22 September 2022

Response matrix for Climate information and early warning systems Sectoral Guide

Summary

The accompanying sector guide was released for consultation in May 2022 and the consultation was open until August 2022 to provide sufficient time for stakeholder to provide inputs. Consultation was open to the Board, advisers, observers, NDAs, Direct and International Access Entities, Civil society, Private sector representatives, Partner institutions and sector experts. The Secretariat received more than 290 specific comments and feedback on this draft. These and the responses by the Secretariat sector experts on how these comments were considered in the updated version of the sector guide is contained in this document.

This feedback and response matrix has been prepared for information purposes only to share the different comments received by the organizations that submitted feedback to the GCF in response to the public consultation of the "Climate information and early warning systems Sectoral Guide" draft for consultation version 1.

The information and content in this document do not imply any judgment on the part of GCF concerning the legal status of any territory or any endorsement or acceptance of such boundaries.

Responses to feedback noted here are those of sector experts and may not necessarily be those of the GCF.

The mention of specific entities, including companies, does not necessarily imply that these have been endorsed or recommended by GCF.

For further inquiries regarding this feedback and response matrix please contact us via: sectoralguides@gcfund.org

Sectoral Guide Section	Feedback received (verbatim)	Organization	Response from GCF/DMA sector specialists
General	We are pleased to see many areas of the document aligning with / referencing WMO initiatives and input (e.g. lines 82-84, 315-342, 384-408, 430-460, 603-608). While it is good that the document mentions initiatives such as GBON and SOFF, there are many other initiatives along the early warning cycle that need to be mentioned, in particular CREWS.	Global Affairs Canada	See comment on Line 96. CREWS is not an equivalent funding mechanism to SOFF. No change to text as drafted.
General	The Guide provides an excellent overview of the current situation and needs for CIEWS. However, this is a field where a lot is happening and some parts of the content might be soon outdated (for example some referring to SOFF already are). There are many relevant actors and initiatives (such as the WMO, UNDRR, SOFF, CREWS, Hydromet Alliance, REAP, etc.) whose role and activities are relevant to the eventual GFC project proposals. Maybe it would be useful to add a section about them. It would be useful to add information / lessons learnt about the role of the NMHS as well as other relevant national / regional actors. Likewise, the role and collaboration with the civil society and very importantly local communities could be strengthened. Chapter 6.7 as well as the column about coalitions in Figure ES-1: There are so many existing coalitions and initiatives, it could be useful to include a mention of them as well as sources for further information. What would be the role of GFC projects in them and avoiding duplication? Concerning terminology, it would be useful still to go through the document and harmonize / clarify the use of the terms early action, anticipatory action, forecast-based action.	MFA Finland	Noted. However space does not permit elaboration in the manner proposed,
General	The subject of these guidelines can be read as the quantitative dissemination of climate/weather information and early warning systems. But in addition, it is important to emphasize the importance of improving the quality of the systems. For example, WMO-No. 168. GUIDE TO HYDROLOGICAL PRACTICES recommends that each country should have at least one weather observation station every 575km2 to ensure the quality of climate observation. Perhaps similar recommendations exist for Radiosondes operations (I have heard this from Julian Báez, Director of the WMO Regional Office). I think it is important to make good use of these EWS quality and performance-based indicators in these guidelines to ensure the quality of projects with GCF investments.	IADB	3.2.2 refers to "optimising, establishing, and scaling up mechanisms for delivering IB-MHEWS, in accordance with UNDRR and WMO standards". Listing all the specific standards to be followed is beyond the scope of this guide.
General	There is also a need for objective monitoring of the effectiveness of GCF project inputs. For example, in the IDB's Project Result Framework, the improvement in the accuracy of weather forecast (%) is used as a project result indicator (e.g., PR-L1155). We think it is important to use such indicators to quantitatively and objectively monitor the contribution of the project through GCF.	IADB	Monitoring is a key aspect of GCF projects. This includes effectiveness pf GCF project inputs.
General	The first paradigm-shifting pathway seems more general than the other two, and this could be prolematic. For example, the third pathway is simply the first pathway (CIS) with a use case in mind (investment/financial decisions). The second pathways is simply the first pathway (CIS) applied for early warning for disasters. This means that the first pathway is a catch-all umbrella, and this is quite risky for project development. Many (most) projects that are trying to push climate services without a specific societal outcome in mind are top-down, data-driven projects without meaningful results. I would suggest to refine the first pathway to be more specific, focused on an outcome like the other two. Health might be a reasonable choice, for example.	International Federation of Red Cross and Red Crescent Societies	Pathway 1 is an underpinning essential supporting the other two.
	The focus of the comments that follow is “index insurance” for households, and not the larger sectoral guide (which I intend to return to later). During the webinar, I termed my comment as a personal one because I do not want that to be taken as the view of any of the institutions I have consulted / consult for. I have worked in the international development sector since 2005, and I have followed developments related to index insurance for 15 of those 17 years in low and middle-income economies. These products seemed a promising alternative to traditional crop insurance designs, and expand the suit of financial products offered to micro-credit clients. My concerns relate to crop index insurance (or a combined index and area-yield insurance), and not livestock index insurance – there are design and implementation issues with the latter, but across (say) East Africa, China, and Mongolia, there’s more cause for hope as to its utility to help livestock farmers manage and recover from weather / climate shocks. For crop index insurance, there are a number of design and operational issues that have not been surmounted even in pilots — even when many such pilots were impact evaluations (randomized control trials, frequently) with significant efforts to help overcome financial barriers (e.g., subsidy, free of cost), informational barriers (e.g., financial literacy modules), design (e.g., offering different triggers for specific parts of the agricultural season) etc. — and, this necessitates a review of the suitability of index insurance for crop agriculture (particularly, as practiced by economically poor households) vis-à-vis other options (public cash transfers, public in-kind transfers, community funds, etc.). I am happy to provide reference to the underlying index insurance evaluative literature if needed. Index insurance design is hampered by the dearth of historical as well as current reference climate / weather data at a granular level. One effect of this is the substantive residual risk (basis risk). E.g., https://doi.org/10.1093/ajae/aaw046. The crop agriculture context is also underpinned by the heterogeneity in yield outcomes – for e.g., the same / similar soil, water, or crop management practices can elicit a different (not always intuitively predictable) yield response for		

General	different crops under differing weather conditions (e.g., Table 5 onwards https://doi.org/10.1016/j.jeem.2018.11.008; section 6.2 https://doi.org/10.1016/j.worlddev.2021.105618 – on how rainfall interacts with crop yields even for different 'climate-smart' practices). This isn't surprising per se but points to challenges in index insurance design, the challenges to high quality products, and the assessments thereof. When a country such as Timor-Leste doesn't quite have the climate data to 'prove' to GCF that its project on fire risk management is a climate finance additionality, you could still have actuaries build out models for index insurance design – is that appropriate? Operationally, farmers — even when offered subsidized or bundled products — have tended to not engage in repeat purchase over years or not buy enough "units" of the index insurance products to cover their risk exposure. When index insurance is scaled out (say automatically bundled with crop loans), new issues arise – farmers may not even be aware of being insured, farmers are denied claims or experience huge delays in claims settlement. If these barriers can be overcome, you are still left with the fact that the payout is often so low as to not cover a significant part of (say) input costs or enough for the household to avoid costly actions (e.g., selling assets) to avert food insecurity or hunger. The response to these challenges has been to embed index insurance in the context of larger programs — combining and layering cash/in-kind transfers, agricultural extension on resilient or climate-smart agriculture, access to stress-tolerant seeds and inputs and so on. Alternately, if the only way to create high-quality but also affordable index insurance products is to customize to every crop-by-season-by geography contexts, how commercially viable is that? Any alternative approach is also going to require finance to first build the underlying data collection and monitoring infrastructure (not just granular weather data and new weather stations, but household data on yields / losses / effectiveness of payouts). Of course, not to deny that projects funded by GCF or World Bank are putting some of this infrastructure in place as a part of agrometerological information services. In the absence of a highly systematic (surely expensive) enabling environment effort, the challenge of low product quality and high basis risk remains, and much like moths to a flame during the microfinance boom, there is a serious risk of insurers designing products that are simply not credible or effective in newer contexts given the interest of international climate funds – to me, in a cash-strapped climate finance context, that is simply public transfers to private corporate actors. THEREFORE one could take a step back and reconsider if climate adaptation may not be better served by offering index insurance at an aggregate level, and other such models. For e.g., public budgets are stressed in the context of climate change and offering sovereign index insurance could help protect those budgets or ensure substantive budgetary scale-up can occur when weather / climate shocks occur (Africa Disaster Risks Financing (ADRiFi) Programme). Is this an area where sufficient financial innovation could occur, and therefore could be better served by climate finance? In short, there are some serious conversations to be had, and a thorough consideration of whether the continued efforts to "improve" index insurance might be driven in part by the development finance that's been made available, rather a solid end-goal. GCF has not hesitated to have these challenging conversations in the past, and hence my comment to you as you develop you TOC in this sectoral guide.	Various (FAO / CFI at Accion etc.)	Thanks. See the guide on Agriculture and food security.
General	The concept of inequalities is not mentioned in the document. We would suggest considering these aspects at the bottom of a structuring process of the EWS, since the same concept is at the base of the last IPCC report on adaptation (IPCC, 2022).	Italy	Noted.
General	It would be important to reference the Climate Risk and Early Warning Systems (CREWS) Initiative in the document (https://www.crews-initiative.org/en). The CREWS Initiative was launched in 2015 by the government of France at the Paris climate change negotiations in response to the Sendai Framework for Disaster Risk Reduction. It was developed to support Least Developed Counties (LDCs) and Small Island Developing States (SIDS) in significantly increasing the provision of weather and climate services and the capacity to generate and communicate effective, impact-based, multi-hazard, gender-informed, early warnings systems to protect lives, livelihoods, and assets. CREWS is a proven, global initiative that supports countries with early warning systems. In addition, given the many global initiatives in the early warning systems "space", it is critical to mention CREWS, especially in light of lines 493-496 and 839-842 speaking to the importance of coherence and complementarity.	Global Affais Canada	CREWS reference added to 2.3.
General	Reference to the UN Secretary-General's Call to Action should be added to this document. The UN set an ambitious five year deadline for countries to ensure that citizens worldwide are protected by early warning systems against extreme weather and climate change. The World Meteorological Organization (WMO) was asked to "spearhead new action to ensure every person on Earth is protected by early warning systems within five years." (announcement made on March 23, 2022)	Global Affais Canada	Text added to Section 1.1.
General	A reference should be added on the importance of gender as it relates to EWS. There is no mention of the influence of gender in the way that people access, process, and respond to information and warnings.	Global Affais Canada	Text added to Section 2.3.
General	It would be good to refer to the recent UN SG Early Warning for All Initiative, particularly how GCF will support/ align with the initiative. This could be added into section 2 subsection at 344.	UK	Text added to Section 1.1.

General	The sector guide rightly has a focus on private sector engagement, however, in my experience (wrt LDCs) often the NMHS are not set up, mandated, or willing to engage with, share or partner with private sector. It could be beneficial to clarify this intent in the NMHS governance work which GCF will fund.	UK	Agreed. This is already covered in the last paragraph of 3.2.2 and elsewhere. No change ot text as drafted.
General	Is there a tension between SOFF observation requirements and observational network requirements for parametric insurance and other finance mechanisms.	UK	SOFF is based on GBON. Any project proposal with investment in observations infrastructure should be designed to meet the requirements of the users, which could and most likely will extend beyond the basic SOFF definition. However this need not give rise to tension provided WMO Unified Data Policy is followed. No change ot text as drafted.
General	The document reads well, with clear, concise messages and a clear and compelling structure.	Germany	Thank you.
General	Established standards: The document does not make use of existing guidelines and standards for Climate Service Centres (see https://library.wmo.int/doc_num.php?explnum_id=4335) nor does it refer to existing guidelines for Early Warning Systems (see an overview here: https://www.crews-initiative.org/en/resources/early-warning-guidelines-publications). We consider it important that any GCF project proposal should align with these established standards and operational practises.	Germany	3.2.2 refers to "optimising, establishing, and scaling up mechanisms for delivering IB-MHEWS, in accordance with UNDRR and WMO standards". Listing all the specific standards to be followed is beyond the scope of this guide.
General	Reference to key reports/initiatives: The document lacks references to a number of key reports (e.g. most recent IPCC AR6, UNDRR Global Assessment Report on Disaster Risk Reduction) and important initiatives (e.g. CREWS Initiative, International Network for Multi-Hazard Early Warning Systems). We call upon the Secretariat to consider these reports/initiatives in the sectoral guideline.	Germany	Additional, more recent, reference have been added.
General	Gender: The document contains only few references to gender-specific aspects of climate information and early warning systems. Women are often affected differently/disproportionately by disasters than men. For instance, in Bangladesh, during cyclone Sidr in 2007 five times as many women lost their lives in the disaster as men (see https://www.worldbank.org/en/news/feature/2013/12/12/improving-women-disasters). It is therefore important to develop and implement actionable climate information and early warning systems that reach women. This aspect could be specified more clearly in the sectoral guide document.	Germany	Text added to Section 2.3
General	Rapid vs. slow-onset disasters: The report could be strengthened by considering the difference between extreme disasters and slow-onset disasters.	Germany	MHEWS covers all timescales of diaster.
General	Contingency planning: To ensure the effectiveness of CIEWS, it can be useful for governments to develop contingency plans ahead of a disaster, specifying concrete responsibilities within governments in the event that early warning systems indicate an imminent disaster. While this could be part of the “enabling environment for institutional effectiveness”, it may be useful to point out that contingency planning can be a useful tool to enable early action during disasters.	Germany	Text added at 3.2.2.
General	The major international facilitator of climate information and services is WMO which mainains specialized meteorological and climatoligical terminology. The GCF process identifies English as the main language with three other languages as optional for comments. We suggest this document be provided in all six languages.	United States	The report will follow GCF's language policy.
General	The list of Sectoral Guide documents is missing the rationale explaining the list. Climate Information and Early Warning Systems and Energy Efficiency do not reflect sectors. Suggest using WMO's Global Framework for Climate Services recommended sectors.	United States	The subject areas for the sectoral Guides have been defined by the GCF Board.
General	It is not clear how climate subject matter expert will be recruited	United States	Detailed question beyond the scope of this guide.
General	Beyond downscaling. There’s discussion about the need for better downscaling of climate information. But, there’s little discussion about the fact that standard downscaling of global climate models does not give information needed for some key decisions. Flood depths and extreme storms are good examples, according to the figure on Page 12, as these are the two most damaging types of weather hazards. For that sort of information, other approaches are often needed. To generate flood depth information, the downscaled model output needs to be linked to hydrologic/hydraulic models. To generate information about things like changes in hurricane intensity, the climate model output needs to be linked to other models that can actually resolve hurricanes. As you know, separately we’ve explored the information engineers and planners need for infrastructure development.	United States	Text added to Section 2.2.
General	The guide could use more information about how climate and early warning information can be translated into actionable information. This too sometimes requires an additional type of modeling, e.g., via impact or damage assessment models.	United States	This is a level of detail beyond the scope of this guide.
General	The document should include consideratiion of the fact that some sectors are historically more primed to leverage EWS (e.g, agriculture) and others less so (e.g., health). For the latter, careful work needs to be done on end-user engagement, trust-building, and awareness rasiing	United States	Text added to table 2
General	The guidelines seem to mix early action, anticipatory action, forecast-based financing and forecast-based action without clearly outlining why different terms are used, which will cause confusion. They can be considered as sysnonyms and it is recommended to align and refer to the widely agreed term 'anticipatory action' throughout the document.	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	the terms are not synonymous and are used correctly in their context
General	The distinction and overlaps between CIS and MHEWS frameworks (and what CIEWS covers) is not clear in the document. This is perhaps difficult to define clearly, but by not doing so makes the reading and understanding of the document difficult. Perhaps a box at the beginning, which sets out the similarities, differences and overlaps, could avoid confusion when reading the rest of the document.	UNDP	Reference has been added in 2.1 to GFCS and the WMO MHEWS checklist.

