc.).

Consideration 4: practical approaches to minimise the trade-offs of a virtual meeting

Where virtual settings are adopted (or adopted for certain elements of a meeting), meeting planners should consider what practical measures and approaches can be selected to minimise the trade-offs from the virtual setting.

The lack of intersocial and interpersonal interactions was a noted trade-off from a virtual setting and future meetings should seek to address this. Eight respondents to the evaluation questionnaire recommended that the TSU host virtual 'coffee breaks', where authors could come together to have informal discussions; another suggestion was to provide a platform where authors could interact informally. While MS Teams was intended for this purpose, as noted, user take-up was low and so efforts should be made to try to introduce meeting participants to new technologies in advance of the meeting (for example, by hosting a pre-meeting virtual coffee event using the technology being introduced).

The chat function available on Zoom was popular with respondents but it should not be considered a substitute for interacting in a physical setting. To improve the use of chat, meeting organisers could develop rules around how participants use the chat, for example, by providing a more structured approach for introducing new topics to the chat or a consistent approach for showing agreement or disagreement with comments. Regarding the former, appointing an additional meeting Chair to monitor the chat and highlight discussion from the chat in the main proceedings of the meeting could be an additional benefit; regarding the latter point, the introduction of online polls could be a means to effect more transparent decision making on key matters of business.

The design of individual meeting sessions could also be revised to achieve benefits in a virtual setting. For example, the duration of some virtual activities could be extended, with one respondent to the evaluation questionnaire suggesting that longer running times for the BOGs could allow discussion to develop more organically.

Consideration 5: actions to ensure that a virtual meeting is run effectively, including to minimise or remove barriers to participation

The success of any meeting depends on the effectiveness of its planning and delivery, and meetings in a virtual setting are no different.

Meeting organisers should start planning well in advance of the meeting. A key early decision is how to select a daily timetable for meeting activities that maximises participation across time zones. In the case of the WG III eLAM 3, midday UTC could in principle support high attendance but at inconvenient times for those in the East or West. Earlier and later meeting times could reduce attendance but are easier for those in at least one hemisphere and so careful consideration should be given to the precise location of participants, including for specific sessions of virtual meetings. A more equitable approach could also be to adjust the timetable part-way through the meeting schedule to allow meeting timing to better accommodate other parties.

Another key planning decision is considering staffing support required for the meeting and defining clear roles and assigning individuals to those roles (e.g. Chair's assistant; technical support; note-taking of discussion; chat monitoring; various roles associated with communications).

In terms of practical delivery of the meeting, all efforts should be made to ensure that all parties understand how the virtual meeting will proceed and how they are expected to participate. Chairs should ensure that all attendees understand good meeting etiquette (for example, the use of "raising hands" on Zoom, the use of

chat, when to share screens, etc.). Where a virtual meeting may prohibit full participation of attendees – and, in particular, where decisions are to be taken – meeting organisers should ensure that those not able to fully participate or attend the meetings will have a subsequent opportunity to comment on business and, where relevant, refine these decisions. On the same basis, organisers should ensure that meetings are recorded and notes, covering both verbal remarks and chat comments, are made available to those who were unable to attend.

Appropriate implementation of technology can also support the delivery of successful meeting outcomes. As noted, technologies worked best where they were familiar to participants. When considering how technology can best support meeting outcomes, the benefits of desirable functionality offered by new and unfamiliar technologies may be outweighed by the benefits of using less functional but familiar technologies that will be used by participants. Using technology to automate elements of meetings can also provide significant benefits and reduce risks. For example, pre-recorded interventions can be used to good effect, as these tend to be briefer, more focused, allow the person otherwise speaking to monitor comments on chat and prepare to respond, and also allow those not in attendance to view them at a later time. Recording discussion during meetings also provides an audio recording to support note takers to produce the most accurate minutes of the event. However, technology can also prove a barrier for some participants. While technology for eLAM 3 was chosen to maximise attendance, some authors were either unable to attend or participate fully due to (i) local technological challenges (e.g. internet connectivity) or (ii) license restrictions for technologies used. These challenges were felt more acutely by participants from developing countries or those from countries with economies in transition. In future, meeting planners should (i) consider what additional technological support or financial support could be provided to participants to enable attendance at, or fuller participation in, the meeting (for example, purchase of IT equipment, purchase of data, hire of a room with high-quality internet connection); and (ii) investigate either what other platforms are available that may allow fuller participation or whether technological workarounds (e.g. dialling in; receiving presentation material via email) could mitigate the issue of direct access to the platform using an application or browser.

