

FIFTY-FIFTH SESSION OF THE IPCC
Electronic Session, 14 – 25 February 2022

IPCC-LV/Doc. 5, Rev. 2.
(27.II.2022)
Agenda Item: 3
ENGLISH ONLY

**ACCEPTANCE OF THE ACTIONS TAKEN AT THE TWELFTH SESSION OF
WORKING GROUP II**

**Working Group II contribution to the IPCC Sixth Assessment Report (AR6),
Climate Change 2022: Impacts, Adaptation and Vulnerability**

**Changes to the Underlying Scientific-Technical Assessment to ensure consistency
with the approved Summary for Policymakers**

(Submitted by the Co-Chairs of the IPCC Working Group II)

IPCC Working Group II Contribution to the Sixth Assessment Report - SPM Tricklebacks to the Underlying Report_Rev2

	SPM	SPM Component	Chapter/Cross-Chapter Paper/ Technical Summary/Annex	Page	Line	Text Edit
1	SPM	Bullet B.1.2	Chapter 03	69	30-32	To support SPM text reading "Approximately half of the 5000 terrestrial and marine species studied have shifted polewards or, on land, also to higher elevations (very high confidence).", Chapter 3 text p. 69, L30-32 must change from this: "A large global meta-analysis of range shifts across multiple levels of the marine food web (Lenoir et al., 2020) estimates that marine species are moving poleward at a rate of 59.2 km per decade (very likely range: 43.7–74.7 km per decade), closely matching the local climate velocity (high confidence)." To this: "A global meta-analysis of range shifts (Lenoir et al., 2020) that included data from 951 species (over half of which exhibited median range shifts consistent with climate change) estimates that marine species are moving poleward at a rate of 59.2 km per decade (very likely range: 43.7–74.7 km per decade), closely matching the local climate velocity (high confidence)."
2	SPM	B4.2	Chapter 04	72	05. Jun	"Projected increases in flooding pose increasing risks, with a 1.2 to 1.8 and 4 to 5 times increase in global GDP loss at 2°C and 4°C compared to 1.5°C warming, respectively (medium confidence)." "Projected increases in flooding pose increasing risks, with a 1.2 to 1.8 and 4 to 5 times increase in global GDP loss at 2°C and 4°C compared to 1.5°C warming, respectively (medium confidence). Without adaptation, projected increases in flooding are 1.4 to 2.5 and 2.5 to 3.9 times in global GDP loss at 2°C and 3°C compared to 1.5°C warming, respectively (medium confidence)."
3	SPM	B.4.2	Chapter 04	65	39-40	Global glacier mass loss between 2015 and 2100 was estimated at the level 18 ± 13% under the RCP2.6 scenario and 36 ± 20% under the RCP8.5 scenario (Marzeion et al., 2020) With: Global glacier mass loss since 2015 and 2100 was projected to be 18 ± 13% by 2100 with 0.9 – 2.3°C global warming, and 36 ± 20% with 3.2 – 5.4°C global warming (Marzeion et al., 2020),
4	SPM	B5.1 Third sentence.	Chapter 05	32	23	Change 'risks of multi-breadbasket failures will also increase (medium confidence).'
5	SPM	C4.2 and C4.3	Chapter 05	127		Table 5.20. In the third column of the header row, add 'and confidence level' at the end.
6	SPM	C4.2 and C4.3	Chapter 05	127		Table 5.20. In the third column of the second row (Agricultural intensification), add 'robust evidence, medium agreement' at the end.
7	SPM	C4.2 and C4.3	Chapter 05	127		Table 5.20. In the third column of the third row (Livelihood diversification), add 'medium' at the end.
8	SPM	C4.2 and C4.3	Chapter 05	127		Table 5.20. In the third column of the fourth row (Irrigation projects or programs), add 'high' at the end.
9	SPM	C4.2 and C4.3	Chapter 05	127		Table 5.20. In the third column of the fifth row (Investment in improved cultivars), add 'medium' at the end.
10	SPM	C4.2 and C4.3	Chapter 05	128		Table 5.20. In the third column of the sixth row (Migration), add 'high' at the end.
11	SPM	C4.2 and C4.3	Chapter 05	128		Table 5.20. In the third column of the seventh row (Coastal sea walls etc), add 'high' at the end.
12	SPM	C4.2 and C4.3	Chapter 05	128		Table 5.20. In the third column of the ninth row (Government policies to coastal fisheries), add 'medium' at the end.
13	SPM	C4.2 and C4.3	Chapter 05	128		Table 5.20. In the third column of the tenth row (Consultive stakeholder systems), add 'low' at the end.
14	SPM	C4.2 and C4.3	Chapter 05	128		Table 5.20. In the third column of the eleventh row (Climate services), add 'medium' at the end.
15	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the twelfth row (Nature-based solutions), add 'medium' at the end.