General	What is missing from the guide is a discussion on more cost-effective technologies for observing (e.g. remote sensing), forecasting (e.g. machine learning), and communication (e.g. mobile phones etc.). These have the potential to reduce costs and especially the burden of O&M in many LDCs. GCF should be promoting these technologies where appropriate, especially where traditional approaches are unsustainable	UNDP	Such innovative, cost efficient approaches are encouraged in various places through the Guide. For example, "Pilot disaster communications systems using digital technology and other innovative channels" (Table 2), "Pilot disaster communications systems using digital technology and other innovative channels" (Section 2.2 Point (5)), "big data analytics and artificial intelligence; satellite technologies and decision sciences" (Section 3.1), "adopts digital technologies to significantly transform the generation, management, and delivery of climate services" (Section 3.2.1)
General	FAO suggests reinforcing that even though early warning systems are historically based on short-range forecasting, medium-range and long-range forecasting can better inform the deployment of correct systems and infrastructures for short-range forecasting and early-warning systems. For example, predicting whether an area is expected to experience a higher frequency of floods compared to drought (long-term forecasting) can help decision-makers to identify which early warning system is required (this is addressed in Table 3 and line 744 but it could be reinforced). Thus, long-range forecasting (e.g based on climate projections) can support the development of more tailored early warning systems and identify priority areas. One recent publication that discusses medium-range forecasting and early warning system can be found here (https://www.sciencedirect.com/science/article/pii/S2590061721000636)	FAO	Text added to 3.2.2
	Thank you for the opportunity to review and comment on the draft GCF Sectoral Guide on Climate Information and Early Warning Systems (CIEWS). We greatly appreciate that CIEWS is treated as an important stand-alone sector for dealing with impacts of the climate crisis, and one where Green Climate Fund financing and resources can play a particularly catalytic role. The Guide also does an excellent job contextualizing the opportunity in relation to the Sendai Disaster Risk Reduction Framework. We further note the important contribution that the Green Climate Fund, in collaboration with the World Meteorological Organization, is making to develop and strengthen the Global Basic Observing Network (GBON), including by expanding observational coverage in SIDS and LDCs. The draft Sectoral Guide cites the 2019 WMO State of Climate Services report, and reproduces (at lines 313-342) the 'Key Gaps' found in global provision of Climate Information Services: 1.Capacity 2.Weak monitoring and evaluation in relation to the benefits of CIS 3.Systematic Observation Gaps 4.Lack of coordination and data sharing 5.'Last Mile Barriers' 6.Research modeling Appreciating the role that GCF and WMO are now playing in addressing 1-4 on this list of Key Gaps; and noting the sensible recommendations for funding prioritization found in the draft Guide; nonetheless we feel that the draft Guide and its related recommendations could go further in pointing to truly paradigm changing approaches. We ask for attention to the following:		

General	1.Treatment of slow onset events. The report presents CIEWS almost exclusively in relation to cataclysmic (fast-onset) events. Where relevance to slow-onset events is mentioned, the primary frame used is that of opportunities to pursue insurance and other private-sector-oriented risk management financial products. 2.People-centered? The Guide would benefit from a more holistic treatment of how families and communities experience climate change, in relation to both fast- and slow-onset events, and the different kinds of development consequences this has for people. The Guide treats local governments and communities as 'recipients' of information but has little to say about the importance of use of downscaled information for decision-making in both local planning and regional response contexts – that is, local communities as actors, rather than passive recipients. 3."Unlocking private sector". The report is imbalanced in the amount of attention given to unlocking private investment as compared to conceptualizing and advancing 'public goods' frameworks. We do appreciate the brief discussion of ways that the GCF can strengthen global climate information coverage -- for example at lines 524 – 528 regarding Hydromet observations – in provision of an important global public good. But other than investment in national hydro-met services, little attention is given to international cooperation in support of public goods of immediate practical relevance for site-specific adaptation and avoiding loss-and-damage. What is the appropriate provision of services in developing country contexts based not on opportunities for vending technologies related to Hydromet services, but rather, defining the necessary information-sharing and early-warning-system supports that also provide global public benefits related to social stability, and can be served through better coordination of existing databases, satellite platforms, etc.? But instead of considering developing country needs, the draft Guide focuses on opportunities for 'de-risking' investment and suggests just copying the kinds of services found in developed countries, where CIEWS services are "driven by a vibrant private sector" (lines 785-794). We find this emphasis neither realistic nor helpful. 4.'Financial resilience investments'. We agree completely with the need for broad consideration of disaster contingent financing models and investing in resilience. We agree with the explora-tion of sovereign risk pooling insurance approaches. But where the Guide pushes 'bailing in' of the private sector not only for provision of information services but 'de-risking' the use of that information for hedging and speculative activities strikes us as inconsistent with the GCF's mandate and primary responsibility to countries. For example, we would oppose the use of GCF funds for use in weather derivatives markets outside of sovereign risk pooling contexts. And while it is not the role of the Guide or the GCF to prejudge any outcomes from current UNFCCC discussions on Loss & Damage, nonetheless an exploration of the appropriate types of insurance products that might be developed and leveraged through future L&D finance strikes us an important and appropriate area for further exploration. 5.'Last Mile Barriers'. Early on the Guide takes note of 'last mile barriers' as a Key Gap in the provision of CIEWS services. The problem is presented as one of the 'information not reaching the user'. This theme is barely revisited in the remainder of the report. We find two problems here. First is the passive role conceptualized for end-users, with the provision of services limited to the bundling and transmission of top-down information, primarily in the form of weather data. We see no attention given to the co-creation of knowledge and disaster response approaches involving local governments, community groups, religious leaders, national coast guards, etc. Treating end-users only as recipients of information flattens into insignificance the necessary and important role that community readiness must play in adaptation and minimizing loss and damage. The second problem is that no effort is made in the Guide to explore what types of information (and formats for presentation) are most appropriate for promoting resilience. We urge much greater attention to the social appropriateness and United Statesbility of information with respect to both slow- and fast-onset extreme weather events, and not just to its provision as understood in Hydromet contexts. The truly paradigm-changing approach would be in combining Hydromet efforts with public engagement regarding the essential site-specific, public nature of adaptation. More effort must be made to determine the appropriateness of information provided to states, local governments, and community leaders – in particular, its 'actionable' content. Note too this requires a partial reconceptualization of what is meant by Capacity – also noted as a Key Gap – as technical capacity must be complemented with outreach and explanatory capacity, including the development of appropriate feedback mechanisms from vulnerable communities.	Pivot Point	Additional text added: - specific inclusion of slow-onset disasters in Pathway 2 - further emphasis of the importance of local communities as actors, rather than passive recipients Other suggested additions are a level of detail beyond the scope of this guide, but further references have been added to sources that may be helpful.

	vulnerable communities. 6.Research modeling. We appreciate the call for 'down-scaled' modeling of climate impacts found in the Guide. We note however several ongoing challenges with respect to the two kinds of modeling that figure most prominently in that downscaling effort. First, even the best models of extreme weather behavior operate on very short time horizons; while climate models, including Shared Socioeconomic Pathways / scenarios, operate on decadal scales. Atmospheric scientists acknowledge that weather-predicting models aren't much use when trying to game out, for example, whether a dry season three years from now will be particularly long or short duration. Yet it's precisely this kind of information that is of greatest interest to planners, land managers, and policy-makers responsible for crafting appropriate adaptation responses. While the tools and modeling approaches used for insurance and other actuary purposes most definitely should play a role here, at the same time there should not be a sole reliance on monetizing risk for climate response purposes; again, a public goods perspective on modeling, one in which formal and informal systems of community resilience are acknowledged and accounted for, is a very important component of the 'downscaling' approach that hasn't yet been incorporated into the vision for this sector. To shift the paradigm, we need types of modeling that are more 'fit for purpose', and that means much greater integration of information pertaining to social risk and response capacities, not just the pricing of risk for protection of physical assets. Social disruption in the wake of natural disasters can cause impacts equal to or greater than that occasioned by the weather event itself. In sum, we believe that assigning a passive role to end-users, while failing to incorporate social data into 'early warning systems' that improve predictive capacity for managing overall social risk from disasters, misses an opportunity to create paradigmatic change in the interpretation and use of Hydromet data. Thank you for the opportunity to submit these comments as an Accredited Observer / as Accredited Observers.		
General	The Sectoral Guide refers a number of times to the need for holistic investments focused on end-user needs and specifies that "investments in CIEWS have had a strong bias towards observational infrastructure, without sufficient attention to…. equal focus on downstream steps in the value chain that ensure higher levels of economic benefits from enhanced reach, better user uptake, and decision effectiveness" yet the Guide only refers to SOFF as an example of financing mechanisms. We suggest a more balanced approach to existing financing mechanisms, allocating similar amount of space to initiatives such as CREWS.	CREWS	There are many financing mechanisms (including GCF of course). The reason for highlighting SOFF is that it is not a development assistance funding stream but an ongoing (therefore sustainable) means of reimbursing LDCs for the provosion of observational data.
General	Regional approaches are referred to in Pathway 1 such as strengthening WMO Regional Climate Centre. Such regional approaches can be equally effective for Pathway 2, strengthening WMO's cascading forecasting system and Regional Specialized Meteorological Centers.	CREWS	It is therefore recommended that any project (from any funding source) that invests in observations is recommended to align to SOFF as a means of post-project sustainable revenue.
General	It would be interesting in the sections on financing to refer to the opportunity to scale-up existing successful programmes such as the countries with existing CREWS projects in line with the proposed GCF/CREWS Scaling-Up Framework to be developed.	CREWS	No change to text as drafted.
General	We can provide a good case study to include in the Guide (either Burkina Faso or Papua New Guinea) that can also reflect how GCF is scaling-up existing successful projects.	CREWS	Noted.
General	The draft sector guide lacks a focus on the human dimension, and a human-rights grounding, for suggested activities and approaches. It is also willfully gender-blind and gender-ignorant, not acknowledging for example the reality of gender and other intersectionalities of marginalization and discrimination as a factor in who benefits from or receives access to climate information and early warning systems (CIEWS). This is a significant shortcoming. Likewise, the guide is silent on how existing GCF core policies, like the gender policy or the Indigenous Peoples' policy intersect with and in effect should guide investment approaches in the area of CIEWS. A word search reveals that "gender" is only mentioned in connection with an existing investment criteria, while the role of women is only mentioned en passant in some case studies. "Human" is only referenced in terms of "human capacity" (= instrumentalized) but not as rightsholders. The draft sector guide lacks a focus on the human dimension, and a human-rights grounding, for suggested activities and approaches. It is also willfully gender-blind and gender-ignorant, not acknowledging for example the reality of gender and other intersectionalities of marginalization and discrimination as a factor in who benefits from or receives access to climate information and early warning systems (CIEWS). This is a significant shortcoming. Likewise, the guide is silent on how existing GCF core policies, like the gender policy or the Indigenous Peoples' policy intersect with and in effect should guide investment approaches in the area of CIEWS. A word search reveals that "gender" is only mentioned in connection with an existing investment criteria, while the role of women is only mentioned en passant in some case studies. "Human" is only referenced in terms of "human capacity" (= instrumentalized) but not as rightsholders.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
General	The draft sector guide, including in the presentation of the underlying justification for a focus on CIEWS, is almost entirely silent on slow-onset events and focuses disproportionately on climate-related fast-onset disasters.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. The guide relates to weather and climate risk, hazard and disaster, which can occur on all timescales. No change to text as drafted.

General	The draft sector guide, while listing economic losses, is not sufficiently acknowledging and integrating the issue of non-economic losses and damages. Because of a narrow focus on economic losses, its remedy is primarily infrastructure focused, instead of focusing on a much broader range of social and societal systems and structures that can profit from and need to rely on CIEWS in order to increase resiliency and reduce vulnerabilities, particularly of the most vulnerable population groups. Thus, it becomes overly financial systems/hard infrastructure-centric instead of having a people-centered focus.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. Section 2 quantifies both financial and non financial risk in some detail, while section 3 presents paradign shifting pathways that will provide transformative change to build community resilience. See espcially Pathway 2: "lives saved, livelihoods and development gains protected, and climate-related risks managed more effectively"
General	The draft guide lacks attention to the issue of accessibility, in particular the related issue of affordability of access to climate information and related services. It seems willfully blind to existing differences and inequities (including based on gender and other intersectional discriminating and marginalizing factors such as age, literacy level/class, indigeneity, ethnicity etc.) in access to climate information and specific technologies propagated as a way to generate and distribute such information, including via commercial services (AI, Internet of things etc). This is relevant for all three paradigm shifting pathways articulated in the draft guide, but in particular for pathway 2 on “Promoting impact-based MHEWS and early action”. Furthermore, it is important that the sector guide establish the preference for GCF approaches to embed no to low-cost, affordable access, recognizing the human right to access information.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
General	The draft sector guide neglects to focus on multistakeholder processes, inclusive and equitable participation of beneficiaries and collaborative spaces for the generation of climate-relevant information and early warning systems, including by neglecting to acknowledge the role of local, traditional and Indigeneous knowledge for CIEWS. Only the last section of this guide, Section 6.7. , makes a substantive reference to these issues. The placement of this section – literally at the end of the discussion – shows that the draft sector guides treats this an afterthought when it should be a central framing part of the discussion about the GCF’s approach to investing for impact in CIEWS. That this important section is placed where it is shows the bias of the sector guide towards a financial approach to the discussion. Instead of using financial instruments as the tool for better CIEWS outcomes, they, and resulting private sector finance leverage, are presented as the goal of the sector discussion.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
General	Firstly, CIEWS need to be framed as multi-hazard ‘systems of systems’’ that share hazard, exposure and vulnerability data to design and deliver weather, water, ocean, ecosystem and climate services that connect and cross all sectors; secondly, defining services that can be derived from CIEWS is crucial to climate resilient development (ability to anticipate, absorb and adapt) and will increasingly rely on “big data” to deliver real time spatially and temporally targeted risk information so they need to be underpinned by data-sharing and crowd-sourcing mechanisms, however - and thirdly, a key barrier to needs-responsive data-driven and increasingly tailored and automated EWS that respond to the exigencies of a changing climate is the current and fundamental lack of a viable business model, especially in developing countries, hence both the ROI and the sustainability of investments in EWS hinges on the development of new multi-sectoral circular economy services-oriented business continuity/sustainability/investment models; this overarching trifecta needs to be made explicit in formulating projects and programmes in order to bring coherence to all GCF financing for EWS. Further, it is time to bridge adaptation and mitigation in all ecosystem-based approaches, so that “AdMit” benefits of NDC goals can be fully leveraged.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted.
General	While the principal reason for scaling up the development of impact-based MHEWS is to protect people, property, assets, infrastructure and livelihoods from negative impacts of a changing climate, it is also important for the GCF to frame a new narrative of climate resilient development which is focussed on “thriving, not just surviving” in a changing climate; this means EWS as central to managing the uncertainty and heightened risk extremes that characterize a warming planet. It also means forging explicit MHEWS linkages as crucial to ecosystem-based adaptation (EBA), integrated water resource management (IWRM), integrated coastal zone management (ICZM); and harnessing restorative ecosystem management, and extreme weather events for their productive benefits, in order to manage soil and water resource systems at the nested scale of the adaptive management unit, which is the catchment basin or coastal ecosystem, and its subsidiary micro-basins or micro-climates.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	This aspect is detailed in the Sectoral Guide to Ecosystems and Ecosystem Services, as referenced in Table 1.No change to text as drafted.
General	Along with hydromet hazards, be vigilant in raising the profile of HEAT as a climate risk with systemic, cascading and compounding impacts at multiple timescales on human, livestock, crop, biodiversity, ecosystems, and ocean health and productive functioning, including the ability of the oceans to continue to sequester carbon, as well as on the built environment and critical infrastructure including but not limited to buildings, road surfaces, communications and energy systems.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	CIEWS covers all weather and climate related hazards.
General	To support climate resilient development, MHEWS need to be people-centred and needs-responsive; this means a shift in mindset from reactive to proactive and from static to dynamic, both in the way MHEWS are utilised AND in the way MHEWS are developed; be careful not to categorize “end-users” - especially at the “last mile” - as beneficiaries of services delivered by technical “producers”; for finger-on-the-pulse impact risk prediction end-user HEV (hazard/exposure/vulnerability) information and data must become increasingly central to the system, and to meet the needs of all people data collection & input needs to be become increasingly massive, streamlined, direct and relational.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 3.2.2 on equity inclusion and communities as actors.

