

Summary report on the in-session workshop held at the first structured expert dialogue on the 2013–2015 review

Bonn, Germany, 5 June 2013

Note by the co-facilitators¹

26 September 2013

I. Introduction

A. Mandate

1. In response to the mandates provided in decisions 2/CP.17 and 1/CP.18, the Chairs of the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) sent a joint message to Parties, on 11 March 2013, signalling the intention to organize an in-session workshop on the 2013–2015 review (hereinafter referred to as the review) at the thirty-eighth sessions of the subsidiary bodies and inviting Parties to submit their views on the available information that should be considered at that workshop.² The secretariat received six such submissions from Parties and two from non-governmental organizations (NGOs).³ On the basis of the mandate for the review and the aforementioned submissions from Parties, the Chairs of the SBSTA and the SBI provided an informal note that outlined the organization and goals of the workshop.⁴

B. General objectives

2. The objectives of the workshop were to increase the understanding of existing scientific knowledge and explore how it could be used to address the two themes of the review: (a) the adequacy of the long-term global goal in the light of the ultimate objective of the Convention; and (b) overall progress made towards achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention.⁵

II. Summary of the proceedings

3. The workshop was held on 5 June 2013 at the Maritim Hotel in Bonn, Germany, during the thirty-eighth sessions of the subsidiary bodies, and it was open to all Parties and observers. The discussions at the workshop focused on the two themes of the review

¹ The workshop was facilitated by Mr. Zou Ji (China), one of the co-facilitators of the structured expert dialogue. The other co-facilitator, Mr. Andreas Fischlin (Switzerland), who was selected after the workshop had taken place, also contributed to the preparation of this report.

² <http://unfccc.int/files/parties_and_observers/notifications/application/pdf/message_to_parties_from_the_sbsta_and_sbi_chairs_2013_2015_review.pdf>.

³ Available at <<http://unfccc.int/7590.php>>.

⁴ <http://unfccc.int/files/methods_and_science/research_and_systematic_observation/application/pdf/informal_note_14_may_2013.pdf>.

⁵ See decision 1/CP.18, paragraph 79.

described in paragraph 2 above. Additional information on the workshop, including the agenda for the workshop and copies of all presentations, is available on the web page of the structured expert dialogue (SED).⁶

4. The workshop was opened by Mr. Richard Muyungi, Chair of the SBSTA, and was facilitated by Mr. Zou Ji (China), one of the co-facilitators of the SED.

5. Under the first theme of the workshop, views were sought on possible ways to assess the adequacy of the long-term global goal using various sources of information. Three experts, from the World Meteorological Organization (WMO), the Intergovernmental Panel on Climate Change (IPCC) and the Hadley Centre, made presentations. The co-facilitator then provided the following guiding questions:

(a) How could IPCC information be used to carry out the review? How could such information be complemented by national and regional information, taking into account any concerns relating to the reopening of the IPCC findings?

(b) How could information from other relevant reports from United Nations agencies and other international organizations be used in the review?

(c) What technical work should be undertaken under the SED to assess the adequacy of the 2°C goal? Which analytical frameworks could be used to assess the impacts and risks of the 2 °C goal?

6. Reflecting on the questions above, representatives of the Alliance of Small Island States (AOSIS), European Union and Switzerland gave presentations, followed by an open discussion.

7. The deliberations under the second theme of the workshop were initiated by a scene-setting presentation made by the secretariat. The co-facilitator then introduced the following guiding questions:

(a) How could information from the IPCC, Parties and United Nations agencies and other international organizations be used in the review?

(b) Which institutions, bodies and processes could provide relevant information to the review?

(c) What technical work should be undertaken under the SED to assess the overall progress made towards achieving the long-term global goal, without duplicating the work of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP)?

8. Reflecting on the questions above, representatives of China, Philippines and New Zealand gave presentations, followed by an open discussion.

9. On the NGO side, a representative of Climate Action Network-International made a statement. The proceedings of the workshop were broadcast on the Web, and social media were used to increase the participation of Parties and observers outside the workshop venue.

10. At the closing the workshop, the co-facilitator thanked Parties for their constructive discussions and the NGOs for their contribution.

⁶ <http://unfccc.int/science/workstreams/the_2013-2015_review/items/7803.php>.

