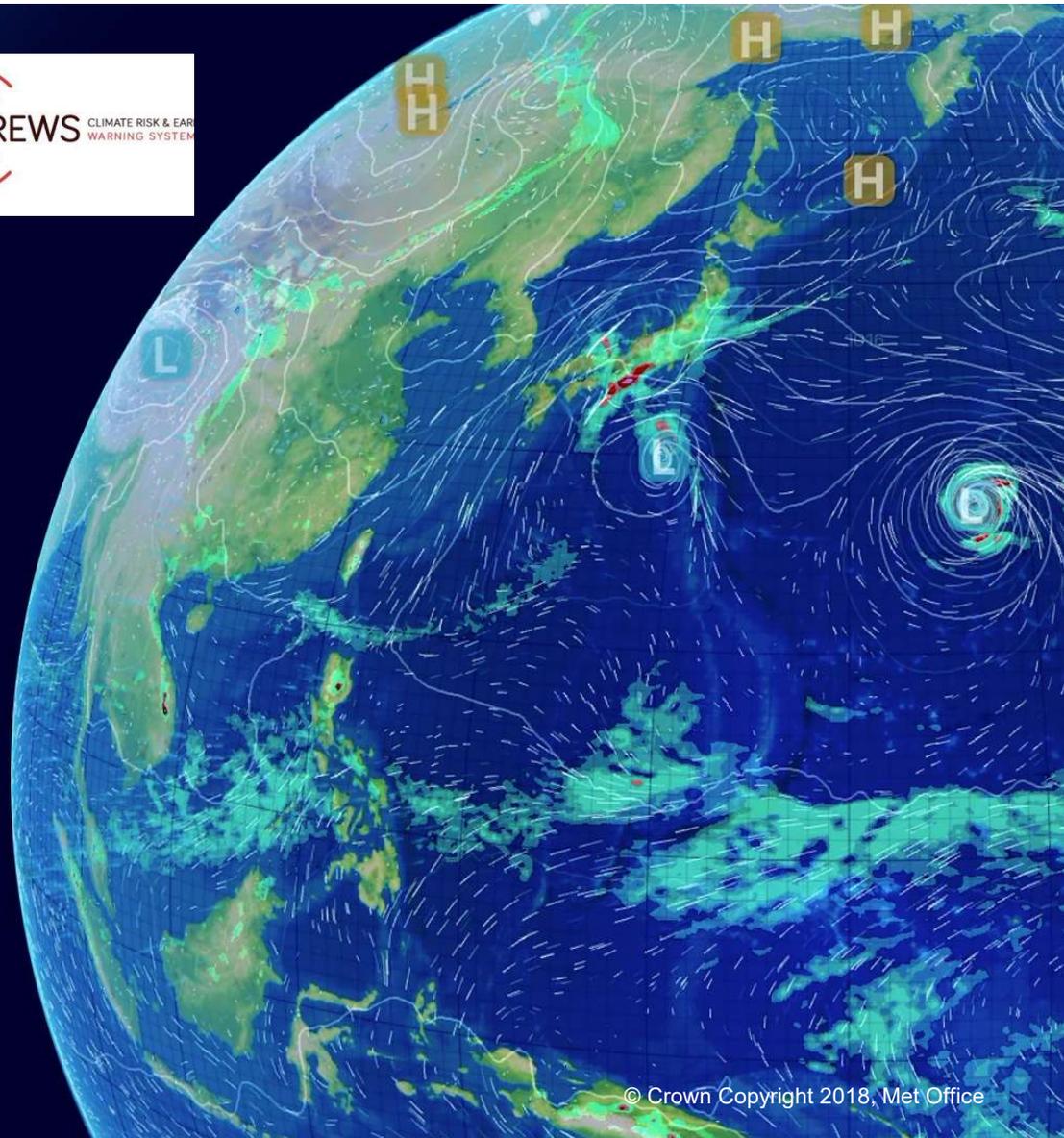


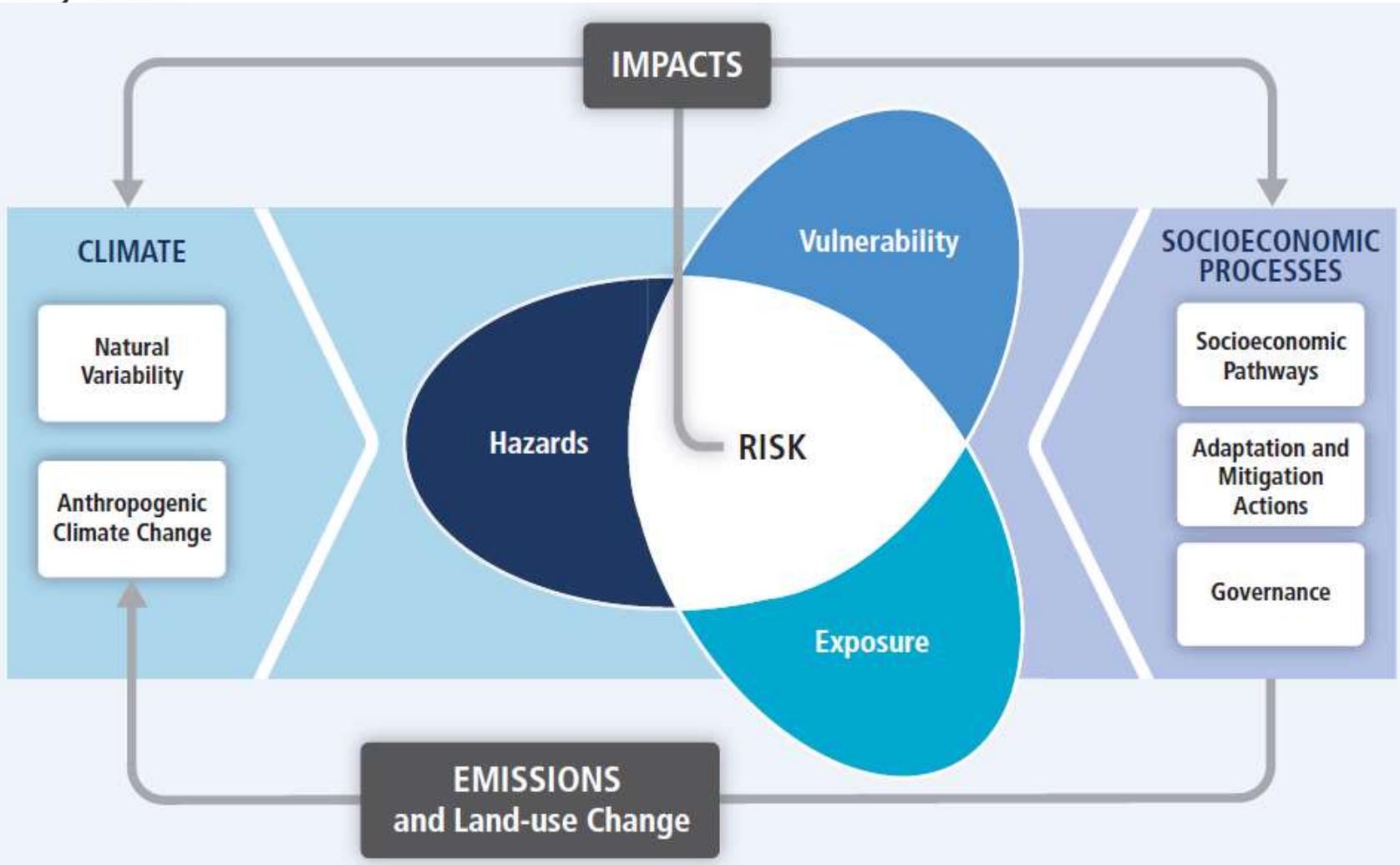


The risk framework, key risks and related climate hazards

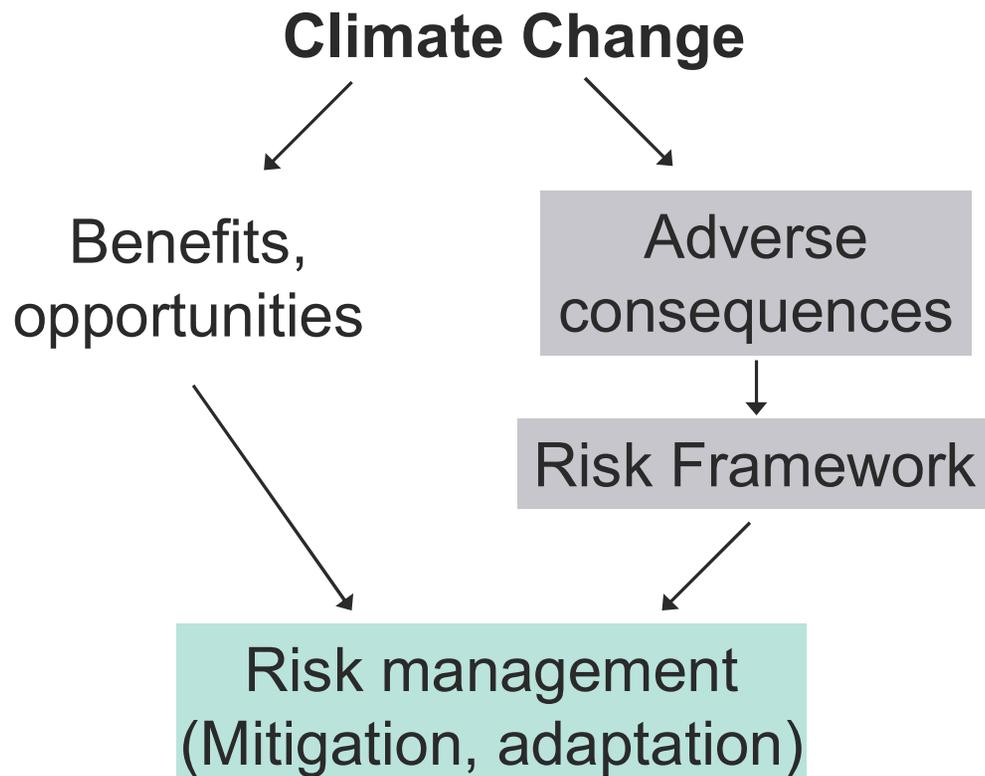
Richard Jones
Met Office Hadley Centre
(with thanks to Brian O'Neil,
CLA WG II AR6 Ch16)



The risk framework



Risk captures only part of the climate issue



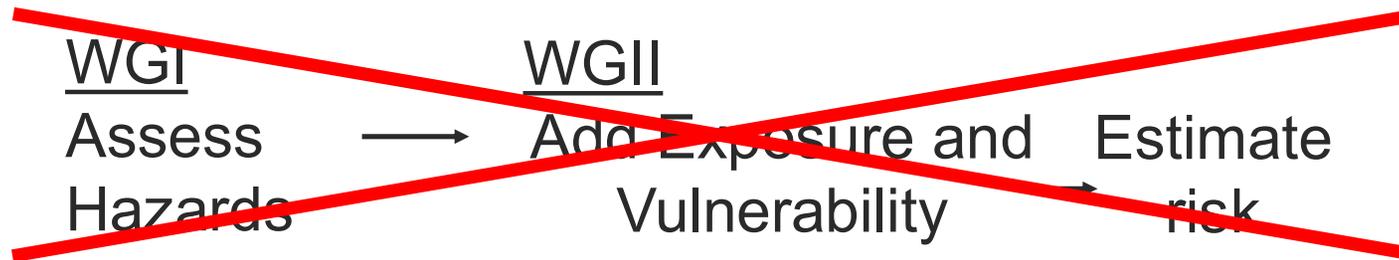
Risk framing does not capture the whole climate change issue

Need to also consider:

- Potential benefits
- Solutions

Thus need to consider not just “Hazards” but impact drivers in general

What do WGI and II do?



WGI Assess Hazards ↔ WGII Assess literature on impacts/risks, adaptation Hazards for context, uncertainty, confidence

When necessary, separately consider hazards, exposure, vulnerability

Key risk characteristics

Example

Key risk	Population at risk of hunger due to climate change
Geographic region	Sub-Saharan Africa
Consequence that would be considered severe and to whom or what	Persistent food insecurity with substantial number of extra people at risk of hunger due to climate change
Hazard conditions that would contribute to this risk being severe	Substantial warming and drying in some agricultural production regions, with heat and hydrological extremes
Exposure conditions that would contribute to this risk being severe	Persistently large numbers of low-income people in markets affected by impacted production areas
Vulnerability conditions that would contribute to this risk being severe	Continued or exacerbated income inequality, slow economic growth, ineffective food distribution systems