Contents	To ramp up the development of robust actionable MHEWS, investments in top-down development of national/regional systems and services must be systematically complemented with local level bottom-up engagement processes, so that people are vested in the continual improvement and use of MHEWS, including through the systematic integration of community-based EWS into larger-scale MHEWS.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 3.2.2 on equity inclusion and communities as actors.
Executive Summary	GCF investment in MHEWS needs to capture practical feedback on effectiveness of the project approaches and of results, ideally through use of Theory of Change and MEAL (monitoring, evaluation, accountability and learning) methods in project formulation to ensure that the evidence base is strengthened and that feedback loops operate so that learning informs both project and portfolio adjustments.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted
Executive Summary	While the draft sector guidance is exhaustive and informative, including in the discussion on paradigm shifts and pathways, it lacks concrete information on how the various barriers can be addressed.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The Sectoral Guide is only a brief, top level document.
Executive Summary	Since EWSs are divided and diversified by climate hazards, we suggest considering a more clear structure grounded on the main climate hazards which are at the base of the establishment of an EWS (see for example the Climate-ADAPT page on EWS: https://climate-adapt.eea.europa.eu/metadata/adaptation-options/establishment-of-early-warning-systems" https://climate-adapt.eea.europa.eu/metadata/adaptation-options/establishment-of-early-warning-systems). These hazards could be related to the systems in the same table, but it is a secondary step from our point of view. Same consideration for other section with the same subdivision in the document.	Italy	The table is a standard template used in all the Sectoral Guides.
Executive Summary	In description "Strengthening hydromet monitoring, development of climate Information services and impact-based multi-hazard early warning systems, and application of CIEWS for investment and financial decisions to manage long-term climate risks" - perhaps worth emphasis on current and long-term climate risks?	International Federation of Red Cross and Red Crescent Societies	"long-term" deleted.
Executive Summary	The table lists sectors of economy. Climate Information and Early Warning Systems is not a sector but rather a resource for use in all sectors	United States	Yes but the terminology 'Sectoral Guide is applied to all of these. Table header changed from 'Sector' to 'Sectoral Guide'. CIEWS line moved to top of table, and shaded in a different colour to distinguish it from the sectors it applies to.
Executive Summary	This suggests that future projections are part of CIEWS - if we are talking about future climate resilience. In which case you might have similar long term information needs for e.g. agriculture - land use planning for particular climate resilient crops etc.	UNDP	Additional text added.
Executive Summary	Is this monitoring land use/land cover, or projecting future change ? Either way this uses a long term dataset and is this the purpose of CIEWS ? Perhaps more on seasonal vegetation change as an indicator of drought and/or reduced surface water etc ?	UNDP	Text now includes climate "projections for longer term planning".
Executive Summary	see above questions on whether climate change is part of the information provided by CIEWS	UNDP	Yes it is. Additional text added.
Executive Summary	What is meant by “early action capacity”? It is suggested that it be revised to convey the value of fast early action or effective fast response capability.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text revised to read " effective fast response capability".
Executive Summary	When talking about MULTI-hazard early warning system to respond to systemic risk, countries need to engage more than hydrological and meteorological (hydromet) services. What they need is a national mechanism to bring together multiple data and analytical service providers in addition to hydromet services. Data and services for Climate Action also come from multiple government agencies (i.e. national disaster management agencies, space agencies, electric/energy, public works & highways, science & technology, agriculture, environment, statistics, interior, national water resource board), international organizations, universities, research institutions, non governmental organisations, private sector, citizen scientists and others.	Group on Earth Observations (GEO) Secretariat	Additional paragraph added under Pathway 2 to cover this (Section 3.2.2).
Executive Summary	In describing the three proposed paradigm shifting pathways, there is no explicit acknowledgement of the public goods characteristic and indeed public information/service obligation of CIEWS; instead the focus is on “asset owners.” The GCF’s role in engaging in investments for CIEWS should go way beyond “unlocking the barriers to the CIEWS market”. In the same vein, support to governments in developing countries must go beyond helping them in efforts to “de-risk the environment and provide the incentives to crowd in private sector investments” (lines 137-139). Instead the guide needs to focus on the GCF’s role to strengthen public investments with a focus on strengthening its own capabilities to provide CIEWS as a public good/service (not just as an enabler of private sector engagement).	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. Pathway 2 is primarily a public good pathway through MHEWS, while pathway is aimed primarily at private sector. Pathway 1 supports both public and private sectors by underpinning pathways 2 and 3. No change to text as drafted.

Executive Summary	Information services must also be informed by data collection at the grassroots and local level as it is important to provide solutions that address the context of people living in vulnerable situations, such as women and girls, who face unique challenges to climate-related disasters.	Global Affais Canada	Additional paragraph on women and girls added 2.3.
Executive Summary	There is significant overlap between these pathways, particularly pathways 1 & 2. The guiding documents on these approaches (GFCS documents & MHEWS checklist respectively) both tackle the underlying data, observations and analytical forecasting and product development. Should this overlap be acknowledged and if so how are the two distinguished from each other ? Conceptually within this framework, are CIS and MHEWS focusing on different timescales ?	UNDP	Pathway 1 is an underpinning capability that enables the creation of relevant, science-based information for Pathways 2 and 3. This is explained in the first paragraph under 3.2.1.
Paradigm Shifting Pathways	This reflects the overall WMO's approach. The possibility of supporting all 5 GFCS pillars in every partner country is questionable in practice. User interface platforms hardly exist anywhere, incl. in many developed countries. User interface platforms would need to offer CIS to users/ customers, which requires all other 4 GFCS pillars. Especially weaker countries could be supported to strengthen observation and monitoring research to make local or downscaled data available. Modelling and prediction/ or projections could be done by global and specialized service providers. There could be PPP and regional models that enable regional hub solutions (e.g. Kenia's HMA for the Nile region; Brazil to cover parts of South America). Overall, CIS are needed urgently. Considering that it takes quite long for HydroMet Agencies to apply larger institutional reforms, buy all equipment and train staff, global and regional solutions could fill the gaps.	GIZ	Agreed that there is much to be done, and that often progress will rely on global and regional hydromet infrastructure. It is certainly not the intention to advocate duplicating at a national level capability that already exists regionally, or can better be develped on a regional scale. The paragraph on Regional Hydromet programmes makes this clear. No change to the text as drafted No change to text as drafted.
Executive Summary	"capacity development" and improved collaboration/estbalishment of legal mandates between different government institutions/agencies e.g. with MoH. It would be useful to be more specific on what the capacity development needs are and also to highlight that a lot of the issue is having the legal mandate and roles and responsibilities clearly articulated in SOPs.	International Federation of Red Cross and Red Crescent Societies	This is covered in the GCF Theory of Change. Key actions for each of the paradigm shifting pathways across the following four pillars of the GCF Strategic Plan are outlined in Figure ES1/Figure 8.
Executive Summary	Why limit the target to disaster risk only?	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The focus of Pathway 2 is MHEWS - i.e. warnings. By definition therefore the target relates to warnable/extreme events. However the target is not just disaster risk but covers all of "disaster risk knowledge; detecting, monitoring, analysing, and forecasting hazards and possible consequences; warnings /advisories communication and dissemination; preparedness and response capability; and effective coordination mechanisms" No change to text as drafted.
Executive Summary	Especially GFCS pillar 4 (modelling…) will be necessary to solve questions related to "attribution" and eligibility of projects. This can be achieved through new modes of cooperation, incl. local data and the ability for modelling and attribution science.	GIZ	Noted. No change to text as drafted.
Executive Summary	Response capability is often thought of as a baseline (development) function that, as such, should be funded through non-climate change related funding. Can you please clarify how GCF views response capability and what aspects of response are fundable through GCF?	UNDP	This Guide sets out the principles of GCF support for CIEWS. See also the WMO MHEWS checklist. No change to text as drafted.
Executive Summary	"It will also promote and support anticipatory action with a specific focus on building the resilience of the most vulnerable communities" - addressing the underlying social vulnerabilities is very important in effective resilience building, perhaps some greater emphasis of this here, e.g. building the resilience of the most vulnerable communities through improved DRR and tackling underlying issues.	International Federation of Red Cross and Red Crescent Societies	This is expanded in greater detail in Section 3 below
Executive Summary	It is unclear how the GCF is coordinating with existing humanitarian structures and actors in place that already address preparedness, AA, and early action for weather-related disasters. It is imperative that the GCF not only takes these into account but have a clear way of engaging with these actors.	United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)	Agreed. This point is captured as one of the barriers to achieving paradigm shift (Table 2)
Executive Summary	The statement on anticipatory action seems rather vague. Suggest to provide further information as below: Anticipatory Action (AA) is an approach that links early warning information with flexible funds to trigger actions that mitigate the impact of predictable shocks on the most vulnerable people. AA aims to: - Safeguard lives and livelihoods from the immediate effects of hazards, thus reducing humanitarian needs and protecting development gains; - Improve overall effectiveness of assistance and reduce the cost of humanitarian response; - Allow vulnerable people to uphold their dignity during and after the shocks; - Improve the resilience of vulnerable communities to shocks over time.	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	This is expanded in greater detail in Section 3 below
Paradigm Shifting Pathways	In conjunction with Pathway 1 – partner countries could be supported to develop their own loss and damage repositories (e.g. infrastructure or agriculture related). This could help to better customize GFCS pillar 1 (user interface platform) as CIS (e.g. extreme weather parameters) could be selected based on previous losses and damages. Selected parameters could be used for further projections to anticipate future probabilities and analyze climate risks.	GIZ	Noted. This is a level of detail beyond the overview provided by this guide. No change to the text as drafted

Executive Summary	This sounds like it is part of climate services (not specifically to do with investment and financial decisions). For example the day to day management of climate resilient infrastructure such as a dam would rather be under climate services. Perhaps this is highlighting the contribution of CIEWS to day to day financial products such as insurance and weather derivatives ?	UNDP	The key focus of Pathway 3 is the development of a set of data, products and services to support the effective management of assets and other financial risks, on all timescales. Inevitably there is a degree of overlap here with some aspects covered by Pathway 2, which relates to more general anticipatory action.
Executive Summary	The table has a row on "Promoting impact-based MHEWS and Early Action" but is quite light in terms of strategies and plans to enable and support the development of the early actions.	International Federation of Red Cross and Red Crescent Societies	This theme is further developed in the text of Sections 2 and 3.
Executive Summary	Barriers and enablers. Add low capacity in LDCs and SIDS. Add insufficient clarity of mandates between national institutions.	CREWS	"Low capacity" is a generalised statement which is manifest in most of the specific bariers listed. Not clear what would be gained in adding it separately. "Clarity of mandates" is exactly what is meant by "(1) Lack of enabling environment for institutional effectiveness"
Executive Summary	In the list of barriers and enablers, there is a strong focus on hydromet data and warnings, without a clear acknowledgement of the gaps in warning communication and response capability. In most cases, warnings and weather information do exist, but the reason we see impacts is because the information is not communicated widely/well, or people do not have the capability to take sufficient early action. I would suggest to combine/reduce #5 and #7, while adding specific bullets on warning communication and response capabilities.	International Federation of Red Cross and Red Crescent Societies	Additional barrier #8 added:" Achieving sustainable 'last mile' effectiveness."
Executive Summary	Concrete examples could be useful for 1-3.	GIZ	This is only an executive summary. More details in the main document. No change to text as drafted.
Executive Summary	A description on the lack of coverage and scale for effective service delivery fails to mention "equity" as an important consideration to ensure inclusive, anti-discriminatory delivery and updake of information with a particular focus on those currently broadly excluded from benefitting from such information and related services. Inclusivity should include considerations of language, literacy levels, and other aspects of access	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	This reference relates to barriers, not to solutions. Additional text added to Section 3.2.2 to captue this important point regarding equity and inclusion.
Executive Summary	Should other barriers to the uptake of information, not only those related to infrastructure, be highlighted?	UNDP	Additional barrier #8 added:" Achieving sustainable 'last mile' effectiveness."
Executive Summary	Not true in some developing countries	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	But is is a barrier in many. No change to text as drafted.
Executive Summary	There are often uncoordinated interventions between development and humanitarian actors. Siloed work can lead to the same inefficient practices all over again while lessons learned are available. Knowledge sharing across sectors is part of the solution.	Global Affais Canada	Agreed. This is covered in Section 4.1 No change to text as drafted.
Executive Summary	According to the UN Office for DRR, every US$1 invested in risk reduction and prevention can save up to US$15 in post-disaster recovery. There is a clear financial benefit in in exploring ways to create stronger links between DRR and anticipatory action in order to ensure that prevention efforts are undertaken in a cohesive manner by all actors.	Global Affais Canada	Agreed. No change to text as drafted.
Executive Summary	What we suggested about lines 72-74 above is actually confirmed in the barriers identified, in particular regarding the fact that there is a lack of coordination among different players and donors' initiatives that are disharmonious. The role of the GCF is also to support coordination and strategic mainstreaming and/or scale-up of the existing initiatives, as well as to support beneficiaries that lack financial resources and budget.	Italy	Agreed. No change to text as drafted.
Executive Summary	Here is it possible to recognize that departments of agriculture and water resources, disaster management etc. all have a role to play in the climate services and MHEWS value chains ? From the perspective of government actors, these institutions often have a role to play in interpreting and providing advice based on both NHMS weather/climate data, and their own understanding of what thresholds of climate/weather result in impacts, modified further by information they may have on particular vulnerabilities etc.	UNDP	This is captured in the main document under 3.2.2 No change to text as drafted.
Executive Summary	Global cooperation solutions could be considered where possible.	GIZ	This is captured in the main document under 3.2.1 No change to text as drafted.
Executive Summary	Similar to previous comment; the translation into useful information and its communication/delivery are equally important as O&M of equipment.	UNDP	Agreed.This is a key theme in the main document. See for example the last line of Table 2, "Achieving sustainable 'last mile' effectiveness". No change to text as drafted.