The coordination of any meeting requires effective communications, especially for IPCC Lead Author Meetings which require high numbers of participants, and this need is only increased in a virtual setting. The newsletter adopted by WG III for its eLAM 3 was a simple but effective way of ensuring that participants were receiving up-to-date information on the schedule and on matters arising from the meeting, but other technologies could be used. Other considerations noted above, such as the adoption of a hybrid virtual-physical approach or extending activities over longer periods of time, only increases the importance of effective communications.

Annex A: Roles in delivering a virtual Lead Author Meeting

Roles were delivered by TSU staff from Working Group III with additional support provided by TSU staff from Working Groups I and II, the IPCC Secretariat, and the Escott-Hunt consultancy.

Role	Detail	TSU Member	Back-Up
Scheduling and Agenda	Checking TSU inbox for new requests for BOGs plus any chapter meetings and their Zoom links Updating the agenda on DMS and MS Teams	Senior Administrator	Head of TSU: Operations
	Updating chapter schedule list with Zoom links Ensuring newsletter contacts are provided with up to date meetings	TSU Administrator	
BOG Coordination	Coordinating BOG organisation with CLAs on BOG titles, scheduling chairs, detailed agenda Provisional bureau and TSU support Setting up a process for facilitating BOGs and notes	Senior Scientist 1	Head of TSU: Science
Figures	Ensure Figures process for SPM/TS up to date (available on SharePoint) and ready for SPM workshop	Senior Scientist 2	Head of TSU: Science
Data	Emissions data and energy data with IEA	Senior Scientist 3	Senior Scientist 1
	TG-Data issues		Head of TSU: WG I
Messaging and Communications	Arranging Chapter visits for messaging and inter-team communication	Communications Manager	TSU Administrator
	Attendance in Chapter visits (17)		Escott-Hunt
	Exporting Qualtrics Feedback		Senior Scientist 2
	Compiling and delivering feedback (presentation) Delivering presentations to plenary (2) Attending SPM session		Escott-Hunt
	All other Comms Inquiries (e.g. where to find docs, outreach support, media questions etc.)		TSU Administrator

Role	Detail	TSU Member	Back-Up
Chapter Scientist communications	Scheduling and chairing meetings with Chapter Scientists Being first point of contact for queries and upsets Organising any training as necessary	Senior Administrator and Science Officer	Senior Scientist 1 and TSU Administrator
Review Editor communications	Drafting agenda/papers, taking notes, recording and circulating, assisting chair	Senior Administrator	TSU Administrator and Head of TSU: Operations
Newsletter	Consolidating content for the daily newsletter, deciding when the newsletter goes out	Senior Administrator	TSU Administrator
	MailChimp user: importing content daily and sending the email to all on the distribution list	Communications Manager	IT Officer (WG I)
Bureau Meeting Agenda/Notes	Taking notes, circulating for approval, distribution Uploading onto DMS Arranging agendas for next meeting	Senior Administrator	Head of TSU: Operations and Senior Scientist 2
CLA-Bureau Meeting Agenda/Notes	Taking notes, circulating for approval, distribution Uploading onto DMS Arranging agendas for next meeting	Senior Administrator	Head of TSU: Operations and Senior Scientist 2
TSU Inbox	Managing incoming correspondence	TSU Administrator	Senior Administrator and Head of TSU: Operations
Technology Troubleshooting	Responding to incoming correspondence regarding technology queries Responding to eLAM 3 MS Teams homepage if any questions are posted relating to technology Being on hand to assist in plenaries if required Ready to enact PLAN B if everything goes wrong with Zoom or other tech	IT and Web Manager	IT Officer (WG I)

Role	Detail	TSU Member	Back-Up
Note taking for Break Out Groups	Science team: Taking notes, circulating to BOG leads for approval. Ensure these are uploaded onto DMS Prepare one slide on key decisions and upload on DMS Ensure a rapporteur is assigned and has agreed to make the presentation	Senior Scientists 1, 2, 3 Science Officer, Head of TSU (WG I), Head of Science (WG I), Science Advisor (WG II), Science Officer (WG II)	Senior Administrator
	Distribution of notes to attendees (note taker to make sure to take list of participants)	TSU Administrator	
Note taking – Plenary Q&As	Taking notes, circulating for approval and distributing to all participants. Ensure uploaded onto DMS.	Head of Science (WG I) and Senior Scientist 2	Science Advisor (WG II)
Chairs Assisting in BOGs and Plenaries	In plenaries: 1-person screen sharing, 2 people turning off mics, monitoring chat and TSU inbox for queries, assisting chair as required. In BOGS: screen sharing and onscreen editing where required, assisting chair with taking questions, monitoring etiquette with mics.	Head of TSU: Operations, Senior Administrator, TSU Administrator, Senior Scientist 2	Director of Operations (WG II)
Documents and Recordings on DMS	Ensuring the relevant documents are uploaded to DMS prior to each day and that at the end of each day all the recordings and summaries are uploaded.	TSU Administrator	Head of TSU: Operations and Senior Administrator