III. Summary of the workshop discussions

A. Theme 1: the adequacy of the long-term global goal in the light of the ultimate objective of the Convention

1. Presentations by experts and Parties' reflections

11. The first presentation, by Mr. Jerry Lengoasa (WMO), focused on the status of the global climate, drawing on the recent publication of the WMO statement on the status of the global climate in 2012.⁷ He described the observed changes in the physical system, showing upward trends in the anomalies for global temperature, in sea level, humidity and ocean heat content and downward trends in the extent of sea ice, glacier mass balance and area of snow cover.⁸

12. He noted the following: a daily carbon dioxide (CO₂) concentration of above 400 ppm was reported in 2012 by the Global Atmosphere Watch stations; the global land and ocean surface temperature was estimated to be 0.45 °C±0.11 °C above the 1961–1990 average of 14 °C; the years 2001–2012 were all among the top 13 warmest years on record; and the Arctic sea ice extent in 2012 showed the largest seasonal loss on record. He underlined the importance of the essential climate variables⁹ in supporting the exchange of information, and also noted that a substantial number of national climate records in temperature and precipitation were renewed and that a very high impact of extreme climate events was recorded in 2012, including heatwaves, drought and floods.

13. The second presentation was made by Mr. Chris Field (IPCC) on the IPCC assessments and their possible use to assess the long-term global goal, with a special focus on dangerous anthropogenic interference. He highlighted that an assessment of what constitutes such interference must involve value judgements that go beyond the methods and insights of science. He suggested that the following four elements be included in the consideration of dangerous anthropogenic interference: the level of impacts to avoid; for which future world; with what probability that the impact will occur; and for which stakeholders. These elements are interconnected. For example, uncertainties mandate a risk management perspective, which requires an agreement on the probability of avoiding a given level of impact. Likewise, different future worlds will have an impact on the vulnerability of a given stakeholder, owing, for example, to variation in wealth, equity, infrastructure and institutions.

14. In addition, Mr. Field explained the core elements of the IPCC Fifth Assessment Report (AR5), including the use of risk-based framing, the presentation of impacts for a wide variety of possible futures and climate outcomes, the thorough description of uncertainty, and awareness of interactions and potential surprises. The presentation underlined the increase in the sensitivity of the system due to observed impacts of climate change (e.g. on wildfires and agricultural yields) and provided examples of recently observed extreme climate events, suggesting whether or not they were caused by climate change. It also illustrated the effect of increases in global average temperature on the risks to unique and threatened systems, on large-scale discontinuities and extreme weather events, as well as on aggregated impacts and the distribution of impacts.

⁷ <http://library.wmo.int/pmb_ged/wmo_1108_en.pdf>.

⁸ The presentation by Mr. Chris Field of IPCC (see paras. 13 and 14 below) emphasized that the changes in the Earth system are consistent with climate change.

⁹ The variables cover the oceanic (18 variables), atmospheric (14 variables) and terrestrial (16 variables) domains.

15. Mr. Jason Lowe (Hadley Centre) said that the feasibility of limiting warming is influenced by the response of the climate system,¹⁰ economic and technology development and the capabilities of policies and markets to create a situation favourable to emission reductions. He then illustrated the relationship between the global emission reduction rate per year and the time frame for the peaking of global emissions¹¹ for emission pathways compatible with a 50 per cent probability of limiting warming below 2 °C in 2100. He concluded that a late peaking would require negative emissions and would lead to potential competition for land between biofuels and food production,¹² and that there is still a 50 percent probability of limiting warming below 2 °C without negative emissions, but the window of opportunity is narrow. He also stated that a 1.5 °C target would be possible with a lower probability or a temperature overshoot, and he questioned whether the resilience for such a target with overshooting could be treated in the same way as targets without overshooting, considering the limited science on temporary resilience.