Executive Summary	The focus here is also on hydromet. It is the starting point but arguably many climate services and information products do not effectively utilize existing data sources. The translation, packaging and development of new products are equally technically complex and require actors beyond the hydromet services/operations to develop them	UNDP	Agreed. See additional text in 3.2.2, paragraph beginning "The development of a Multi-Hazard Early Warning System …" No change to text as drafted.
Executive Summary	Lack of awareness/quantification of the economic benefits of CIEWS can be another key market barrier	UNEP	This is captured within the barrier headed "Market barriers to creating enabling conditions." No change to text as drafted.
Executive Summary	Please clarify this sentence. It is not clear how failure to monetize value creation (we assume this refers to making money from selling climate services/products) discourage climate resilient practices. As an example, it could be questioned why a farmer would not use climate resilient practices because the climate information provider is not making a profit.	UNDP	The market failure presented here is one in which there is insufficient incentive for the private sector service provider to operate. Therefore the farmer is denied the opportunity to use climate resilient practice. No change to text as drafted.
Executive Summary	Does this refer to weather, seasonal or climate change forecasts?	UNDP	All timescales. In some cases there is insufficient skill to reliably inform climate-smat decisions. No change to text as drafted.
Executive Summary	In addition to creating financial or other incentives, co-production can be a key means to build trust (as evidenced through the WISER and DARAJA projects, etc.)	UNEP	Noted. No change to text as drafted.
Executive Summary	In addition to financial incentives, trust is earned through long term engagement with service providers or third party intermediaries who the user of information can interact with, understand and learn to trust their approaches/information.	UNDP	Noted. No change to text as drafted.
Executive Summary	What is meant by “de-risk”? It is not possible to de-risk” if one refers to climate change risks in the face of the multiple and compound risks from the increasing severity and frequency of climate extremes. Moreover, there will always be residual risk. What is possible is addressing these risks by reducing vulnerabilities.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Defnition of de-risk: take steps to make something less risky. Level of risk is related to hazard, vulnerability and exposure. Reducing any one of these can be a means of de-risking. CIEWS can, in particular, be used to reduce both the vulberability and the exposure even as the hazard is growing (due to climate change). No change to text as drafted.
Executive Summary	At the first reading it is confusing as it leaps around 4 to 3 pillars / pathways. A clearer introduction to the pillars or prongs would help settled a reader in to the concepts. I suggest that after the first sentence (line 128-129) it would be good to list the 4 prongs or pillars – then the current 2nd sentence can’t be confused with the 4 approaches (4 approaches are listed) At line 144 the pathways are called investment pathways – these could be confused for being different with the paradigm shifting pathways. Sentence 145-146 talks about investments along the four pillars – but in the diagram ‘along’ refers better to the pathways.	UK	Text redrafted to clarify.
Executive Summary	Is this referring to the business or financial environment?	UNDP	Text added to clarify.
Executive Summary	This is slightly confusing as the four pillars talked about here and in the figure are not introduced in the previous text.	UNDP	Text clarified (see line 38)
Executive Summary	To ensure scietific evaluation, GCF should work with climate subject matter experts and engage with the World Meteorological Organization working on creating a Global Framework for Climate Services.	United States	Agreed. GCF is fully engaged with WMO, GFCS and other experts on this.
Executive Summary	Is “recipient needs” synonymous to “country-driven, not funding-driven”?	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	This is the wording of the GCF investment criteria. No change to text as drafted
Executive Summary	Under the paradigm shifting pathway on “promoting impact-based MHEWS and Early Action” a reference to “create community knowledge platform to integrate Indigenous knowledge” is included. Highlighting local, traditional and indigenous knowledge as part of multi-hazard early warning approaches is important, however, in the narrative there is practically NO explicit reference to and evidence of an understanding of the importance of GCF investments in the sector to support such information/knowledge generation. A revision of the draft sector guide should focus explicitly on the role of such information generation instead of treating people in communities and local settings only as recipients of climate information/data.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.

Executive Summary	In box on Promoting IB MHEWS and Early Action X Mobilization of finance at scale, add “Learn from and replicate successful financing of MHEWS.” (this will open the door for replicate CREWS projects through SAP). In box on Promoting IB MHEWS and Early Action X Coalitions and knowledge to scale up success add “Systematically measure effectiveness of national MHEWS including accuracy and timeliness of forecasts, their dissemination and actions taken.”	CREWS	Text added.
Executive Summary	While acknowledging that just some example actions can fit into this table, for pathway 2 (Promoting impact-based MHEWS and early action) the following additional priorities should be considered: Transformational planning and programming: - Develop/update of AA systems and protocols for prioritized hazards (including as a minimum an early warning system with triggers, pre-selected AA and a pre-identified finance source) Mobilization of finance at scale: - Protect vulnerable households and their livelihoods from the impact of shocks through anticipatory action delivered including through national social protection systems. Coalitions and knowledge to scale up success: Instead of "Identify and select evidence-base for FbA" suggest to rephrase: Further strengthen evidence base for AA and share learnings to accelerate a system-wide shift towards an anticipatory approach to risks.	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	First suggestion added but not enough space for others without making the text impossibly small to read.
Executive Summary	National Framework for Climate Services should follow WMO recommendation for such entities	United States	Noted, but this level of detail is not appropriate within the table. No change ot text as drafted.
Executive Summary	This bullet is already part of 1st column - should it be repeated?	UNDP	Disagree. The two references to NFCS are different.
Executive Summary	How does the GCF plan to do this/implement this?	UNDP	This is detailed in Sections 3.3 and 4
Executive Summary	How will GCF persuade national governments to ring fence funds for hydromet?	UNDP	GCF can influence through the project approval process. However, ultimately national governments are sovereign.
Executive Summary	How will the GCF influence these other budgetary sources to do what it suggests ?	UNDP	GCF can influence through the project approval process. However, ultimately national governments are sovereign.
Executive Summary	Sectoral agencies and intermediaries who need to develop their own products and information resources are missing here.	UNDP	Agreed. By definition, national optimisation of hydromet needs to include all relevant agencies.
Executive Summary	Is it possible to add 'monitoring' specifically to this list ? Even if monitoring is implied in the impact evaluation, this is often done only occasionally or when required, whereas day to day monitoring is still needed and useful for many EW applications.	UNDP	Agreed. Done.
Executive Summary	Should this be unpacked further as the framework is not the endpoint? Is it not the weaknesses in the system, identified through the framework, that are needed to guide investment decisions	UNDP	This table is only intended to be a brief summary of some key points.
Executive Summary	What kinds of digital technologies?	UNDP	This table is only intended to be a brief summary of some key points.
Executive Summary	This bullet is the same as 2nd bullet in previous column - should it be repeated? (Catalyzing climate innovation, last row)	UNDP	No as the first relates to Transformational planning and programming while the second relates to Catalyzing climate innovation.
Executive Summary	Are these two (bullets 2&3) the same as each other and if so should they be repeated? (Mobilizing finance at scale, last row)	UNDP	No they are different. Thie first is about digital technology and the second is about climate analytics.
Executive Summary	Can these 2 bullets be combined?	UNDP	No as they specifically distinguish between public and private sector.
Executive Summary	How is this different to the first bullet? (Transformational planning, last row, last bullets)	UNDP	Unclear what this is referring to. The two are quite different.

Executive Summary	This bullet is the same as first bullet in column 1 - should it be repeated?	UNDP	Yes as the first relates to Transformational planning and programming while the second relates to Catalyzing climate innovation
1. Introduction	It is not clear what the cross sectorial issues are referring to. I think they are where the CIEWS provision will enable other GCF sectors.	UK	The meaning of 'Cross-Sectoral Issues' is explained in the sentence immediately above Table 1. This is standardised terminology across multiple sectoral guides. No change to the text as drafted.
1. Introduction	The table lists sectors of economy. Climate Information and Early Warning Systems is not a sector but rather a resource for use in all sectors	United States	Yes but the terminology 'Sectoral Guide is applied to all of these. Table header changed from 'Sector' to 'Sectoral Guide'. CIEWS line moved to top of table, and shaded in a different colour to distinguish it from the sectors it applies to.
1. Introduction	Confusing to have CIEWS in the table when the table is about (I think) how CIEWS enables / complements the other sectors – and the table show where the overlaps are.	UK	CIEWS line moved to top of table, and shaded in a different colour to distinguish it from the sectors it applies to.
1.1	The rationale of the CIEWS is based on the increasing cost of disasters caused by climate hazards across the globe as climate change is being seen to increase even faster than being projected. It is not just the significant cost-ratio benefit and potential of CIEWS, reliable CIS and impact-based MHEWS to minimise and avert disaster risk that should be highlighted. One must also emphasize here that for the transformation and the paradigm shift that fuel the ambitions of the Paris Agreement, in particular, the role that adaptation approaches based on CIEWS play in developing countries most vulnerable to the impacts of extreme weather and climate events, and compound events is crucial.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Additional text added to 1.1 to capture this point.
1.1	The term 'hydromet services' accentuates the view that hydrology and meteorology dominate the discourse, whereas climate services incorporates ideas of co-production, co-creation and the recognition that there are more actors involved beyond the NHMS. Should a different term be used?	UNDP	Hydromet is becoming a widely used shorthand. Not sure what other term could be used without making the text very clumsy. 'climate services incorporates ideas of co-production, co-creation and the recognition that there are more actors involved beyond the NHMS' - true but this is also the case for best-practice weather and hydrological services. No change to the text as drafted.
2. Global context	Benefits of CIEWS: This section could be further strengthened by mentioning the benefits of CIEWS in terms of lives, livelihoods and assets protected and / or financial losses avoided as a result of well-functioning CIEWS.	Germany	Additional text added to 2.1 to capture this point.
2.1	Should other decisions that CIEWS inform, besides investment decisions, also be mentioned here?	UNDP	the second sentence covers this: "They can increase the resilience of vulnerable populations and enhance the capacity of local communities to adapt to future changes in climate".
2.1	This is important and would it would help the guidebook rationale (and reason for focusing on CIEWS), by explaining how CIEWS increases resilience or decreases vulnerability, as well as how it supports	UNDP	Reference to WMO MHEWS Checklist added.
2.1	It would help here to explain which hazards are part of CIEWS e.g. which hazards are considered to be climate related and therefore eligible for GCF funding ? For example are landslides caused by high rainfall ? Are landslides caused by seismic activity ? What about compound hazards that include a climate and non-climate related hazard ?	UNDP	Multi-hazard implies that all natural hazards may be included. Additional reference to MHEWS checklist added.
2.1	It would be good to highlight as well the impacts on people (beyond number of deaths) and not just the economic angle. The IFRC World Disaster Report has great stats and info on this and can be found here. It is important to note also compounding, concurrent and cascading risks made more likely by the impacts of climate change, putting communities/ government and humanitarian response capacities at risk of being overstretched.	Senior Climate Change Policy Advisor, FCDO UK	Lots more could be added but the data presented is sufficient to make the point that impacts are substantial and growing.
2.1	Are these values in millions of dollars correct? They seem small?	UNDP	Text updated with more recent data.
2.1	Elaborating the scientific basis for the relevance of CIEWS, the section points out that the greatest damage from natural hazards (again, focusing too narrowly only on fast-onset hazards) relative to GDP is incurred by SIDS and African countries. However, in talking about financial pathways and financial instruments to be used, the guide makes no reference to the importance to avoid using debt-creating approaches in investing in CIEWS solutions in these countries with GCF support (disregarding and failing to mention worsening indebtedness in those countries)	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Almost all GCF projects to date have been grant funded, so have not incurred any additional debt.

2.1	There are more current scientific findings this Guidebook can use, in addition to the single paper being cited here.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Agreed, but the source presents the data in a particularly helpful way for the purposes of this guide.
2.1	Figure 2: The top graph shows annual expected damages from storms. What is slightly surprising about the graph is that the Central African Republic appears to be highly impacted by storms – is this correct?	Germany	The figure is reproduced directly from Mühlhofer (2019). The source data is from EM-DAT. In the case of CAR, it 'storms' recorded are describes as Convective Severe Storms. The damage may relate to lightning strikes, sudden strong wind gusts or localised flash flooding. No change to the text as drafted.
2.1	The color of Taiwan, China on the map is different from mainland China. Please delete the wrong map.	China	Figures are presented as published by the author.
2.1	In this section about Sendai Framework, it is critical to add info on specific INDICATOR, at least the compound G-1 (Number of countries that have multi-hazard early warning systems), but also ideally all 6, and how countries are supposed to report indicator figure to the Sendai Monitor. https://www.preventionweb.net/sendai-framework/sendai-framework-indicators	Group on Earth Observations (GEO) Secretariat	Footnote added.
2.1	How much benefit does this diagram bring given the limitations of the data? To me it suggests that the state of CIS are much better than expected, and that perhaps there is less of an urgent need to invest in them. However the six key gaps in the text below are more compelling	UK	Figure 3 is the best available data.
2.1	The guide references the four priorities of the Sendai Framework for Disaster Risk Reduction. Priority 3 focuses on multi-dimensional resilience through EWS and disaster-risk reduction (economic, social, health and cultural). While the framework is quoted, the guide does not attempt to incorporate those multi-dimensional priorities, instead focusing exclusively on economic/financial resilience.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. Pathway 2 is primarily related to building community resilience through MHEWS, while pathway 3 is aimed primarily at financial resilience. Pathway 1 supports both by underpinning pathways 2 and 3. No change to text as drafted.
2.1	In SDGs useful to mention the indicator on number of lives lost to disasters under the Poverty Goal.	CREWS	Agreed. Goal 1.5 added.
2.1	Is it only MHEWS, or do climate services also contribute to sustainable development ? EW is part of climate services under the DRR part of the GFCS, so I would expect it also contributes to both short term and longer term sustainable development goals.	UNDP	Agreed. CIS added.
2.1	These terms often depend on who is making the reference - MHEWS is a term often used in the DRR community, whereas climate services is used more in the climate change and GFCS community. They both include similar/ consistent elements and the term CIEWS is often used to bring them together (including both the long-term climate and the short term early warning timescales). But this framing of the CIEWS concept is missing from these discussions, so it is not clear why you refer to only MHEWS, or Climate services when you do.	UNDP	Agreed. MHEWS replaced by CIEWS through section 2.1.
2.2	The global baseline overlays a lot of useful information on the CIEWS, however, it is also important to connect that with the baseline of the early action: how much of the existing CIEWS translate to early action/ decision-making, pre-agreed plans to act head of a hazard; and also is important because Pathway 2 is around MHEWS and EA. Good source could be REAP state of play report 2021 and antiicpation hub mapping on anticipatory action	International Federation of Red Cross and Red Crescent Societies	A level of detail beyond this guide, eference is made to the WMO MHEWS Checklist for more detail.
2.2	The products developed through the COFs tend to focus on seasonal forecasts and associated timescales. They do not adequately represent the wealth of products being developed in the private sector and elsewhere with information on shorter timescales etc.	UNDP	This may be true but not relevant to this section, which relates to the findings of the WMO report. No change ot text as drafted.
2.2	What is meant by hydromet system ? This sounds like the networks of weather and hydrological stations and forecasting capacities etc. Whilst important, they are not always the greatest constraint on capacity to deliver and access CIEWS, as the sentence implies. Capacity to communicate and translate the information is often equally as important.	UNDP	The 'hydromet system' encompasses the whole end-to-end chain, including service delivery, 'so that everybody benefits'. By defenition this includes the vitally important communication and traslation elements. No change to text as drafted.
2.2	"All NAPs prepared to date mention early warning systems". It would be interesting to also specify how many NAPs currently mention linking EWS with anticipatory action as a priority	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	This information is not available from the WMO report. No change to text as drafted.
2.2	Annual damages due to each hazard or total annual damages?	UNDP	Damages due to each hazard. This is implied by 'respective'. No change ot text as drafted.