16	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the thirteenth row (Social safety nets), add 'low' at the end.
17	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the fourteenth row (Community-based adaptation), add 'high' at the end.
18	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the fifteenth row (Digital agriculture), add 'low' at the end.
19	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the sixteenth row (Increased credit access), add 'low' at the end.
20	SPM	C4.2 and C4.3	Chapter 05	129		Table 5.20. In the third column of the seventeenth row (Aquaculture), add 'low' at the end.
21	SPM	SPM.B.2	Chapter 07	3	7	Added phrase "due to differences in exposure and vulnerability" to be consistent with SPM emphasis on exposure and vulnerability.
22	SPM	SPM.B.4.4	Chapter 07	5	53	promoted to headline statement in ES, "...and heat-related morbidity and mortality (high confidence)."
23	SPM	SPM.B.4.4	Chapter 07	5	56	Promoted to ES following statement from main text of chapter, "Heat related cardiovascular disease mortality is projected to increase by the end of this century (high confidence)."
24	SPM	SPM.B.2	Chapter 07	12	24	Added phrase, "and differential vulnerability, particularly for exposure to extreme events and conditions, such as floods and droughts" to be consistent with SPM focus on exposure and vulnerability.
25	SPM	SPM.B.4.4	Chapter 07	64	4	Adjusted paragraph wording to be clearer in supporting confidence statements re deaths in SPM: "The second study (Carleton et al 2020) focused on all-cause mortality associated with warming under both a high emissions scenario (RCP8.5) and a middle emissions scenario (RCP4.5). The analyses created a metric of death equivalents that accounted for hot and cold temperature-related mortality and the costs of individual level adaptation; no acclimatization or community-level adaptation, such as early warning systems, were incorporated. Average annual temperature-mortality-income per capita relationships estimated from pooled data from 40 predominantly middle- and high-income countries (38% of the world population) were applied worldwide. Under the high emissions scenario, climate change was projected to result in approximately 85 deaths equivalents per 100,000 population.
26	SPM	SPM B.3	Chapter 07	64	19	Existing paragraph has been replaced by following text based on trickleback from SPM approval sessions re Burning Embers diagram Fig. 7-9: "Temperature increases are projected to exceed critical risk thresholds for six key climate-sensitive health outcomes, highlighting the criticality of building adaptive capacity in health systems and in other sectors that influence health and well-being (high confidence). Recently reported research illustrates the temperature thresholds under three adaptation scenarios describing the effectiveness of health systems to manage additional risks from climate change for heat-related morbidity and mortality; ozone-related mortality; malaria incidence rates; incidence rates of Dengue and other diseases spread by Aedes sp. mosquitoes; Lyme disease; and West Nile fever (Ebi et al., 2021a). As shown in Figure 7.9, these adaptation scenarios significantly alter the warming thresholds at which risks accelerate, with the proactive adaptation scenario, a scenario that emphasises international cooperation towards achieving sustainable development, having the greatest potential to avoid significant increases in risks under all but the highest levels of warming. The incomplete adaptation scenario describes a world with moderate challenges to adaptation and mitigation. The limited adaptation scenario describes a world with high challenges to adaptation and mitigation. In the figure, transitions are based on the peer-reviewed literature projecting risks for each of the health outcomes. Projections for time intervals were changed to temperature increase above pre-industrial levels based on the climate models and scenarios used in the projections. The assessed projections were based on a range of scenarios, including SRES, CMIP5, and ISIMIP, and, in some cases, demographic trends. The black dots are levels of confidence, from very high (four dots) to low (one dot). The diagrams for the proactive and incomplete adaptation scenarios are truncated at the nearest whole °C within the range of temperature change in 2100 under three SSP scenarios used in panel (a) of SPM.3."