16. Mr. Lowe highlighted the benefits of achieving the 2 °C goal compared with ‘business as usual’, such as reducing the number of people suffering as a result of the stress on water resources and river and coastal floods, increasing spring wheat productivity, reducing the acidification of the oceans, and reducing the energy requirements for cooling. He noted that the estimated percentage of avoided impacts for 2 °C compared with 4 °C varies for the above examples and that these estimated percentages are relatively robust to the uncertainty of climate modelling compared with the uncertainty for absolute avoided impacts. He also noted that large-scale climate system thresholds may be affected by more than temperature,¹³ underlined the significant role that the interactions among these thresholds might have on the overall risk of abrupt climate change, and suggested the application of multiple temperature targets, each with a separate probability (e.g. a 50 per cent probability of limiting temperature rise to less than 2 °C and a 90 per cent probability of limiting temperature rise to less than 4 °C).

17. A representative of AOSIS stressed that the technical work to be undertaken should include an assessment of impacts and risks at different levels of CO₂ concentration and warming, including 1.5 °C, especially the risks of ocean acidification, global and regional sea level rise and irreversible changes in the physical, ecological and human systems, including for specific regions and key sectors and systems. Observations and projections relevant to local and regional circumstances should cover exposure and vulnerability to climate change, the resulting impacts, adaptation options and loss and damage.

18. In addition, he underlined that the SED should also consider current and near-term emission trends and global emission pathways, including target emission levels and budgets for achieving the long-term global goal with high probability; associated costs of, and technological options for, mitigation pathways; and the issues relating to the response of the climate system, such as climate sensitivity, the global carbon cycle, non-CO₂ forcing and climate projections. Regarding the issue of the use of information, he noted that, in addition to IPCC information, information from United Nations agencies and other international and regional organizations should be used in the review (see the annex), in particular with regard to research findings for smaller countries, such as small island developing States and the least developed countries.

¹⁰ Temperature response to a given emission pathway.

¹¹ Based on climate-modelling results from the AVOID (Avoiding Dangerous Climate Change) programme (see <<http://www.metoffice.gov.uk/avoid/what-is-avoid>>).

¹² For example, a global emission reduction rate of 2-4 per cent could result in emissions peaking between 2015 and 2020, for cumulative emission budget by 2100 of between 0 and 200 Gigatonnes of CO₂.

¹³ For example, the dieback of tropical forest is affected by the CO₂ concentration, as well as the length of the dry season, while the overturning of the Atlantic Ocean is affected by the atmospheric concentration of aerosols.

19. A representative of the European Union further elaborated on the risks at different levels of warming and evaluated those risks as manageable through adaptation for a temperature rise of 1–2 °C, significant for a 2–3 °C rise, and potentially disastrous for a 3–4 °C rise, on the basis of the species extinction rate, impact on food production, additional people exposed to water stress and the response of the climate system.¹⁴ Regarding the global emission pathways, he suggested considering the probability of achieving the 2 °C goal, noting that for a 50 per cent probability, emissions should peak at 500 ppm CO₂ eq and stabilize at 450 ppm, while for a 75 per cent probability they should peak at 475 ppm and stabilize at 400 ppm.

20. A representative of Switzerland was of the view that Article 2 of the Convention indicates which scientific inputs should be considered by the SED (e.g. greenhouse gas concentration, dangerous anthropogenic interference with the climate system, ecosystems, food security and economic development in a sustainable manner) and he illustrated the danger of ‘cherry-picking’ data and literature on climate science. He then stressed that the IPCC provides the best scientific input and, therefore, should be the foundation for the review.

2. Discussions

21. Responding to the presentation made by the IPCC, a participant welcomed the approach of a risk-management framework and underscored that all available information, including regional information, should be taken into account when a value judgement is going to be made under the review. In addition, with regard to the presentation made by the representative of the European Union, she asked for the rationale for distinguishing manageable risks and significant risks, and whether such risks are perceived as global or regional. Furthermore, responding to the Swiss representative’s presentation, she noted that regional information is as important as IPCC information.

22. Another participant explained her interpretation of the objective, principles and scope of the review and stressed the need for balance between the two themes. She noted that the adequacy of the long-term global goal is not only an issue of the number for the goal but also an issue of its context. Her views were supported by another participant, who stated that an integrated approach, assessing mitigation, adaptation and economic, social and political conditions, is needed to conduct the review. He also stressed that the assessment of what has to be done under the Convention to achieve the 2 °C goal is important.

23. Most Parties underlined the important role of science in the review. Some Parties stated that IPCC findings will be key information and that regional and national information could supplement the IPCC information, while others were of the view that regional and national information should be regarded as being at the same level as IPCC information.