2.2	The footnote indicated less than 50% of the member-countries and territories of the WMO in the presented analyses of NDCs and NAPs, and only for agriculture and food security. It should be indicated that these gaps highlights the urgent need to further develop/enhance the role of CIS, CIEWS and MHEWS and expanding services beyond agriculture and food security. There is much added value and co-benefits if these were extended to health and well-being, protection of biodiversity, especially in terms of cultural values and food production. Additionally, the WMO has always highlighted the need to assess the way forecasts are prepared and used by the various users and ways of improving them for maximized benefits via consultations with the users. This should be made an important aspect of the funded projects.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The focus on agriculture and food security is simply due to that being the specific topic considered in the WNO report cited. Elsewhere in the Guide it is made clear that CIEWS have much wider applicability. Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
2.2	Figure 3: It is not completely clear what the percentage figures are referring to. An explanation of the figure would be helpful.	Germany	Explanation added beneath figure.
2.2	Citing a WMO report on the “State of climate services”, the draft sector guide recounts six key gaps as the foundational basis for the recommendations for actions in the draft guide. It cites the lack of data-sharing as an obstacle for sub-optimal availability and use of CIS. However, in the draft guide itself, there is no reflection that in promoting an increased private sector engagement in CIS privatization, given the proprietary use of climate information generated, could actually aggravate a lack of data sharing and data availability. Similarly, the draft guide does not discuss whether it is appropriate for public funding (such as provided through the GCF) to support private sector proprietary use and for profit-provision of CIS as encouraged in the draft sector guide. There is also no discussion on the extent such private sector privileged/proprietary CIS could serve to undermine the global public goods mandate and characteristics of CIS.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Section 2.3 specifically highlights the clear obligation for all nations to acquire and exchange essential observational data, and states that "Any GCF project proposals that include installing meteorological observation equipment should ensure full compliance with the GBON standard and SOFF operating regime", which will include "data sharing as a measure of success". The guide envisions a mixed economy which will include public good information (including warnings) as well as a thriving private sector of weather and climate service provision. No change to text as drafted.
2.2	These six key gaps in CIS provision can serve to some extent as the keystones of what the GCF funding should aim to address, in particular, systematic observation gaps. The enhanced deployment of observing equipment across the ocean and even in regions where observing stations had been few are encouraging, and has led to more evidence-based assessments of the changing climate. However, there has been a decline in the observing systems over land in most developing countries and the lack of much needed observing systems to benchmark vital information on impacts of climate change, such as quantified local sea level rise.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Agreed. Hence the focus on GBON and SOFF as part of the solution. No change to text as drafted.
2.2	This is a very critical bullet. The problem is not only in missing data records but also quality of the data observations including observation siting, metadata, and instumentation standards.	United States	Agreed. This is implied by the term 'missing or insufficient'. No change to text as drafted.
2.2	(5) Last Mile Barrier: it might be worth highlighting here the need to co-creation of CIS for last mile/first mile communities. It has been shown key in enabling decision making from end users.	Senior Climate Change Policy Advisor, FCDO UK	Agreed. 'Co-created' added to text.
2.2	The reseach should also lead to operational climate services improvement. Existing gap in Reseach to Operations to application (R2O2A) transition should be included in GCF scope	United States	Agreed. This paragraph specifically highlights this need. "Transitioning research results into operations will entail interactions between the research and operational communities to address the needs of users, stakeholders, and decision-makers" No change to text as drafted.
2.2	That MHEWS are assessed in a State of Climate Services report indicates that practically MHEWS are considered part of climate services. See earlier comments.	UNDP	Agreed but these extracts from the WMO 2020 report are specifically about early warning systems, as a component of the wider CIEWS provision. No change to text as drafted.
2.2	It must also be noted that there is little evidence of how communities use the CIS, benefits derived from this use and how best to improve the value of the advisories.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Text added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
2.2	These statistics are not very informative without a context i.e. it is not clear what they are supposed to illustrate. Might they be better used to highlight gaps in communication, preparedness, response and M&E, as mentioned in the last sentence of the previous paragraph?	UNDP	Not sure what the problem is here. The statistics present the current state and are there to illustrate the gaps in provision. No change to text as drafted.
2.2	It would be good to understand the context of these numbers – ie 113 NMHS out of?	UK	Agreed. Total number of WMO members added to give context.
2.2	Comment same as in line 357-359	UNDP	Not sure what the problem is here. The statistics present the current state and are there to illustrate the gaps in provision. No change to text as drafted.

2.2	See above comment which covers 1-9 (Line 357-370)	UNDP	Not sure what the problem is here. The statistics present the current state and are there to illustrate the gaps in provision. No change to text as drafted.
2.2	Should this rather be referring to figure 6?	UNDP	It should actually refer to Figure 4. Text changed.
2.2	"Capacity worldwide to translate early warning into early action is insufficient – especially in LDCs. LDCs in SIDS and Africa face numerous capacity gaps, especially with full value-chain MHEWS. Translating early warnings to early action requires national and local plans, including knowing how to act once the warning has been released." Knowing how to act and having emergency funds available should be emphasised in the GCF strategy, as well as the training necessary so that all involved know their roles and responsibilities and can carry them out competently.	International Federation of Red Cross and Red Crescent Societies	Agreed. No change to text as drafted.
2.2	The following description does not talk about 'sustainable', which is the key term. Perhaps add a sentence saying why there is a lack of reporting?	UNDP	Agreed but unfortunately the WMO report does not provide any details on this. It states that "Further work is needed to improve countries' reporting on climate information and EWS capacity, especially from SIDS, to obtain a complete picture." No change to text as drafted.
2.2	Correction: The statement "Only 24 SIDS (41% of world SIDS)" is incompatible with the number of SIDS listed by the UN: 38 (see https://www.un.org/ohrlls/content/list-sids).	Germany	Percentage deleted.
2.3	Economic losses from weather-related hazard events ? Following on from previous sentence implies this cost is associated with climate change.	UNDP	Additional text and reference added to clarify meaning.
2.3	What does linear approach mean in this context ? Is it the pace of scaling CIEWS capacities, spatial coverage, the capacity to predict, or other?	UNDP	Linear' replaced by 'piecemeal'
2.3	"as climate change gathers pace"? This does not communicate the urgency of the need to address climate change.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	See the following sentences "With global economic losses from weather and climate related events exceeding USD 320 billion, 2017 was the costliest year on record (WMO, 2018). Weather patterns are projected to worsen as global warming increases, and the current piecemeal approach to delivering CIEWS is inadequate to address the scale and urgency of challenges and demands." "and urgency" added to the above text.
2.3	The reference being used is now academic. Much has happened and 2017 is no longer the costliest year on record. ICSC	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Reference removed.
2.3	Early on the Guide takes note of 'last mile barriers' as a Key Gap in the provision of CIEWS services. The problem is presented as one of the 'information not reaching the user'. This theme is barely revisited in the remainder of the report. We find two problems here. First is the passive role conceptualized for end-users, with the provision of services limited to the bundling and transmission of top-down information, primarily in the form of weather data. We see no attention given to the co-creation of knowledge and disaster response approaches involving local governments, community groups, religious leaders, national coast guards, etc. Treating end-users only as recipients of information flattens into insignificance the necessary and important role that community readiness must play in adaptation and minimizing loss and damage. The second problem is that no effort is made in the Guide to explore what types of information (and formats for presentation) are most appropriate for promoting resilience. We urge much greater attention to the social appropriateness and United Statesbility of information with respect to both slow- and fast-onset extreme weather events, and not just to its provision as understood in Hydromet contexts. The truly paradigm-changing approach would be in combining Hydromet efforts with public engagement regarding the essential site-specific, public nature of adaptation. More effort must be made to determine the appropriateness of information provided to states, local governments, and community leaders – in particular, its 'actionable' content. Note too this requires a partial reconceptualization of what is meant by Capacity – also noted as a Key Gap – as technical capacity must be complemented with outreach and explanatory capacity, including the development of appropriate feedback mechanisms from vulnerable communities.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	These is very little space in this short report for practical details. However the point is accepted. Additional text has been added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
2.3	Overcoming the "last-mile" barriers is largely problematic. This is where guidance and progressive interventions are needed. The GCF should encourage innovative ways the funded projects could serve as best practices in addressing these barriers.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted No change to text as drafted.

2.3	Additionally, more staff are often needed (not only training and developing existing staff) in many LDC NHMS, if they are to take on an expanded workload of operating and maintaining more equipment and performing more duties etc. We often find that NHMS do not have a full complement of staff for current requirements, and this situation is exacerbated when new technologies or expanded observing systems are introduced. Solving this problem requires individual countries to also invest in new staff to undertake expanded MHEWS/CIS activities.	UNDP	Agreed. This is addressed in the section 'Building Human Capacity'. No change to current draft text.
2.3	SOFF is one financing mechanisms available to countries. In WMO alone there is another, namely CREWS. We recommend either presenting all financing mechanisms or removing this section.	CREWS	There are many financing mechanisms (including GCF of course). The reason for highlighting SOFF is that it is not a development assistance funding stream but an ongoing (therefore sustainable) means of reimbursing LDCs for the provosion of observational data. It is therefore recommended that any project (from any funding source) that invests in observations is recommended to align to SOFF as a means of post-project sustainable revenue. No change to text as drafted.
2.3	The progreessive development of regional rainfall grids could be a focus for GCF programming to accelerate the development of national and regional MHEWS: combining local rainfall observation info with radar, satellite and modeled data, to produce a precipitation grid can fill gaps in coverage, and add significant value by providing input to FFGS, SWFI and other forecasting systems.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Technical detail beyond the scope of this report. No change ot text as drafted.
2.3	It would be useful to understand what other key reasons, besides training and financing, are responsible for this situation. Even with financing, it is not possible to operate and maintain an extensive network of field equipment in some countries e.g. reduced staff numbers, security/vandalism and accessibility of sites.	UNDP	Useful perhaps, but beyond the scope of this short document. (new report to be released shortly by World Bank GFDRR covers this in detail) No change to text as drafted.
2.3	While the Philippines is deemed to have satisfied the GBON requirements/criteria for compliance re horizontal resolution, active reporting and sharing data internationally, much remains desired to be able to effectively provide MHEWS.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	No change to text as drafted.
2.3	The color of Taiwan, China on the map is different from mainland China. Please delete the wrong map.	China	The figure has been copied straight from the source. No change required.
2.3	Whilst long term financing for O&M will help greatly, NHMS also need to have sustained internal (government) funding which they control. In some countries the NHMS has barely enough funding to pay its existing (under)staffed salaries. To successfully and sustainably O&M more field equipment will require more staff and government policies which support their expanded role etc.	UNDP	Agreed. Text added to highlight the need for sustained internal (government) funding, based on government policies which support their expanded role.
2.3	Agreed but what is needed beyond international support - see previous comments (line 440-443)	UNDP	See line above.
2.3	With reference to the partnerships sought with the humanitarian sector, it is important to note that OCHA has been coordinating humanitarian action in the context of disasters, including weather related disaster. OCHA, leveraging the Cenrtal Emergency Relief Fund (CERF) is one of the largest financial, technical and operational partners working on AA with pre-committed finance of over 140 million USD. So, OCHA could play a role in helping coordination across the humanitarian and climate financing. More broadly OCHA hosts the Inter-Agency Standing Committee, an inter-agency, coordination forum of United Nations and non-UN humanitarian partners, covering a range of areas, including preparedness, early response, and recovery.	United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)	OCHA is just one of many agencies in the sector. It would not be appropruate to single it out for specific reference.
2.3	It would be good to understand more about how this will work, i.e. how the interaction with SOFF will work.	UK	This information is available at https://alliancehydromet.org/soff/ No change to text as drafted.
2.3	Long-term investment in staff development is mentioned, but it is also important to consider the maintenance and withholding of new equipment and technology. Due to the NHMS poor career prospects and short staff, when a training is provided on a new radar or numerical model for example, the knowledge remains in the hands of a few and is generally not transferred. Therefore, many of the new equipment or products remain unused after a short period of time.	IADB	Operations and maintenance support is covered with reference to SOFF. No further change to text as drafted.
2.3	We agree that the role of the GCF can be to provide support to capacity building for CIEWS sustainability, particularly in SIDS and LDCs. An assessment of capacity building provided through international (bilateral, multilateral, as well as SOFF, GBON, etc.) should be developed when the GCF interventions are designed to deliver long-lasting investments in the human capacity of developing countries regarding CIEWS, to ensure additionality, cost-effectiveness, sustainability, avoid double-funding, and reduce transaction costs. The capacity should also be developed in association with clear, stable institutional focal points and responsibilities in the beneficiary countries' government, who should be able to coordinate, manage, fund also with national resources, and have the full capacity to coordinate with all stakeholders and the legislative processes in relation to the long-term sustainability of the interventions.	Italy	Agreed. These principles are not specific to CIEWS but should apply to all interventions. Text added to highlight the need for sustained internal (government) funding, based on government policies which support their expanded role.