Annex B: Implementation of selected technology

To enable effective use of Zoom, a number of generic Gmail accounts were created and assigned to the licenses purchased, allowing the TSU to avoid tying the logins to specific users' emails, which provided contingency if there was an issue with a TSU member's connectivity or health. All Zoom links to plenaries, BOGs and Bureau meetings were generated and saved in a word file in SharePoint, accessible by all TSU staff. This included the Gmail account used for each. This ensured any TSU member could start and manage the meetings.

For added security and to minimise disruption, all Zoom meeting defaults were set up with a password, the waiting room was enabled, only hosts could share their screen, file sharing and annotation was disabled, and video and audio was disabled on entry for participants. For plenaries, most presentations were pre-recorded (using Zoom) and were made available on DMS to participants who could not join the meeting. This also ensured a smoother running of the meeting by minimising the potential audio issues of presenters. Once plenaries started, TSU staff were made co-hosts and the Communications Manager was assigned to be the sole screen sharer. All co-hosts made sure they had relevant videos and presentations ready in case of any issue with the Communications Manager's connectivity.

During meetings, participants were advised to change their Zoom display name (or had it changed for them by co-hosts after a private chat) to ensure all participants were easily identifiable; this also ensured no unwelcome participants were attending. TSU staff managed to have all participants identified correctly which made chairing the meeting much smoother. All meetings ran successfully and uninterrupted on Zoom. All recordings were completed successfully.

In relation to Microsoft Teams, the TSU sent instructions about using the technology with more detailed instructions on how to create an account and join the IPCC WG III eLAM 3 Team. The bulk of the registrations was completed in the last weekend prior to the meeting. The TSU responded to a number of support emails and did manage to get a large number of attendees to join and use Teams, but not all given the circumstances. The following channels were created:

- General
- Announcements from TSU
- Breakout Groups (BOGs)
- Chapter Scientists
- Helpdesk

The Mailchimp newsletter was distributed at the end of each day and would highlight the most important events and results of the daily activities.

The new platforms (Zoom and MS Teams) introduced, combined with the well-established DMS and participants' emails (including the daily eLAM 3 Mailchimp newsletter) provided a range of technologies for the majority of participants to be kept informed and involved all week, and information flow was optimised for a successful meeting.

Annex C: Lessons learnt

The eLAM 3 afforded the TSU and AR6 authors a range of lessons learnt that could inform future decisions on whether to hold a virtual LAM and, if having done so, choices in how to best manage a virtual LAM to secure intended outcomes. Some lessons learnt also held relevance for future physical LAM meetings.

1. Scientific objectives lessons learnt

- BOGs were very successful, in part due to additional preparation that they were given. Whether BOGs are held virtually or physically, this highlights the need for preparation to establish the BOG objectives, and the intended outcomes and next steps.
- The importance of pre-meeting preparation extended to all elements of the virtual LAM – of crucial importance was ensuring that responsibilities for specific topics and cross-cutting issues were allocated.
- Plenaries were considered more effective in a virtual setting than in a physical setting by many participants. This highlights the importance of keeping to time, as well as ensuring interventions are kept short and to the point. Additional material and guidance can be provided on DMS rather than presented in Plenary. However, more thought needs to be given to how to ensure authors access and engage with the additional guidance videos and documentation, as the survey indicated the majority of authors did not do so.
- Chapters meetings were left to be organised and arranged by the CLAs. However, due to time zone and connectivity issues, chapters were unable to meet as often and for as long as a physical meeting would have allowed. Chapters also adopted very different approaches, with some chapters scheduling an intense week of meetings and others spreading meetings out a few weeks before and after the eLAM 3.
- Participants missed the ability to have informal, spontaneous conversations the most. This impacted scientific elements of the report, in particular the ability to discuss overlaps between chapters.
- With not all LAM activities confined to a single week, there is a temptation not to draw a line under the LAM and let activities drift on.
- A virtual LAM works better when participants already know each other. With regards to CLAs, LAs, and CSs, this was (for the majority) the case; so too for Co-Chairs, Vice-Chairs, and TSU staff; however, eLAM 3 was the first time that WG III Review Editors had attended a Lead Author Meeting, and so the chapter teams had not yet been introduced to their REs, and explaining the role of REs and ensuring they were integrated into the chapter discussions was more challenging in a virtual setting than a physical one, where attendants can be directed to the correct room or introduced to the authors in-person.