¹⁴ EU Climate Change Expert Group ‘EG Science’. 2008. *The 2 °C target: Background on Impacts, Emission Pathways, Mitigation Options and Costs*, available at http://ec.europa.eu/clima/policies/international/negotiations/future/docs/brochure_2c_en.pdf.
Eric Fee (Ed.) 2010. *Scientific Perspectives after Copenhagen*, available at http://www.eutrio.be/files/bveu/media/documents/Scientific_Perspectives_After_Copenhagen.pdf.

B. Theme 2: overall progress made towards achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention

1. Presentations by experts and Parties' reflections

24. An introductory presentation was made by the UNFCCC secretariat on information gathering for the assessment of the overall progress made towards achieving the long-term global goal. After outlining the main sources of information for the review, he focused on information from Parties,¹⁵ which he grouped into three categories, namely: submissions; national reports, including international assessment and review (IAR) and international consultation and analysis (ICA) reports; and information from other relevant reports from Parties and processes under the Convention. Regarding national reports, he stressed a possible issue relating to the date of publication of IAR and ICA reports, which will be available from 2014 and 2015, respectively. With regard to the above-mentioned other processes, he noted the need to identify processes that would be relevant to the review.

25. A representative of China was of the view that the objectives of the review are to facilitate the achievement of the ultimate objective of the Convention and to provide useful input to the ADP and various institutions under the Convention. After presenting his understanding on how the principles and provisions of the Convention would guide the review, he noted that the review is not a review of the Convention itself and suggested its focus should be on assessing the implementation of the commitments under the Convention. With regard to elements that should be addressed under theme 1, he mentioned the impacts of the 2 °C goal on ecosystems, the environment and social and economic aspects; adaptation costs; the impacts of mitigation efforts on developing countries; and current knowledge on alternative goals. In relation to theme 2, he mentioned the adequacy and implementation of mitigation commitments of Parties included in Annex I to the Convention (Annex I Parties), the provision of means of implementation by Parties included in Annex II to the Convention (Annex II Parties), and adverse social and economic impacts of the implementation of mitigation commitments on developing countries.

26. Regarding the use of information, he acknowledged that the IPCC is one of the key information sources and suggested that high priority should be given to information from Parties. He also stated that information from United Nations agencies and from existing institutions, bodies and processes is also important and complementary to the IPCC information. Regarding the technical work to be conducted under the SED, he suggested updating the information on financial and investment flows on the basis of previous work,¹⁶ and the technology needs of developing countries on the basis of a new round of technology needs assessments.¹⁷ He also provided some questions to be addressed, including on the emission trends of Annex I Parties and on the technology and financial needs of developing countries.

27. A representative of the Philippines supported the views presented by the representative of China and presented an integrated contextual framework for the review, which suggested that the implementation of the Convention should be the basis for assessing the progress on mitigation and adaptation towards achieving the LGTT. He illustrated that the level of progress will influence the amount of time available to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner, and will consequently determine the adequacy of the 2 °C goal. He provided questions corollary

¹⁵ Decision 2/CP.17, paragraph 161(b), specifies the types of information received from Parties that should be included in the review.

¹⁶ See <<http://unfccc.int/resource/docs/2008/tp/07.pdf>>.

¹⁷ See <http://unfccc.int/ttclear/templates/render_page?TNA_home>.

to the key assessment questions for the two themes of the review (e.g. is the 2 °C goal adequate? Is overall progress being made towards achieving the 2 °C goal?¹⁸) and suggested categories of information that will be needed to carry out the review.

28. Regarding the technical work to be conducted under the SED, he suggested assessments of implementation advances and gaps; incentives for, and barriers to, the implementation of commitments; the impacts of, and responses to, the implementation of commitments; and linkages and feedback loops arising from the implementation of commitments.

29. A representative of New Zealand, speaking on behalf of Australia, Canada, Japan, New Zealand, Norway and the United States of America, presented a view different from the two preceding presentations on elements to be discussed as part of the SED under theme 2, drawing on the mandate of the review to assess aggregate progress and the actions of all Parties. This involves assessing aggregate GHG emissions, trends and projections; the effectiveness of mitigation actions undertaken by all Parties; the aggregate mitigation commitments of all Parties and progress towards achieving those commitments; the implementation of commitments under the Convention; economic circumstances and capabilities of Parties; and cost-effective mitigation potential, clean energy technology and energy efficiency potential.