2.3	Consistently building human capacity (the transformation in meteorological and hydro-meteorological institutions) especially in developing countries is a very important component in addressing the urgent need to pursue the goas of the Paris Agreement.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Agreed. This is the key message of the section on Building Human Capacity. No change to text as drafted.
2.3	The complexity of the gap between knowing how to do IBF and operationalising IBF is a significant problem preventing many national Met Services from delivering IBF services; this needs to be addressed holistically as a matter not just of technical training, staffing and maintenance but also of cultivating new sectoral users and the operational relationships that entails, of sustainable financing and the advocacy that entails, and given reputational risks also in gaining the confidence to begin to issue impact-based forecasts, given the uncertainty inherent in probabilistic forecasts.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Agreed. No change to text as drafted.
2.3	This is factually incorrect. Institutional support (development of national strategies, plans and legislations, including financing of NMHSs) is and will continue to be financed through CREWS and not SOFF. SOFF will be focused on financing of observation networks.	CREWS	Agreed. The referred to paragraph has been removed from the text.
2.3	Agreed on all the above points. But will the SOFF also require governments to co-finance additional staff that will be needed as a condition for funding ? Or will the SOFF take on the salaries of those extra staff?	UNDP	SOFF will reimburse directly for the provision of data. No change ot text as drafted.
2.4	It is confusing to have these barriers separate to those discussed previously for MHEWS. All these barriers also apply to MHEWS and reinforce the problem with treating MHEWS and CIEWS separately in this guide.	UNDP	MHEWS and CIEWS point already addressed. Section 2.4 is intended to summarise the wider institutional and contextual challenges. No change to text as drafted.
2.4	Uncoordinated interventions: This is indeed often one of the challenges to the implementation of well-functioning CIEWS. In some countries, multiple donors and development agencies have invested in separate, overlapping systems; therefore, a good starting point may be an assessment of what is already available. Government ownership of the system is also a key factor that may determine the effectiveness of CIEWS.	Germany	Agreed. No change to text as drafted.
2.4	Does NMHS mandate (or lack thereof) impact the finance and capacity?	UK	Yes, often NMHS has insuffiicent infleunce within government. Hence the identification of instutional capacity building in the last paragraph of 2.3 No change to text as drafted.
2.4	It is unclear if the GCF will fund the anticipatory actions, or if the GCF will solely focus on the systems and capacity strengthening elements. Anticipatory action is about the pre-agreed triggers, action, and finance, so all of these need to be considered in tandem. If the finance is not coming from GCF to fund the action, what are the arrangements envisioned for this?	United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)	The guide makes clear the scope of potential GCF investments. No change ot text as drafted.
2.4	This is what we refer to in the discussions on SOFF etc. This same barrier is present for MHEWS	UNDP	Agreed. No change to text as drafted.
2.4	The different specific changes for the development, application and uptake of CIEWS presented here is extensive, although in some cases, some no longer applies now , for example, on adapting policies to local circumstances (Reference is UNDP, 2011). The others (notably, limited governmental finances allocated to NHMS, market barriers to creating enabling conditions in the field of transition of energy use to low-carbon ambition.) must be addressed.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Unclear what is identified as no longer applicable. No change to text as drafted.
2.4	The listing of limitations for climate-informed advisory and risk management services is incomplete and should include a reference not just to “accessibility” but also to the “affordability” of such data, as well acknowledging that it is not just a matter of using technology, but the accessibility and appropriateness of technology. Overall, the draft guide – while for example detailing the very different technological reality of SIDS and African states in section 2.2.) with respect to MHEWS – does not reflect on the inequities in technology access among countries and within developing countries, especially in SIDS and LDCs – while it focuses on the commercialization of CIS and EWS (such as through the internet of things, AI). The guide does not acknowledge the reality that this is and will remain inaccessible for the large part of affected populations in the most vulnerable GCF recipient countries. Thus there is no reflection about the adequacy of climate information technology approaches and ensuring that they are “fit-for-purpose” for localized context (the “last mile provision”).	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	"Affordability added to the text. The problems with current technology in SIDS and LDCs is documented in Section 2. Additional text has been added in 2.3 on gender, and 3.2.2 on equity inclusion and communities as actors.
2.5	It isn't clear why a discussion of total adaptation and mitigation costs is presented here. Would it make sense to rather use section (2.5) to discuss the relative cost of financing the CIEWS/MHEWS investment?	UNDP	The purpose of this paragraph is to set the modest cost of CIEWS in the broader context of adaptation investment, and demostrate the very small relative investment required.
2.5	The need to do adaptation hand in hand with mitigation must be a priority even in developing countries other than those in the SIDS and the LDCs; although the more urgent need is a focus on adaptation. Clearly, CIEWS is a vital tool. This is where the GCF is mostly needed. Barriers must be effectively addressed.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Agreed. No change to text as drafted.

2.5	The example estimated funding of USD 400 billion is useful, but only covers the cost of basic surface-based observations rather than investment in the entire CIEWS value chain. Suggest to also mention the USD 1.5 billion estimated by WMO (June 2022), which will be needed to finance EWS to protect the entire world over the next five years.	UNEP	Agreed. Text adjusted accordingly.
2.5	This is the only place in the document that mentions the focus on the provision of public goods – but only in relation to investment in broader Hydromet coverage. The section then goes on to suggest that developing countries should make CIEWS investments that mirror those of developed countries. We would rather see an effort to help developing countries define the necessary information-sharing and early-warning-system supports that 'de-risk' the impacts of extreme weather events on those populations – rather than an effort merely to 'de-risk' investment in tools and services that may not even be appropriate in developing country contexts! This problem reappears at lines 785-794, where the Sectoral Guide becomes stuck on suggesting investments "driven by a vibrant public sector". We find this emphasis neither realistic nor helpful.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. MHEWS especially is largely driven for public benefit.
3.1	To avoid confusion, suggest updating this paragraph to reference scale, replicability and sustainability, in line with the new IRMF.	UNEP	Agreed. Paragraph updated
3.1	The GCF ToC can be a transformational tool. However, there remain almost insurmountable barriers that prove to be challenging to most developing countries	GCF Observer Network of Civil Society Organizations	No change to text as drafted.
3.1	Mobilization of finance at scale: It is also recommended to scale up funding provided to local accredited direct entities to facilitate access to finance for climate risks prevention at the grassroots level. The poorest, most vulnerable and marginalized face difficulties in accessing climate finance given insufficient transparency, complex requirements, and gender discrimination. Indigenous Peoples face equally challenging obstacles.	Global Affais Canada	The available GCF financial instruments are described in this guide. No change to text as drafted.
3.2	In the online workshop held on 2 June 2022, it was stated that projects can target a combination of the pathways, but do not need to target all three pathways. Please include this clarification in the sector guide.	UNEP	Clarification added.
3.2	CIEWS seems to be an overarching term and includes MHEWS (pathway 2). This distinction would have been useful to make at the beginning of the document and would avoid some of the confusion mentioned in previous comments.	UNDP	Earlier clarification resolves this issue
3.2.1 Paradigm shifting pathways	In the context of the first pathway, "Strengthening climate information services," we felt that two additional elements needed to be described here. The first is to strengthen the service capacity to forecast localized torrential rains (in small/narrow area), which have been increasing in recent years. For example, just recently (mid-May), Nassau, Bahamas experienced this (12 inches of rainfall in 6 hours) and infrastructure was damaged as a result. The government had to allocate US$8M for this response: https://thenassauguardian.com/8-mil-price-tag-for-flooding-remediation/ . Also, the Trinidad and Tobago Met Service has recently (2018) fully updated its EWS, but still finds it difficult to forecast localized heavy rainfall (https://ttweathercenter.com/2019/08/17/the-early-warning-system-how-effective-is-it/). We think it is important to emphasize and clearly state in these guidelines that the GCF will be used to provide solutions to these new challenges (e.g., strengthening the observation network with X-band radar, etc.). The second point addresses marine meteorological services. This is important to promote blue economy-related industries (from the perspective of climate resilience blue economy), which have been increasingly growing in recent years (especially in IDB member countries in the Caribbean region). In addition, marine weather monitoring at the local/areal level (note: this should include monitoring sea temperatures, etc.) can feed back into forecasting and predicting weather systems at the global level. In any case, the climate-resilient Blue Economy may be even more in demand in the future. We recommend that this important point also be clearly stated in these guidelines.	IADB	This very brief overview simply refers to modernisatoin of hydromet services in general, and does not specify particular types of service (of which there are many). To highlight any (such as the two proposed) it would not be appropriate without listing all the service types and sectors in need of development. No change to test as drafted.
3.2.1	We broadly support the approach and scope of the Pathway 1, including the modernization and the development of hydromet programmes also at the regional level. We are also largely in agreement with the proposed approach to engage the private sector through PPP, "GCF grants for public goods only" principle, leveraging resources from the SOFF, the AF, the GEF. This is all the more important. In this context, we would seek more clarifications on how the GCF Secretariat has aligned/linked with work done with the World Meteorological Organization on the development of information platforms and guidance for providing climate data aspects required for adaptation proposals launched at COP26 in Glasgow. Are these meant to cross-feed each other, i.e. will CIS projects financed by the GCF be required to provide support to these work, or vice versa, the information platforms could serve as a basis to strengthen CISs?	Italy	This guide is closely aligned with WMO priorities, but not limited to WMO, and can align with any platform which is credible. No change to text as drafted.
3.2.1	One more paragraph can be added after regional hydromet programmes about other frameworks and mechanisms, which provides climate information, such as disaster management agencies, space agencies, other line ministries (public works&highways, science&Technology, agriculture, environment, statistical agency, electric/energy, interior, natioanl water resource board), international organizations, universities, research institutions, NGOs, private sectors and citizen scientists to complement the work of national and hydromet agencies and WMO. The Group on Earth Observations (GEO), which is an international organization and partnership of over 700 national government agencies and 150 other partners working across more than 100 countries to promote sharing of open data and solutions, based on which DRR and climate related actions and decision-making can be made. GEO works with Amazon Web Service and Google Earth Engine, who provide cloud credits to GEO's international teams who work on climate actions and early warning, early actions.	Group on Earth Observations (GEO) Secretariat	Additional paragraph added
3.2.1	What about other long term non-investment or financial decision making e.g. shifting crops or land use (in a non- commercial / non-investment sense) i.e. as long term policy/advice?	UNDP	These are covered in other sectoral guides. No change ot text as drafted.

3.2.1	The section on the strengthening the CIS is framed by science-based information, financial decision making through modernising hydromet services. It is equally important to mention community and local capacities for CIS, for resilience building and sustainability.	International Federation of Red Cross and Red Crescent Societies	Agreed but this particular pathway is focused on hydromet services as "These sub-components are pre-requisites for strengthening weather and climate information and ensuring that development planning integrates CIS so that it becomes widely available." Pathway 2 specifically includes interventions to enhance early action and response.No change to text as drafted.
3.2.1	Is this referring to sub-components of this pathway (not the other pathways as sub-components of the overall vision)?	UNDP	Reworded to clarify.
3.2.1	The first 4 listed components of the GFCS correspond to the first 3 components of the standard MHEWS checklist, further emphasizing the overlap between the CIS and MHEWS views/approaches.	UNDP	Agreed but MHEWS is a specific subset of Climate Services that is the primary focus of Pathway 2 No change to text as drafted.
3.2.1	This includes impact-based forecasting - which is also part of the MHEWS framework.	UNDP	No change to text as drafted.
3.2.1	Whilst the power and potential of e-infrastructure and big data analytics is well recognised, the feasibility and scope of such interventions in LDCs and many SIDS is highly limited. In 2021, only two of the 46 LDCs had met SDG Target 9.c regarding universality and affordability of broadband (ITU, 2021). If GCF requests interventions that focus on advanced e-infrastructure, big data and AI technologies, investment much simultanously be made in the underlying hardware and ensuring high-speed connectivity.	UNEP	The investments proposed already include the full scope of e-infrastructure. No change to text as drafted.
3.2.1	Private sector engagement is unrealistic in the context of LDCs and many SIDS whose NMHSs are starting from very low baseline capacities, with limited capacities to provide basic 'public good' services, let alone service the private sector. CIEWS projects in LDCs and SIDS can contribute to creating an enabling environment for private sector engagement in the future. However, we suggest that it is unfeasible and unrealistic to expect fully private or public-private arrangements to be adopted within the duration of CIEWS projects where starting capacities are very limited.	UNEP	Disagree. The private sector have a key role to play in resilient development, which GCF is committed to supporting.
3.2.1	Although it is important to collaborate with the private sector based on needs and capacities, in terms of partnerships it is important to highlight broader collaboration/partnerships on CIS strengthening including national hydromet services, academic institutions, NGOs, local authorities, NDMOs, etc. as all these actors have a role to play when it comes to effectiveness and use of CIS.	International Federation of Red Cross and Red Crescent Societies	Additional paragraph added (see Line 120 above).
3.2	The role of entrepreneurship needs to be recognized and supported; if traditional pathways for private sector engagement in MHEWS were viable as a means of horizontal and vertical expansion of MHEWS service delivery, there would not be such a gap in the quality of MHEWS service & delivery between access to proprietary vs public EW services.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	No change to text as drafted.
3.2.1	It is not clear what 'at a minimum' means in this sentence. Does it mean that SOFF funding is mandatory to be able to access GCF financing ? If so then this would unnecessarily restrict GCF financing in cases where SOFF financing is either not available or not needed.	UNDP	at a Minimum' removed from text.
3.2.1	Why is the SOFF singled out for fund leverage in particular? 'Leverages funds from the SOFF (at a minimum)', especially as the SOFF will provide funding for observations and is less likely to engage the private sector. The other funds in the list make more sense.	UK	at a Minimum' removed from text.
3.2.2 Paradigm shifting pathways	The second pathway, "Early Action," is important. But its success depends on citizens' willingness to take Early Action. To solve this problem (and promote Early Action), evacuation drills at the community and municipal level are important, but these drills currently face a number of problems. First, citizen participation is low. For example, in Ecuador, where an EWS has been established through an IDB EC-L1221 loan project (although hazard observation equipment and community sirens have already been installed), the number of citizens who participated in evacuation drills at the municipal level was reported to be less than 1%. However, the Ecuador case is still a better example. Most countries do not conduct evacuation drills on a regular basis, and even if they do, they do not have statistical information on how many residents participate. Therefore, it is not possible to analyze which groups of communities participated or did not participate and why. In summary, in order to involve the citizens and realize Early Action in a practical manner, it is necessary to realize very long-term and persistent activities. It is also necessary to analyze why citizens do not participate in evacuation drills from a social perspective (or from the perspective of behavioral science) before making improvements. To do this, the strengthening of local authorities and the contribution of local NGOs will be crucial. We recommend that this context also be indicated in these guidelines.	IADB	Noted. Such detail is beyond the scope of this guide. No change to text as drafted.
3.2.2	What is an "early action services " are these the emergency services?	International Federation of Red Cross and Red Crescent Societies	Early action services are weather/climate services delivered in a timely and effective way such that early actions may be taken to avert/mitigate impacts from weather-related hazards. No change to text as drafted.
3.2.2	Alignment with existing standards: Pathway 2 should be aligned with UNDRR activities and existing standards from WMO / the International Network for Multi-Hazard Early Warning Systems.	Germany	Additional text added.