2. Technology lessons learnt

- The introduction of new technologies requires consideration. Participants successfully used known-technologies (e.g. DMS, email for daily newsletter) and adopted the (for many new) technology of Zoom, however uptake of MS Teams remained low. It is difficult to ascertain whether low uptake of MS Teams related to the usability of the technology or the purpose towards which its use was intended. Participation in eLAM 3 required use of Zoom, meaning that participants had to "get to grips" with the technology, and its similarity to other videoconferencing technology may have supported successful uptake. From the post-meeting questionnaire results, it was confirmed that not all authors were able to join and use MS Teams. Respondents suggested limiting the number of platforms used.

- The intended purpose of MS Teams was to support the ancillary, rather than core, aims of the eLAM 3 (to support interpersonal and intersocial interactions) and so, when faced with a range of new technologies some participants may have elected not to use it due to already having a number of technologies to adapt to and manage. It should be noted that the lack of interpersonal and intersocial interactions (the ancillary aims for adopting MS Teams) was cited as a drawback for a virtual, rather than physical, meeting and so, if technologies such as MS Teams (or another suitable alternative technology) was introduced and successfully adopted by participants (including through training, more test sessions, or use in other IPCC activities well in advance of the virtual LAM), those identified shortcomings of a virtual meeting could be attenuated.
- Based on responses to the feedback questionnaire, participants mostly ranked the technology guidance and assistance provided as 'excellent' or 'good' (an average of 86% across all five categories). However, three categories of guidance received scores above 10% for 'neutral' ((i) guidance on assistance with troubleshooting and accessing technology platforms at 13% 'neutral'; (ii) guidance on responding to review comments at 18%; and (iii) how to access additional guidance documentation (e.g. on data issues, glossary, Mendeley, etc.) at 17%). It is unclear whether these 'neutral' scores are scores for the quality of the guidance and instructions or whether they relate to participants not needing to use, or not being able to find, the guidance and instructions. Communications will be reviewed in advance of the next meeting and the evaluation questionnaire adjusted.
- Pre-recording videos seemed to work well, reducing pressure on speakers and allowing Chairs to focus on other aspects of meeting management (e.g. observing the chat, preparing for the next item of the agenda). However, this did require earlier completion of presentations than would normally have been the case with no scope for last minute changes.
- Meeting etiquette was important for the smooth running of the meetings and overall the TSU found that attendees followed guidance very well, and having this guidance prepared in advance was very useful. Having dedicated members of the TSU on hand to support policing of etiquette (lowering hands, turning of mics and videos) worked well. In future, meetings could commence with a reminder to participants of meeting etiquette.
- Contingencies for technology failure were essential, including for presenters and those sharing screens. For future meetings, more consideration would be given to hardware backup, such as making sure spare headphones and laptop/desktop replacements were made available, especially for Chairs and meeting hosts.
- The chat function on Zoom seemed to work well but more guidance could have been given in advance to Chairs to help them to manage meetings where questions were submitted via chat and via the "raise hand" function. One helpful format was to assign two Chairs with one charged with monitoring the chat only.
- For the first plenary annotation was not disabled, and briefly some scribbled graphics appeared on screen; this was rectified quickly by stopping the sharing and sharing again with annotation disabled. Annotation was disabled for all subsequent meetings and no further disruptions occurred.
- The convening of virtual Chapter meetings, which were managed by Chapter Scientists (rather than by TSU staff who managed Plenaries, BOGs, and Bureau Meetings), could benefit from receiving more detailed guidance on best practices for using and running Zoom securely.
- While Gmail accounts increased flexibility regarding who could sign-in to Zoom meetings, it also allowed for confusion as users needed to ensure that they were logging in using the right Gmail account. In one instance a meeting host was logged into the wrong meeting. This is easily resolved by clearing browser cache before login.
- The TSU received the bulk of support emails in the weekend leading up to the first Plenary, so this was not as crucial during the week as had been planned for. This was mainly due to the fact that information was distributed efficiently, including through the newsletter.
- The use of outlook invites for key meetings appeared to work very well and this would also be considered for future physical meetings.