IPCC Working Group II Contribution to the Sixth Assessment Report - SPM Tricklebacks to the Underlying Report_Rev2

	SPM	SPM Component	Chapter/Cross-Chapter Paper/ Technical Summary/Annex	Page	Line	Text Edit
27	SPM	SPM B.3	Chapter 07	65	12	"Burning embers" diagram Fig. 7-9 to be updated to match new version agreed upon in SPM approval sessions. Caption to now read, "Climate-sensitive human health outcomes under three adaptation scenarios"
28	SPM	SPM.B.3.1	Chapter 07	118	29	Sentence added to tie FAQ response more explicitly to SPM statement re conflict risks: Climate hazards have affected armed conflict within countries but the observed influence of climate is small relative to socioeconomic, political and cultural factors.
29	SPM	B2.4	Chapter 08	3	21	Replace the sentence starting with "Observed average mortality" with the following sentence "Observed average mortality from floods, drought and storms is 15 times higher for regions and countries ranked as very high vulnerable, such as Mozambique, Somalia, Nigeria, Afghanistan and Haiti compared to very low vulnerable regions and countries, such as UK, Australia, Canada and Sweden in the last decade (high confidence)."
30	SPM	HS, B2	Chapter 08	3	25	After "low or very low vulnerability". Add a new sentence "Approximately 3.6 billion people live in low and lower middle-income countries, which are most vulnerable and disproportionately bear the human costs of disasters due to extreme weather events and hazards".
31	SPM	B2.4	Chapter 08	36	23	Replace the sentence starting with "Studies found that" with "Studies found that the average mortality from floods, storms and droughts is 15 times higher in regions and countries ranked as very highly vulnerable (e.g., Mozambique, Somalia, Nigeria, Haiti, Afghanistan) compared to regions and countries with very low vulnerability (e.g., UK, Sweden, Italy, Canada) (Birkmann et al., 2022)."
32	SPM	B2.4	Chapter 08	36	30	replace "11 times higher in countries" with "11 times higher in regions and countries"
33	SPM	HS, B2	Chapter 08	37	12	Add following new sentence after (Birkmann et al., 2022) "Additional assessments based on the classification of income groups of countries reveal that approximately 3.6 billion people live in low and lower middle-income countries, which are most vulnerable and disproportionately bear the human costs of disasters due to extreme weather events and hazards (World Bank, 2019; CRED and UNDRR_2020; EC-DRMKC, 2019; UN-DESA, 2020; UN-DESA, 2021; Birkmann et al., 2022)"
34	SPM	HS, B2	Chapter 08	125	33	Add reference "CRED and UNDRR, 2020: Human Cost of Natural Disasters: An Overview of the last 20 Years 2000-2019. Center for Research on the Epidemiology of Disasters (CRED) UN Office for Disaster Risk Reduction (UNDRR), Disasters, C. f. R. o. t. E. o., Louvain. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/Human%20Cost%20of%20Disasters%202000-2019%20Report%20-%20UN%20Office%20for%20Disaster%20Risk%20Reduction.pdf "
35	SPM	HS, B2	Chapter 08	150	35	Add reference: "UN-DESA, 2021: Statistical annex: Country classifications. In: World Economic Situation and Prospects 2021. United Nations, New York, pp. 123-131. ISBN 9789210054980."
36	SPM	Hs, B2	Chapter 08	150	35	Add reference "UN-DESA, 2020: Climate change: exacerbating poverty and inequality. In: World Social Report 2020. Inequality in a Rapidly Changing World, United Nations, New York, pp. 81-106. ISBN 9789210043670."
37	SPM	SPM Figure 2 (b)	Chapter 10	3	46-47	Replace "Both climatic and non-climatic drivers such as socio-economic changes have created water stress conditions in both water supply and demand in all sub-regions of Asia (high confidence)." by "Both climatic and non-climatic drivers such as socio-economic changes have created water stress conditions in both water supply and demand in all sub-regions of Asia, except for North Asia (medium confidence)." in line with the the change of Asia water scarcity from - to +-, medium confidence for SPM Figure 2 (b).