30. She suggested the following approach to the technical work under the SED: to discuss the findings of the IPCC, when available; to compile inputs into synthesis reports; and to keep it an open space in which to explore the best ways for the global community to achieve and maintain the long-term global goal. She also stressed the important role of information regarding the implementation of transparency provisions, including biennial reports and biennial update reports, and the role of the secretariat in compiling and systemizing information on progress, under the guidance of the co-facilitators of the SED.

2. Discussions

31. Responding to the proposal for an assessment of the commitments of developed country Parties, several participants commented that the global picture of the long-term global goal should be maintained in the review. Another participant suggested that the review should not duplicate work that is being undertaken elsewhere in the UNFCCC process.

32. Additional inputs by other participants included the following:

(a) Emphasized that the assessment of IPCC information is the starting point for the review and that such information should be supplemented by national and regional information, especially when large-scale data are interpreted for developing a policy on a small spatial scale.

(b) Explained their understanding of the long-term global goal, which is not just a simple temperature goal, but also includes goals for adaptation, technology and finance, and underlined that assessing the overall progress towards achieving the long-term global goal implies an assessment of the means of implementation provided, as implementation of actions will depend on the scale of the means of implementation.

(c) Stressed the importance of balance between the two themes of the review and suggested inviting IPCC experts on sustainable development, equity, investment and finance to make presentations under theme 2, and supported the view presented by the representative of China that the review is not a review of the Convention itself.

(d) Pointed out that reviewing finance or technology support will be understood as a review of the Convention. She noted that the decisions of the COP on the review make

¹⁸ For example, linked to the implementation of Article 4, paragraph 1(a), (b) and (d), paragraph 2(a) and (b), and paragraphs 3, 4, 5 and 7, of the Convention.

no reference to groups of Parties, and she stressed that the overall progress made by Parties encompasses all Parties' efforts towards achieving the long-term global goal.

33. Regarding the 'other processes'¹⁹ to be considered in the review, one participant suggested that relevant outputs of processes under the Convention, such as on long-term finance, response measures and work done under the Nairobi work programme on impacts, vulnerability and adaptation to climate change, should be fed into the review. He also suggested that the consideration of inputs from IPCC AR5 should start after the completion and adoption of its reports.

C. Virtual participation

34. Participants who were not at the workshop venue were able to watch the event online via webcast and offer reactions, views or questions as input to the discussion on Twitter. Over 300 tweets were sent out by 140 contributors, reaching 230,000 people, including on the following:²⁰

- (a) The extent of avoided impacts in the 2 °C or 1.5 °C target scenarios;
- (b) The implication for risks if the global emissions do not peak by 2020;
- (c) The need to consider information from the International Energy Agency and World Bank publications (e.g. *World Energy Outlook*);
- (d) The role of science, including what is dealt with in the political negotiations, what leads to action and what needs more awareness;
- (e) The methodology to decide whether the 2 °C goal is adequate;
- (f) The role of observers.

IV. Reflections

35. It is our perception that the discussions revealed some substantive and procedural issues that we should consider when preparing for the next meeting of the SED, including regarding the consideration of the forthcoming contribution of Working Group I to the AR5, which will be relevant to both themes of the review.

36. Regarding the approach to the review, most Parties stressed the need for balance between the two themes, in terms of their consideration in parallel, the time allocated to them, the format of activities, and the experts and panellists invited from developed and developing countries; while some Parties were of the view that the next SED meeting should focus on either theme 1 or theme 2.

37. The expert presentations on theme 1 underlined some issues that require further consideration, including:

- (a) The trends in observed changes in the physical system, in particular in relation to the atmosphere (e.g. temperature and precipitation), oceans, cryosphere and sea level, including observations relevant to local and regional circumstances, the consideration of which should cover exposure and vulnerability to climate change, the resulting impacts, adaptation options and loss and damage;
- (b) The elements to consider when making a value judgement on the adequacy of the 2 °C goal, the use of risk-based framing, and the assessment of the risks of ocean

¹⁹ See paragraph 24 above.