3.2.2	Many of these components are part of CIS. It seems that here we are, perhaps, mostly talking about different timescales i.e. weather to seasonal timescales and the response to disasters and weather extremes?	UNDP	MHEWS is a subset of Climate Services, but goes beyond short term at least to seasonal risks. No change to text as drafted.
3.2	IB-MHEWS should be more on providing climate advisories than warnings so that it is not just disaster risk knowledge that forms the basis, but more on the long-term climate hazards that require longer-term planning.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Early Warning Services' include the full range of timescales so by definition include climate advisories and other longer term information services. No change ot text as drafted.
3.2.2	This reinforces the impression that the distinction between CIS and MHEWS in this document is mostly based on timescales.	UNDP	See line above.
3.2.2	The following elements should be added in this part: In buillding and operationalizing IB-MHEWS, transparent, co-design process with users is critical while linking it to community develoment programmes etc. In doing so, it is important to leveradge open data and knowledge on Climate Action, which enable transparent and fair decision-making, effective monitoring of situation, validations of data and coordination/collaboration among partners while building trust among them.	Group on Earth Observations (GEO) Secretariat	Co-design and open data are already referenced within the guide.
3.2.2	As a subset of social protection mechanism, it would be good to mention disaster risk financing programme.	Group on Earth Observations (GEO) Secretariat	Already covered in Pathway 3.
3.2.2	Shock-responsive social protection: Social protection systems can represent a cost-effective delivery mechanism for assistance to affected areas rapidly and effectively when the early warning system triggers a response. The guidelines could expand on this, where appropriate.	Germany	Shock-responsive social protection is already referenced. Further expasion of this is beyond the scope of this guide.
3.2.2	Overall comment on FbA section: overall the 3 bullet points are not very clear, further comments below, but it might be worth revisiting to make it clearer as to what is meant under each.	Senior Climate Change Policy Advisor, FCDO UK	We consider the existing text is adequate. There is the option of adding further detail in annexes later if required.
3.2	On forecast-based action (FbA): With a major focus on modernising hydromet services, support for local community-based action planning has been vastly overlooked - and yet without support for this Process (establishing the process is the desired product) even modernized MHEWS struggle with user uptake and cannot fully deliver benefit. Effective early action does not happen simply because an actionable warning is issued, nor does early action planning magically occur: it requires stakeholder engagement (which in turn must be planned & implemented), systematic involvement of intended end-users, and training in risk-informed action planning - as well as ideally simulations and drills, and finally, to be fully effective must include assessment and learning for ownership and continual improvement. There is a similar need for risk-informed forecast-based action planning support at the community level as well for MSMEs (micro, small and medium size enterprise), which means that GCFR could consider linking community-based action planning with Business continuity planning, as a means to forge synergies and coherence in developing triggers and action plans that serve the needs of the general population as well as the private sector, which in the context of climate resilient development means more robust businesses throughout the disaster managment cycle.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Additional text added to 3.2.2 to emphasise the importance of community based action planning.
3.2	With climate change, climate hazards are projected to become more frequent and more severe. Addressing climate risks through impact-based forecasting can reduce climate hazards which could trigger disastrous events. It is thus important to have in-depth analysis, which must take into consideration potential impacts using climate projections. An example is the case of tropical cyclones which are projected to increase as global warming intensifies. In a country like the Philippines, where an average of 19.6 TCs affect the country annually, potential impacts can increase exponentially. How are these aspects addressed in FbA?	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Details of how CIEWS are developed and implemented are beyond the scope of this Guide. No change to text as drafted.
3.2.2	It might be worth making reference to the 'anticipatory action' terminology under this first bullet before a hazard occurs. And also worth noting that anticipatory action is also usually linked to anticipatory finance. The analysis of impacts helps define pre-agreed thresholds that trigger action and finance.	Senior Climate Change Policy Advisor, FCDO UK	Agreed and added to text.
3.2.2	it states that FbA targets 3 broad areas 1. before a hazard occurs, 2. during and immediately following a climate hazard, 3 across multiple time scales- this is rather confusing, all 3 talks about different timelines. To clarify suggest FbA parameters to be 1) Time factor: the action happens in anticipation of a hazards 2) Aim: actions to prevent or mitigate the impact 3) Methodology: Predicted on a forecast and/or collaborative analysis	International Federation of Red Cross and Red Crescent Societies	We disagree, and consider the existing text is clear.
3.2.2	Before a hazard occurs, accuracy of early warning increases as hazardous events approaches. Depending on the time frame, different types of communications and actions can be taken. It may start with public awareness campaigns, media (including SNS and social media) campaigns, validation of early warning info by experts, consideration and preparation for releasing proactive-financing.	Group on Earth Observations (GEO) Secretariat	Agreed but not necessary to add here.
3.2.2	Some finance (for preparing activities) can be released in the previous step i.e. before a hazard occurs.	UNDP	Agreed and text added

3.2.2	During and immediately following a climate hazard, it is important to monitor the progress and accuray of forecasts (i.e. water level in the river, dam etc.) to update forecasts and adjust and modify response plans (i.e. controlled water release, evacuations) accordingly. A successful operational example is provided by the application of the GEOGloWS ECMWF Streamflow System - a forecast model produced as part of the GEOGloWS Partnership with collaboration from BYU, ECMWF, esri, NOAA, NASA, SERVIR, United StatesID, ICIMOD, JRC, Copernicus, World Bank, and Microsoft Azure. Use case: https://earth-observation-risk-toolkit-undrr.hub.arcgis.com/pages/precipitation-and-flood-forecasting-in-honduras The GEOGLoWS-ECMWF Streamflow Forecast Service was used by the state-owned power company of Honduras, Empresa Nacional de Energía Eléctrica (ENEE), to establish a series of low flow releases through the massive hydroelectric dam "El Cajón" between hurricanes Eta and Iota that hit the country in November 2020, following discharge protocols that dictate that the maximum discharge of 1000 m3/sec must not be exceeded. Following the first hurricane Eta, the information from the regional flash flood guidance and short-term forecast models was insufficient to determine a long-term management strategy and estimate the volume of runoff that Iota was bringing thirteen days later. Through collaboration with AmeriGEO, ENEE became aware of the 15-day discharge forecast from the GEOGLoWS ECMWF Streamflow Forecast Service provided directly from the web. Based on that information, prior to the arrival of Iota, a total of 185.95 million m3 was discharged, providing the reservoir with sufficient storage for the runoff that Iota brought from the upper basin. The timely application of the information provided by the GEOGloWS-ECMWF Streamflow Forecast Service enabled national authorities to efficiently manage the reservoir during the storms and helped to prevent potentially huge losses and damages in the Sula Valley, one of the most populated and productive areas in Honduras. This case study demonstrates the importance of climate services and early warning systems in protecting livelihoods by helping communities prepare for and respond to climate related challenges.	Group on Earth Observations (GEO) Secretariat	Agreed that during and immediately following a climate hazard, it is important to monitor the progress and accuray of forecasts. The case study cited to illustrate this is noted.
3.2.2	This is not just multiple timescales. It is also about using non-climate/weather information to better understand the impact of a particular climate/weather event e.g. what other aspects make people and systems vulnerable to a weather/climate hazard?	UNDP	Agreed and text added
3.2.2	In the guidance, GCF notes the key roles of AA and insurance, as well as the need to link these up under the broader disaster and climate risk finance umbrella. However, it is unclear what is the GCF strategy or envisioned engagement on disaster risk finance. This has to go beyond interactions with adaptation finance, but consider investments by other sectors to the whole disaster and climater risk management cycle. The humanitarian sector provides a lot of funding to support DRM across many countries, especially those highly exposed and vulnerable to climate change.	United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)	Investments in other sectors are beyond the scope if this guide. However, other guides refer to CIEWS as appropriate.
3.2.2	GCF's commitment to CS, EWS, and AA is welcomed and much needed. However, we would appreciate a greater consideration of how the GCF will interact meaningfully and strategically with pre-existing structures and actors, especially those beyond the climate sector, working on these same issues. Their investments will be more impactful and have a great chance for transformation change by taking into account this considerations.	United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)	The guide makes numerous references to such interactions.
3.2.2	Not clear. Is this suggesting the private sector would be used to scale up these public investments?	UNDP	It is anticipated that private sector services will draw on the freely available CIEWS data and services and add value for specific use cases.
3.2.2	Evidence generation for anticipatory action is and will go beyond "the evidence base for FbA will focus on earlier response and reduced response time". There are several available studies on the avoided damage and losses and related retun on investment of AA, the effect on curbing food insecurity, the effect on strengthening resilience, the effect on preserving human dignity and empowering communities. Further evidence needs to include - for example - comparing the effectiveness of AA to traditional humanitarian response. While the mentioned "decreasing the cost of response through greater prepositioning and early procurement" can be a co-benefit of AA, this rather refers to preparedness. The "decreasing the cost of response" instead is a result of protecting livelihoods and other assets from hazard impacts.	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	Noted.
3.2.2	It seems out of place to have this table in a section focused on IB-MHEWS. Perhaps it needs a separate section if discussing barriers to CIS as well, though most of these have already been presented in the section discussing CIS.	UNDP	The table is positioned at the end of the sections covering pathways 1 and 2, and is clearly headed as referrring to both. No change to text as drafted.
3.2.2	In terms of barriers, important to highlight that 1) even when the CIS/EWS exist it does not necessarily reach the last mile communities 2) CIS/EW does not necessarily translate into early actions, thus the disconnect between the EWS and FBA is a major barrier to be acknowledged in this table	International Federation of Red Cross and Red Crescent Societies	Agreed. Additional line added to table.
3.2.2	This table may be expanded to better reflect also the barriers for pathway 2 (IBF and AA). For example: i) limited flexible finance for AA at scale (see for instance: https://www.early-action-reap.org/finance-early-action-tracking-commitments-trends-challenges-and-opportunities); ii) (so far) very limited integration of AA in national/submnational DRM/climate/sectoral strategies and plans, including NDCs and NAPs, etc.; (iii) limited political will to act under uncertainty. See further details in the AATF policy brief here: https://www.anticipation-hub.org/Documents/Policy_Papers/AATF_Policy_Brief_for_Donor_Governments_May_2021.pdf	(FAO)- on behalf of the Anticipatory Action Task Force (RCRC, START Network, OCHA, WFP, FAO)	Tables 2 and 3 present "Selected barriers". They are not intended to be comprehensive.
3.2.2	In Table 2, another barrier that should be added is the lack of social awareness around the subject of meteorology and the importance of early warning systems. Society is the basis of any paradigm shift and therefore its engagement should be a priority. A cultural change is needed to address all the barriers mentioned.	IADB	Agreed. See line 151 above.

3.2.2	We found very positive to see detailed attention to the barriers of ensuring effective CIEWS including institutional effectiveness, coordination of interventions and adequate financial allocations, as well as adaptation to local needs.	DanChurchAid	Noted No change to text as drafted.
3. Paradigm shifting pathways	Data sharing is a big issue in some countries. To address this limitation, the promotion of new policies is generally recommended, however it is crucial to encourage the implementation of such policies. WMO recently (2021) launched an updated Unified Data Policy which reaffirms the commitment to the free and unrestricted exchange of data (https://library.wmo.int/doc_num.php?explnum_id=11256). The GCF can become a strategic ally in the implementation of this policy.	IADB	Agreed and reference added.
3.2.3	Interrelation with “Sendai framework”: Pathway 3 is very close to Sendai Priority 3 “Investing in disaster risk reduction for resilience”. The document should further clarify its interrelation with the Sendai Framework.	Germany	Agreed and reference added.
3.2.3	We strongly support and welcome the introduction and consideration of Pathway 3. We support it in all its dimensions, and especially highlight its paradigm-shifting potential and the importance for the GCF to invest in it to deploy its catalytic role on the potential for CIEWS data to spur climate risk finance and investments owners (public and private) across all GCF result areas. We also agree on the proposed approach that investments would include prevention and mitigation, preparedness, response (excluding humanitarian assistance), recovery, and reconstruction to build back better. Just a question regarding the overall integration of the existing work on that into the GCF scope. As highlighted for other contexts, including the “climate rationale” paper, please take into account the the FSB Task Force on Climate-related Financial Disclosure (TCFD) framework and guidance on the methodologies and tools available for ensuring the consideration of current and future climate risks. This can be particularly helpful to have a shared and advanced framework to help the implementation of the private sectors’ identification and disclosure of climate-related financial risks in investment.	Italy	Reference added to TCFD.
3.2.3	This section on pathway 3 with its focus on CIEWS investment for climate-resilient infrastructure design reads more like a general discourse about using climate information for providing the “climate rationale” of GCF investments more broadly than a specific sector guidance approach. Likewise, the guide provides a justification for climate analytics of financial approaches and financial instruments more broadly, than looking specifically at CLIEWS finance examples (several of the case studies in section 5 are also exceedingly weak with respect to sector specificity).	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	No change to text as drafted.
3.2.3	This vision statement goes beyond CIEWS for investment and financial decisions. Should the title of this pathway be changed to reflect this?	UNDP	Vision wording changed to clarify that the focus is financial resilience.
3.2.3	Should 'climate disaster' be 'climate-related disaster'?	UNDP	Agreed. All references changed.
3.2.3	Should this refer to decision making on climate risks in general, which would also include finance and investments?	UNDP	No the focus of Pathway 3 is financial decision management No change to existing text.
3.2.3	It is not appropriate for the GCF, and not in line with its responsibility to support developing country actions, to indicate the use of GCF resources for de-risking private sector engagement through CIEWS in order for private sector profitable endeavors in weather derivatives and commodities markets. This is NOT the mandate of the GCF and should not be encouraged and supported with GCF funding.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. The private sector has a key role to play in resilient development.
3.2.3	Is CIEWS data only useful for financing resilience, or can CIEWS data be used for general resilience building?	UNDP	The focus of Pathway 3 is financial decision management No change to existing text.
3.2.3 Paradigm Shifting Pathways	Scaling up risk pools, enabling resilient infrastructure investments and building new capability in risk forecasting and prioritisation can be useful tools to address risks in a systemic manner while serving as regional platforms for knowledge exchange.	Global Affais Canada	Agreed. No change to existing text.
3.2.3	Does this refer to using IB-MHEWS data for assessing risks ? This aspect was not really covered in the IB-MHEWS section and so it might aid clarity to mention it earlier.	UNDP	This is covered later in the section, in the paragraph beginning: "This Pathway strengthens…" No change to existing text.
3.2.3 Paradigm Shifting Pathways	What about green infrastructure? Specifically as eco-DRR options to reduce risks (i.e. planting mangroves to reduce sea surges).	Senior Climate Change Policy Advisor, FCDO UK	Text added.
3.2.3	GEO can act as a trusted broker of data and information from multiple innovative sources (satellites, in situ, citizen science) to support the design of adaptation projects. GEO initiatives generate Earth observation-based applications and tools that support climate services in different domains, including adaptation and early warning for food crises, coastal and river floods, fires, etc. GEO can rely on a broad network of national experts and users that enable comprehensive action to tackle climate change.	Group on Earth Observations (GEO) Secretariat	Noted No change to text as drafted.
3.2.3	Sub-seasonal and seasonal timescales are also part of pathway 2, both for IB-MHEWS and for FbA. Should this be reworded to make this clearer?	UNDP	Agreed. Reworded.