3. Communications lessons learnt

- There was a need to keep communications simple. While the desire to target sub-groups with specific information was commendable, the result largely confused participants. As such, there was a three-way trade-off between highly targeted messaging versus a small number of messages versus relevant content that would need to be managed carefully.
- Pre-meeting information disseminated to participants about the communications activities to be covered in the virtual meeting could be improved. Since communications activity is often separate from main programming, a summary or briefing document would help to keep all participants in the loop about what activities will be taking place, when they will be taking place, and where documents can be accessed. This was attempted at eLAM 3 with a presentation from the WG III Communications Manager and a contracted media and communications professional in the opening plenary. However, uptake of what was covered in the session could be improved.
- The communications team took chapter consultations and textual feedback from authors during eLAM 3. Textual feedback did not always follow the request to fill in the form, but rather consisted of lengthy comments and editing by multiple parties of a messaging document, which became unmanageable. In future, it is recommended to place tighter restrictions on how feedback should be provided and avoid any editable documents (e.g. in MS Word format) being circulated to authors.
- Some authors found the turnaround time to read and review important documents that was provided at the eLAM 3 too short to offer thorough and constructive feedback. This is more of an issue with the length of the eLAM 3. The communications team would benefit from having a longer overall virtual meeting (e.g. spread over two weeks rather than one week).
- The experience of the chapter consultations during eLAM 3 was that 30 minutes was not always adequate to consult with each chapter. The team would in future plan a 30-60 minute session per chapter. In addition, the number of authors in each session sometimes meant that discussion veered off onto unrelated topics. Identifying several CLAs and LAs from each chapter would, in future, help to keep conversation with communications staff on-track.
- Other aspects relating to communications may be less successful in a virtual setting. For example, media training is normally provided in a physical setting in order to replicate the experience of a (usually) in-person interview with a member of the press (or other media/public engagement professional); replicating this situation is important to support an author in developing the skills to handle such questions, bridge from such questions/topics to move forward in an interview, and adhere to agreed upon messaging. While some interviews are taken via telephone or video conference, the majority are not, and experts will be requested to speak live for broadcast, radio, or other visual media. Virtual media training will supplement but not replace the need for in-person training with experts, especially as approval of an IPCC report draws closer.

4. Other lessons learnt

- The timing of eLAM 3 and its respect to different time zones was one of the biggest challenges for participation. This was reported as a major or minor problem for participants from North America, Central America and the Caribbean region (95% of respondents), South America (89%), South-West Pacific (89%), and Asia (77%) (compared to 48% and 26% respectively for participants in Africa and Europe). Linked to this was the decision to run eLAM 3 over seven days because each day there were very few hours that could be used by all or a majority of participants across the different time zones and increasing the number of days greatly increased these viable hours (see 2.2). However, some participants were of the opinion that seven days was too long for participants to engage with all the activities, that the meeting ended up expanding into the number of days that were available, and that five and a half days (as normal) would have sufficed. In order to alleviate issues associated with time zones and reduce meeting duration, the WG could consider options such as reducing the number of sessions (e.g. messaging sessions), holding some activities at later dates (e.g. SPM sessions), or considering switching the timing of meetings part way through the virtual LAM week to benefit those for whom the initial time zone had been less preferential.
- The scheduling of Plenaries and BOGs was timed to use the limited number of most viable hours available each day. However, using these time slots limited the available times when CLAs could hold their chapter meetings. A different scheduling of Plenaries and BOGs (including outside the virtual LAM week) could have facilitated a greater number of chapter meetings, greater participation in chapter meetings, and potentially more progress on chapters.
- The meeting extended over a weekend (this was due to the original planned physical meeting falling over a weekend due to restrictions in scheduling because of celebrations for Easter) and some feedback from respondents noted that meetings over the weekend should be avoided in future.
- While the time zone was selected because it seemed most appropriate for ~80% of authors, it would be important in future to share more fully the rationale as to why the TSU selected its time zones.
- Many participants tried to attend all meeting elements regardless of time zone, which would prove very challenging.
- It is unclear what the position was in terms of insurance from losses in revenue for the conference venue and accommodation providers due to the cancellation of the event. Given the extraordinary nature of the Covid-19 pandemic, this impact could not be avoided. However, when considering the trade-offs from hosting a virtual versus physical LAM, the benefits from a physical meeting to the host country should not be ignored, including lost auxiliary economic benefits to the local area otherwise provided through the expenditure by LAM participants in travel and tourism.