38	SPM	B.4	Chapter 14	6	9	change "latter part of the 21st century" to "long-term"
39	SPM	C.5.3	Chapter 14	17	5	replace "Communicating to educate or enhance knowledge on climate change science or consensus can, but does not" -> the addition of the word "can".
40	SPM	B.1.4	Chapter 14	68	33	delete "reductions in mortality"
41	SPM	SPM Fig 2 Panel B	Chapter 15	25	52	Evidence is emerging of the mental health impacts of climate change (limited evidence).
42	SPM	SPM Figure 4	Chapter 16	SM354	3	Replace "Urban infrastructure damage due to flooding" by "Damage due to flooding to human wellbeing and critical infrastructure, especially in coastal cities and settlements" in table SM16.24 in line with the change in SPM Figure 4 (f) examples of regional key risks for Asia.
43	SPM	SPM Figure 4	Chapter 16	SM355	3	Replace "Biodiversity and habitat loss" by "Biodiversity loss and habitat shifts and associated disruptions in dependent human systems across freshwater, land and ocean ecosystems" in table SM16.24 in line with the change in SPM Figure 4 (f) examples of regional key risks for Asia.
44	SPM	SPM Figure 4	Chapter 16	SM355	4	Replace "More frequent and extensive coral bleaching and mortality" by "More frequent and extensive coral bleaching and mortality induced by ocean warming and acidification, sea level rise, marine heat waves and resource extraction" in table SM16.24 in line with the change in SPM Figure 4 (f) examples of regional key risks for Asia.
45	SPM	SPM Figure 4	Chapter 16	SM357	4	Replace "Decline in coastal fishery resources" by "Decline in coastal fishery resources due to sea level rise, decrease in precipitation in some parts and increase in temperature" in table SM16.24 in line with the change in SPM Figure 4 (f) examples of regional key risks for Asia.
46	SPM	SPM Figure 4	Chapter 16	SM358	3	Replace "Risk to food and water security due to drought" by "Food and water insecurity due to increased temperature extremes, rainfall variability and drought" in table SM16.24 in line with the change in SPM Figure 4 (f) examples of regional key risks for Asia.
47	SPM	SPM.Fig.5	Chapter 17	84	6	"co-benefits" change to "benefits"
48	SPM	SPM.Fig.6	Chapter 17	84	20	sentence should end "i.e. trade-offs/ dis-benefits"
49	SPM	SPM.Fig.7	Chapter 17	85	5	Legend of Fig.17.09 should read "synergies/ benefits and trade-offs/ dis-benefits"
50	SPM	SPM.Fig.5	Chapter 17	87	Fig.17.10	Fig.17.10 will be updated along with the changes in SPM Fig.5a and Fig.SPM5b (previous numbering)
51	SPM	SPM.Fig.8	Chapter 17	SM106	1	Adding table according to the changes in SPM Fig.5, showing the relation/ correspondance of adaptation options that were used in the CCB FEASIB and the Ch17 assessment on adaptation options
52	SPM	SPM5 Panel A, Panel B	Chapter 18	18-158	5	Add 'd' after 'Improved water use efficiency'
53	SPM	SPM5 Panel A	Chapter 18	18-158	5	Delete 'Risk spreading and sharing' which is currently mentioned twice in the last column
54	SPM	SPM5 Panel A, Panel B	Chapter 18	18-158	5	Population and Health Systems changed to Health and Health Systems Adaptation
55	SPM	SPM5 Panel A, Panel B	Chapter 18	18-158	5	Human migration and displacement changed to Human migration
56	SPM	SPM5 Panel A	Chapter 18	18-158	5	Edit caption to read "Feasibility assessment responses and options mapped against Representative Key Risks (RKR's)"
57	SPM	SPM5 Panel A, Panel B	Chapter 18	18-160	25 to 57	Correct CCB FEASIB.3.2.2 Sustainable aquaculture to CCB FEASIB.3.2.2 Sustainable aquaculture and fisheries
58	SPM	SPM5 Panel A, Panel B	Chapter 18	18-168	10	Change CCB FEASIB.3.4 Overarching adaptation options to CCB FEASIB.3.4 Cross-sectoral climate responses and adaptation options
59	SPM	SPM5 Panel A, Panel B	Chapter 18	18-169	37	Population and Health Systems changed to Health and Health Systems Adaptation
60	SPM	SPM5 Panel A, Panel B	Chapter 18	18-169	37	Correct CCB FEASIB.3.4.5 sub-heading to Health and Health Systems Adaptation
61	SPM	SPM5 Panel A, Panel B	Chapter 18	18-170	24	Correct CCB FEASIB.3.4.6 subheading to Human migration