Representative Key Risks

Risk to people and livelihoods in low-lying coastal areas

Risk to urban people and livelihoods from inland flooding

Risk to critical infrastructures and structural networks from extreme events

Risk of death from extreme heat

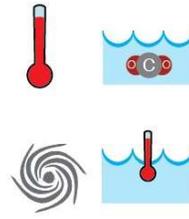
Risk to food security

Risk of loss of livelihood and income in rural areas from impacts on agriculture and water

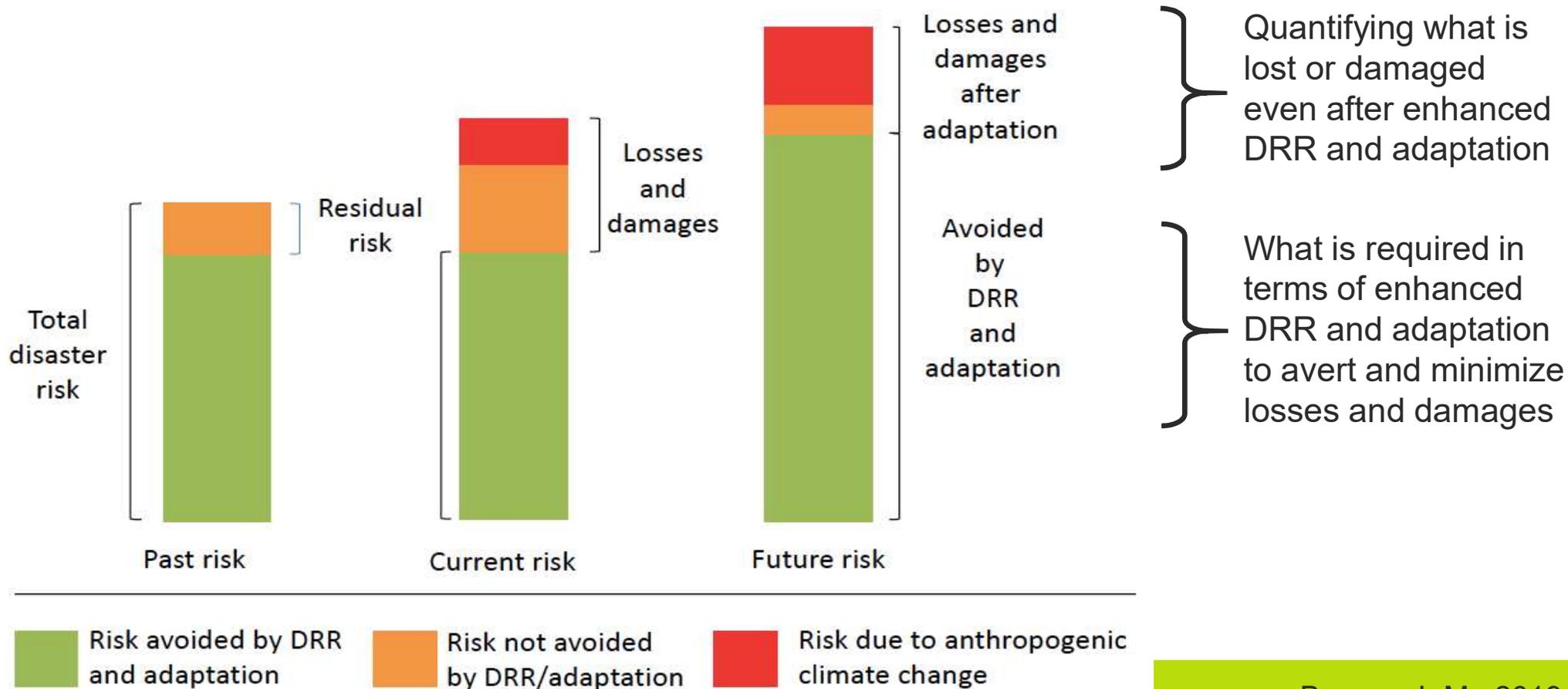
Risk to ocean biodiversity and ocean-based food security