²⁰ A summary of the Twitter discussion is available at <http://adoptanegotiator.org/2013/06/05/fcccreview-bringing-science-back-into-the-climate-talks>.

acidification, global and regional sea level rise, and irreversible changes in physical, ecological and human systems, including for specific regions and key sectors and systems. Some Parties stressed that regional assessment should be covered in the review, especially regions that are less studied in the existing climate science literature;

(c) The feasibility of limiting warming, how to treat temperature overshooting and the benefits of achieving the 2 °C goal compared with ‘business as usual’, as well as current and near-term emission trends and global emission pathways, including target emission levels and budgets for achieving the long-term global goal with high probability.²¹

38. Parties had an initial exchange of views on the adequacy of the long-term global goal for preventing dangerous anthropogenic interference with the climate system and the feasibility of this goal within given socioeconomic and technical constraints. Parties’ views differed on whether the feasibility of limiting warming, including in relation to current and near-term emission trends and global emission pathways, should be addressed under theme 1. The effects of the LGTT on helping to streamline global efforts to reduce greenhouse gas emissions and inspire national regional and local initiatives could be another aspect to take into account.

39. The presentations on theme 2 underlined a few issues that require further consideration, including:

(a) The identification of inputs from other relevant processes, referred to in decision 2/CP.17, paragraph 161(b), as one of the sources of information specified in decision 2/CP.17, paragraph 161;

(b) The information base that will help with the assessment of overall progress towards achieving long-term global goal, including information from the forthcoming IPCC AR5 reports, from Parties and from other United Nations agencies and international organizations, and from regional and subregional agencies;

(c) The approach to assess the overall progress towards achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention. Some Parties were of the view that the implementation of the commitments under the Convention, including of the mitigation commitments of Annex I Parties and of the commitments for provision of financial resources, transfer of technology and capacity-building by Annex II Parties, should be the basis for assessing progress on mitigation and adaptation towards achieving the long-term global goal, while other Parties were of the view that the review should assess the efforts made by all Parties, considering the implementation of the commitments under the Convention only when needed to assess overall progress.

²¹ The report of Working Group I will contain emission pathways that are likely to limit warming to below 2 °C or 1.5 °C above pre-industrial levels by 2100.

Annex

Specific information sources suggested for consideration under the structured expert dialogue¹

1. Assessment and special reports and technical papers of the Intergovernmental Panel on Climate Change:²
 - International Panel on Climate Change *Special Report on Renewable Energy Sources and Climate Change Mitigation* (2011).
2. Other relevant reports from Parties and processes under the Convention
 - Technology needs assessment reports;
 - Technical paper on investment and financial flows to address climate change: an update.
3. Other relevant reports from United Nations agencies and other international organizations, including reports on emission projections and technology development, access, transfer and deployment, and reports on gross domestic product, including projections, such as from:
 - The Food and Agriculture Organization of the United Nations;
 - The World Bank;
 - The United Nations Environment Programme;
 - The International Arctic Science Committee;
 - The International Ocean Carbon Coordination Project;
 - The International Human Dimensions Programme on Global Environmental Change;
 - The International Energy Agency;³
 - The Earth System Science Partnership;
 - The World Climate Research Programme;
 - The International Geosphere–Biosphere Programme;
 - The World Economic Forum.⁴

¹ This is an initial list of information sources specifically mentioned by Parties during the workshop. For further updates please consult the structured expert dialogue website at <http://unfccc.int/science/workstreams/the_2013-2015_review/items/6998.php>.

² Categories 1–4 in this annex reflect the categories of information sources defined in decision 2/CP.17, paragraph 161.

³ International Energy Agency. 2012. *Energy Technology Perspectives*. Available at <<http://www.iea.org/w/bookshop/add.aspx?id=425>>.

⁴ World Economic Forum. 2013. *Global Risks 2013*. Available at <http://www.marsh.pt/documents/WEF_GlobalRisks_Report_2013.pdf>.

4. Scientific information on the observed impacts of climate change, including from reports coordinated by relevant regional and subregional agencies, such as:
 - The South Pacific Regional Environment Programme;
 - The Caribbean Community Climate Change Centre;
 - The University of the West Indies;
 - The University of the South Pacific.
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