IPCC Working Group II Contribution to the Sixth Assessment Report - SPM Tricklebacks to the Underlying Report_Rev2

	SPM	SPM Component	Chapter/Cross-Chapter Paper/ Technical Summary/Annex	Page	Line	Text Edit
62	SPM	SPM5 Panel A, Panel B	Chapter 18	18-172	1	Option 'sustainable water management' should be 'sustainable urban water management' and shifted to 'urban and infrastructure systems'
63	SPM	Changes to Figure Cross- Chapter Box FEASIB.2	Chapter 18	18-172	1	Edit caption to include "Multidimensional feasibility at global scale, in the near term and up to 1.5°C global warming"
64	SPM	SPM5 Panel A, Panel B	Chapter 18			adaptation options' to 'Climate responses and adaptation options'
65	SPM	SPM5 Panel A, Panel B	Chapter 18			Spelling of 'including' is wrong throughout text
66	SPM	SPM5 Panel A, Panel B	Chapter 18			Transition/transitions
67	SPM	Figure SPM.7	Chapter 18	11	1	Figure 18.1. Adjustment to panel a to align with revisions to spm.7
68	SPM	SPM.B.4.1	CCP1	8	24	replace "may" by "will" ("may" was replaced by "can" in the corrigenda)
69	SPM	SPM.B.4.1	CCP1	17	28	retain "may" ("may" was replaced by "are projected to" in the corrigenda)
70	SPM	SPM.B.4.1	CCP1	17	38	replace "may" by "are projected to" ("may" was replaced by "is projected to" in the corrigenda)
71	SPM	SPM.B.4.1	CCP1	17	28-29	remove "(low confidence)"
72	SPM	SPM.B.4.1	CCP1	23	27	replace "may" by "will" ("may" was replaced by "can" in the corrigenda)
73	SPM	SPM.B.4.1	CCP1	27	36	replace "may" by "will" ("may" was replaced by "is projected to" in the corrigenda)
74	SPM	SPM.B.4.1	CCP1	27	32-33	replace "appear unlikely to" by "will not" ("appear unlikely to" was replaced by "are not expected" in the corrigenda)
75	SPM	SPM.B.4.1	CCP1	30	55	replace "seem to be able to" by "may"
76	SPM	SPM.B.4.1	CCP1	30	56	retain "may" ("may" was replaced by "can" in the corrigenda)
77	SPM	SPM.B.4.1	CCP1	30	56-57	remove "(high confidence)"
78	SPM	SPM.B.4.1	CCP1	33	6	remove "(low confidence)" ("may be resilient" was replaced by "have shown resilience")
79	SPM	SPM.B.4.1	CCP1	33	13	replace "may" by "will" ("may" was replaced by "is expected" in the corrigenda)
80	SPM	SPM.Fig.5	Technical Summary	60	Fig. TS11	Fig. TS.11 will be updated along with the changes in SPMFig.5a and Fig.SPM5b (previous numbering)
81	SPM	SPM.B.3	Annex 1 Global to regional Atlas	Figure AI.46c	Figure AI.46c	Figure AI.46c panel (a) to be updated to match new version agreed upon in SPM approval sessions.
82	SPM	SPM.B.3	Annex 1 Global to regional Atlas	Figure AI.46c	Figure AI.46c	Figure AI.46c panel (e) to be updated to match new version agreed upon in SPM approval sessions. Caption to now read, "Climate-sensitive human health outcomes under three adaptation scenarios " Labels under each ember updated based on the updated narrative on scenarios described at the right side.
83	SPM	Footnote	Annex II: Glossary	35		Add the following definition of the term Planetary health: Planetary health a concept based on the understanding that human health and human civilisation depend on ecosystem health and the wise stewardship of ecosystems.
84	SPM	Footnote	Annex II: Glossary	2		Add the following definition of the term Acute Food Security: Acute Food Security Acute food insecurity is a situation which can occur at any time with a severity that threatens lives, livelihoods or both, regardless of the causes, context or duration, as a result of shocks risking determinants of food security and nutrition, and used to assess the need for humanitarian action (IPC Global Partners, 2019).
85	SPM		Annex II: Glossary			Change the definition of Key Risks to: Key Risks Key risks have potentially severe adverse consequences for humans and social-ecological systems resulting from the interaction of climate related hazards with vulnerabilities of societies and systems exposed.
86	SPM		Annex II: Glossary			Add the following definition of "climate literacy" to the glossary: Climate literacy Climate literacy encompasses being aware of climate change, its anthropogenic causes and implications.
87	SPM		Annex II: Glossary			Change the definition of the term "justice" by removing the following text from the definition: "ensuring that people get what is due to them"
88	SPM		Annex II: Glossary			Add the definition of "Low Elevation Coastal Zones (LECZ)" to the glossary: Low Elevation Coastal Zones (LECZ) Coastal areas below 10 m of elevation above sea level that are 13 hydrologically connected to the sea.