Risk to terrestrial biodiversity

Key risks in small islands and potential for adaptation

Climate-related drivers of impacts								Level of risk & potential for adaptation																			
 Warming trend	 Extreme temperature	 Drying trend	 Extreme precipitation	 Damaging cyclone	 Sea level	 Ocean acidification	 Sea surface temperature	 <p>Potential for additional adaptation to reduce risk</p> <p>Risk level with high adaptation Risk level with current adaptation</p>																			
Key risk	Adaptation issues & prospects			Climatic drivers	Timeframe	Risk & potential for adaptation																					
<p>Loss of livelihoods, coastal settlements, infrastructure, ecosystem services, and economic stability (<i>high confidence</i>)</p> <p>[29.6, 29.8, Figure 29-4]</p>	<ul style="list-style-type: none"> Significant potential exists for adaptation in islands, but additional external resources and technologies will enhance response. Maintenance and enhancement of ecosystem functions and services and of water and food security Efficacy of traditional community coping strategies is expected to be substantially reduced in the future. 				<table border="1"> <thead> <tr> <th></th> <th>Very low</th> <th>Medium</th> <th>Very high</th> </tr> </thead> <tbody> <tr> <td>Present</td> <td colspan="3"></td> </tr> <tr> <td>Near term (2030–2040)</td> <td colspan="3"></td> </tr> <tr> <td rowspan="2">Long term (2080–2100)</td> <td>2°C</td> <td colspan="2"></td> </tr> <tr> <td>4°C</td> <td colspan="2"></td> </tr> </tbody> </table>		Very low	Medium	Very high	Present				Near term (2030–2040)				Long term (2080–2100)	2°C			4°C					
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<p>Decline and possible loss of coral reef ecosystems in small islands through thermal stress (<i>high confidence</i>)</p> <p>[29.3.1.2]</p>	<p>Limited coral reef adaptation responses; however, minimizing the negative impact of anthropogenic stresses (ie: water quality change, destructive fishing practices) may increase resilience.</p>				<table border="1"> <thead> <tr> <th></th> <th>Very low</th> <th>Medium</th> <th>Very high</th> </tr> </thead> <tbody> <tr> <td>Present</td> <td colspan="3"></td> </tr> <tr> <td>Near term (2030–2040)</td> <td colspan="3"></td> </tr> <tr> <td rowspan="2">Long term (2080–2100)</td> <td>2°C</td> <td colspan="2"></td> </tr> <tr> <td>4°C</td> <td colspan="2"></td> </tr> </tbody> </table>		Very low	Medium	Very high	Present				Near term (2030–2040)				Long term (2080–2100)	2°C			4°C					
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<p>The interaction of rising global mean sea level in the 21st century with high-water-level events will threaten low-lying coastal areas (<i>high confidence</i>)</p> <p>[29.4, Table 29-1; WGI AR5 13.5, Table 13.5]</p>	<ul style="list-style-type: none"> High ratio of coastal area to land mass will make adaptation a significant financial and resource challenge for islands. Adaptation options include maintenance and restoration of coastal landforms and ecosystems, improved management of soils and freshwater resources, and appropriate building codes and settlement patterns. 				<table border="1"> <thead> <tr> <th></th> <th>Very low</th> <th>Medium</th> <th>Very high</th> </tr> </thead> <tbody> <tr> <td>Present</td> <td colspan="3"></td> </tr> <tr> <td>Near term (2030–2040)</td> <td colspan="3"></td> </tr> <tr> <td rowspan="2">Long term (2080–2100)</td> <td>2°C</td> <td colspan="2"></td> </tr> <tr> <td>4°C</td> <td colspan="2"></td> </tr> </tbody> </table>		Very low	Medium	Very high	Present				Near term (2030–2040)				Long term (2080–2100)	2°C			4°C					
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Risks beyond existing risk management strategies – important new questions for research



And finally some opportunities to engage in IPCC

IPCC AR6 WG II report chapters currently in Expert Review – until Dec 13

IPCC AR6 WG I report chapters will be open for Government and Expert review March-April 2020

Deadline for papers to be submitted for citation in WG II report – June 2020

Relevant grey literature (project reports, etc.) citable in IPCC reports

Some questions for you following your feedback on hazards/impacts in the region

- Was there anything missing from the Climate Brief & session that wasn't discussed that they feel should have been?
- Regarding climate info/data/knowledge: what do they currently have, what don't they have, and what do they want/need?
- What climate services do they have in the region and what do they want/need?