3.2.3	Resilience financing should not focus exclusively on “assets”' and “asset owners” as indicated in this section, but also on “service provision” and public goods provision, including for rights holders. As such, the focus of resiliency financing is too narrowly biased toward private sector activities (with public sector relegated to one of many market participants as either a “buyer” or “seller” of CIEWS). For example, while there is a focus on insurance and reinsurance companies, there is no elaboration of the role of public sector social services/safety needs as an alternative to (or at minimum corollary to) commercialized insurance and how CIEWS is needed to safeguard such service provision.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The guide covers both human and economic resilience.
3.2.3	The costs of inaction may be largely intangible but the GCF portfolio of MHEWS investment could define some required project metrics to begin to measure the cost-effectiveness of FBA in a harmonised way that would enable a roll-up across the portfolio. Building an evidence base specifically around cost-effectiveness could become a powerful tool for reducing the perceived risk of spending on resilience, including early warning early action as central to climate resilient development.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Investmet criteria are already defined.
3.2.3	This should not be limited to asset owners. Vulnerable populations need to also benefit. This is related to the question on line 693 above.	UNDP	The focus of Pathway 3 is financial decision management. Vulnerable populations will benefit from greater financial resilience. No change to existing text.
3.2.3	It is not appropriate for the GCF, and not in line with its responsibility to support developing country actions, to indicate the use of GCF resources for de-risking private sector engagement through CIEWS in order for private sector profitable endeavors in weather derivatives and commodities markets. This is NOT the mandate of the GCF and should not be encouraged and supported with GCF funding.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree. The private sector has a key role to play in resilient development.
3.2.3	Here we include vulnerable populations - not just asset and finance related. Perhaps they need to be mentioned in 693 and 749 as well?	UNDP	The focus of Pathway 3 is financial decision management. Vulnerable populations will benefit from greater financial resilience. No change to existing text.
3.2.3	In 2021, as an outcome of the GEO Climate Policy and Finance Workshop, the GEO community has agreed to establish a Climate Finance workstream in GEO. This workstream will gather EO experts to support businesses and financial institutions in running climate risk assessments, as well as support Least Developed Countries (LDCs) and Small Island Developing States (SIDS) in improving the climate rationale of project proposals for adaptation and mitigation with EO data. Several GEO Members and partners are interested in collaborating towards this effort.	Group on Earth Observations (GEO) Secretariat	Noted No change to text as drafted.
3.2.3 Paradigm shifting pathways	Attention should be paid to the reference to "Lack of historical datasets" in Table 3. For example, the Bahamas Met Office observes daily (or eight-hourly) weather/climate conditions from the 1960s to the present for each of the country's 27 weather stations. However, it is also true that most of these records are kept on paper. Therefore, it is very difficult to access them. If these data were digitized and put to good use, it might be possible to analyze national (or even more local) climate change trends in more detail. Such paper-based data records are likely to exist in many other countries. In summary, the digitalization of existing data and the analysis and research using this data would be one major contribution of the GCF. We recommend that this context be clearly stated in these guidelines.	IADB	Agreed. Added to section 3.2.1.
3.2.3 Paradigm shifting pathways	Barriers to paradigm shift through Pathway 3: Some of the barriers listed here seem relevant to the other pathways too, e.g. lack of historical datasets, limited quality of short-term to seasonal forecasts, and uncertainty with climate change projections.	Germany	Tables 2 and 3 present "Selected barriers". They are not intended to be comprehensive.
3.2.3	There is also limited interannual guidance provided to decision makers. This barrier is not included in this table	United States	Agreed. Text added.
3.2.3	In addition to the barriers mentioned, important to highlight acting/investing in vain (lack of no regret financing)	International Federation of Red Cross and Red Crescent Societies	Tables 2 and 3 present "Selected barriers". They are not intended to be comprehensive.
3.2.3	It seems this refers to observation networks as well as ICT infrastructure ? In the description it only describes a solution to ICT infrastructure?	UNDP	Lack of observations added.
3.3	GCF can also have a role in terms of strengthening the CIS/MHEWS within the national and local capacities through collaboration with CSO and local Red Cross and Red Crescent entitities	International Federation of Red Cross and Red Crescent Societies	Noted No change to text as drafted.
3.3	In describing the three proposed paradigm shifting pathways, there is no explicit acknowledgement of the public goods characteristic and indeed public information/service obligation of CIEWS; instead the focus is on “asset owners.” The GCF’s role in engaging in investments for CIEWS should go way beyond “unlocking the barriers to the CIEWS market”. In the same vein, support to governments in developing countries must go beyond helping them in efforts to “de-risk the environment and provide the incentives to crowd in private sector investments” (lines 137-139). Instead the guide needs to focus on the GCF’s role to support public investments with a focus on strengthening the public sector’s own capabilities to provide CIEWS as a public good/service (not just as an enabler of private sector engagement).	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The guide covers both human and economic resilience.

3.3	Under the paradigm shifting pathway on “promoting impact-based MHEWS and Early Action” a reference to “create community knowledge platform to integrate Indigenous knowledge” is included. Highlighting local, traditional and indigenous knowledge as part of multi-hazard early warning approaches is important, however, in the narrative there is practically NO explicit reference to and evidence of an understanding of the importance of GCF investments in the sector to support such information/knowledge generation. A revision of the draft sector guide should focus explicitly on the role of such information generation instead of treating people in communities and local settings only as recipients of climate information/data.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Additional text added to 3.2.2 to emphasise the importance of community based action planning.
3.3	See comments on table in Executive Summary (Line 63: Table ES-1)	UNDP	Revised table here reflects changes made in Executive Summary.
3.3	Pink middle box – pilot digital comms systems using digital tech – what about communities who have limited access? Could you widen the innovation options (and methods for reaching communities with less or no digital access) to ‘pilot digital comms systems using digital technology and other innovative channels’.	UK	Agreed. Text added.
3.3	We suggest having more emphasis on the mechanisms to strengthen local level and community leadership and involvement. The document has a strong focus on national meteorological and hydrological service institutions leadership and capacity, however the involvement of the community level and other end-users is less described in the text, although it features as a possible action. We suggest using as reference points: (i) the principles for Locally Led Adaptation, endorsed by over 70 organisations, and the (ii) WMO MEWS guidance on ensuring the active involvement and ownership of end-users in the establishment and operation of EWS. This could speak to explicitly ensuring that local communities and local level institutions are directly involved in co-designing EWS and CIS business models, tailoring of advisories and messages to the needs of different target groups, definition of early actions, availability of flexible finance for local early action, integration of local and indigenous knowledge, accountability of systems towards the local levels and end users and feedback of learnings for system improvements. Furthermore, based also on the principles for locally led adaptation, we suggest outlining the need to ensure that CIEWS address structural inequalities and that vulnerable and marginalized individuals are encouraged to meaningfully participate in CIEWS decision-making.	DanChurchAid	Additional references made to communities as actors, including maginalised communities.
3.3	In addition to establishing new platforms/hubs/frameworks, or enhancing an existing service/effort, please add elements of to connect existing efforts, developing a package of already available solutions with successes.	Group on Earth Observations (GEO) Secretariat	This is already captured under 'Establish knowledge platforms for sharing of best practice', and 'support knowledge brokering' No change to existing text.
3.3	(Figure 8:) For instance, GEO has established a GEO Indigenous Alliance that supports innovations in Earth observation data, science, and technology that are co-designed with indigenous peoples for climate action and food security. It also addresses issues like Indigenous data sovereignty and management, and women empowerment and education	Group on Earth Observations (GEO) Secretariat	Noted No change to text as drafted.
3.3	Regarding Sendai Framework, it is important to also mention Target G's 6 indicators to measure and monitor progress.	Group on Earth Observations (GEO) Secretariat	Reference made earlier in document. Not required to repeat here.
3.3	In PPP, please mention new opportunities brought by cutting leveraging frontier technologies i.e. blockchains, AI/ML to process big Earth data.	Group on Earth Observations (GEO) Secretariat	Text added.
3.3	The opportunity for transformation in the early warning systems outlined in lines 850-854 will have to be assessed carefully to ensure there it is alignment with WMO's data policy regarding the free and open use of data (that the services potentially being sold do not contravene free and open access) (and also noting the caveat outlined in lines 955-957).	Global Affais Canada	Agreed. WMO data policy reference added (see Line 155).
3.3	In many cases NHMS and governments (employees) come from a public funded background/institution and do not have experience in standard private sector practises e.g. negotiating contracts etc. This puts them at a disadvantage when engaging in PPP discussions etc. GCF can provide the training (in business development and negotiation) needed within these public institutions to be better equipped to deal with the private sector. Fair deals/contracts would also avoid the sometime feeling within public institutions of not being properly compensated for commitments, use of data etc.	UNDP	Noted. No change to text as drafted.
Section 4	There is emphasis on private sector finance providing for investments in CIEWS. It is oftentimes difficult for national meteorological/ hydro-meteorological agencies to establish /create opportunities for this to happen.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted. No change to text as drafted.
4.2	Given the need to forge new business models to sustain MHEWS, the GCF may want to consider investing in innovative financing mechanisms to support MHEWS, such as DAOs (decentralized autonomous organisations) that can harness and create value in non-traditional ways; e.g. generating co-financing through participation, in-kind contributions, engagement in co-learning, economic valuation of ecosystem restoration, etc.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted.

4.4	The focus on the use of grants to increase the likelihood of social impacts in the CIEWS results area here is appreciated, including through focus on Enhanced Direct Access (EDA) for small grants, community-focused approached to reach “bottom of the pyramid” organizations as a way to address “last mile barriers" to benefitting from CIEWs. This should be further elaborated as well in the narrative sections, where an undue focus is instead on large-scale financing/financialization approaches. Similarly micro- and small-scale loan provision, including through revolving loan funds at most concessional terms (interest rate and maturity) for community-focused enterprises (including for cooperatives) is not just a way to improve the risk/reward profile, but also to increase the likelihood of social impacts. Forecast-based finance with shock response contingency funding (or, alternatively loan forgiveness) for those kind of community-focused private sector actors (including in the informal sector) is crucial for socio-economic impacts and resiliency-building. Actually a good example is FP061, where small loans for rebuilding after climate hazards in the Eastern Caribbean include small loan forgiveness as a contingency finance approach.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted.
3.3 Paradigm Shifting Pathways	Incorporation of indigenous knowledge feels as if is it is not fully integrated. In ES1 (Coalitions & MHWES box) it states – ‘Create community knowledge platforms to integrate Indigenous knowledge’. In line 1225-1236, the coalitions and networks are to contribute to understanding applicable methods and standards, and indigenous peoples are mentioned in line 1232. Perhaps the yellow box would better focus on ‘create community knowledge platforms, including marginalised groups’, and the blue box ‘Community engagement in designing and implementing forecast-based action at all levels’ could include ‘including indigenous knowledge’. Are the community platforms potentially supporting the community engagement? Through projects such as WISER (Weather and climate Information Services for Africa) and FCFA (Future Climate for Africa), participatory collaboration has been an essential part of the development useful, useable and sustainable IB MHEWS, and indigenous knowledge is part of that. Are the community knowledge platforms part of the wider participatory method of developing sustainable MHEWS?	UK	Agreed. Text added.
4.2.1	Example of innovative solution for CIEWS in the agriculture sector: https://earth-observation-risk-toolkit-undrr.hub.arcgis.com/pages/drought-early-warning-in-uganda The Ugandan Office of the Prime Minister worked with partners to develop a system that can predict crop failure several months in advance and unlock disaster risk financing for vulnerable farming communities. The Global Agriculture Monitoring System (GLAM) provided objective indicators of crop damage and helped benefit 90,405 households under the Disaster Risk Financing Programme. Between 2017 and 2020, early financing release saved the government around US $11 million in reactive food aid costs. While crop failure can have devastating impacts on farmers’ livelihoods and food security, early warning using near-real-time spatially disaggregated data gives governments time to prepare, mitigate and respond to a crisis to alleviate loss and damage in a transparent, cost-effective, and efficient manner. Open satellite data, combined with and verified by systematic in situ observations, can enable fast analysis that helps mitigate climate risks in Uganda or any other at-risk countries. Open data and analyses from the Earth observation community ensure that all governments, organizations, and individuals have access to the data and information they need to report on crop conditions and manage disaster financing regularly. Other countries can use Earth observation-based tools and services provided by GEOGLAM to improve lives, save money, and increase food security. Notably, this methodology and related applications can be efficient when integrated into National Adaptation Plan processes to increase the resilience of the agriculture sector to climate impacts.	Group on Earth Observations (GEO) Secretariat	Noted. No change to text as drafted.
4.2.1	Sometimes the problem is not whether it is a viable option or not. It can be the scale of generated income, which can be very low in many LDCs/ SIDs.	UNDP	Text added.
4.2.1	In addition to WMO supporting NMHS, the Group on Earth Observations (GEO) supports a broader constituency of government agencies (such as Ministry of Science, Ministry of Environment, NMHS, research organisations, academia, etc) to create national mechanisms to ease the access and use of Earth observation data and information for decision-making. Some GEO applications requiring a holistic government approach have triggered EWS and disaster risk financing in specific sectors.	Group on Earth Observations (GEO) Secretariat	Noted. No change to text as drafted.
4.2.2	This assumes that developing countries should emulate the practises used in developed countries, even though the business dynamics (e.g. relationship between the public and private partner) and potential revenue (lower in LDCs) are different. It can be dangerous to assume that the same practises are simply transferable to LDCs.	UNDP	" It can be dangerous to assume that the same practises are simply transferable to LDCs". Agreed, The point of this paragraph is to eject some realism that commercialisation of the NMHS is very unlikely to be a profitable route. No change to text as drafted.
4.2.2	Note that blended financing options are only realistic if there is a predictable timeline for project approval and start of implementation, so that organisations can coordinate and plan their investments accordingly.	UNEP	Noted. No change to text as drafted.
4.2.2	Does this include GCF funds being used directly for contingency financing or funding FbF actions themselves?	UNDP	No, GCF funds support the establishment of local financing mechanisms.
4.4	Do you mean NAP focal points? NAPs are plans, not people. Sendai’s NDMAs may also be added in the list.	Group on Earth Observations (GEO) Secretariat	Agreed. NAPs deleted and NDMAs added.

4.4	Insurance: The section could be strengthened by mentioning what kind of insurance, e.g. sovereign disaster risk insurance (like, for instance, the Africa Risk Capacity (ARC) and Caribbean Catastrophe Risk Insurance Facility (CCRIF)), agricultural insurance, or (home owner's) flood risk insurance.	Germany	Text added.
4.4	How is FbF part of loan based financing? It is not clear who will be expected to pay back the funds used for FbF. See Examples (second row)	UNDP	Detailed question beyond the scope of this guide.
4.4	Is the equity financing actually the co-financing ? Or is it 50% of the financing (co-financing being the other 50%)? See Examples (first row)	UNDP	Detailed question beyond the scope of this guide.
4.4	Is this assuming that GCF sets up the climate risk pooling instrument e.g. African Risk Capacity and then relies on countries to contribute to the funds used to finance FbF? Or will/can GCF provide the funding pool itself, with perhaps additional contributions from governments and the private sector? See Examples (second and third row)	UNDP	Detailed question beyond the scope of this guide.
4.4	Not clear what is being managed. Is it the PPP itself See Examples (third row)	UNDP	Detailed question beyond the scope of this guide.
Section 5	There may be overlap between the case studies in the Philippines and Burkina Faso as there are CREWS projects in both of those countries	Global Affais Canada	Noted. No change to text as drafted.
Section 6	Correspondingly, the Sector Guidance should indicate the need for investment in capacity related to the conduct of successful multistakeholder processes. It is NOT a given that such processes can be conducted well – in fact, such public engagement around weather-related risks – particularly as it pertains to high-heat events – is simultaneously one of the more difficult things to do well, but also, has a very high 'payoff' in terms of community readiness. The GCF should be ready to invest in the paradigm-shifting approaches allowed by bottom-up engagement on readiness planning.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Noted.
Section 6	The examples provided for CIS mirror those provided for IB-MHEWS - again blurring the distinction between the two and emphasizing that they have many aspects in common.	UNDP	Noted. No change to text as drafted.
6. Investment Criteria	The investment criteria could further integrate a local leadership and engagement perspective which can be emphasized particularly in connection to the section 6.4 on needs of the recipient and 6.7. on coalitions and networks.	DanChurchAid	Text added.
6.1	It is very difficult to measure these benefits (attributable to CIEWS) as there are many factors besides the CIEWS improvements that influence these results. We need to be careful to not include these as reportable metrics in log frames, as they either cannot be reliably quantified or attributed to the CIEWS itself.	UNDP	Noted.
6.1	See previous comment (line 1160-1162)	UNDP	Noted.
6.1	By contrast these metrics simply report what the project does and not the ensuing benefits to wellbeing etc., which would be very difficult to untangle.	UNDP	Noted.
6.6	The GCF investment criterion on "efficiency and effectiveness" with a focus on cost efficiency is NOT applied to adaptation. As such the suggested criteria for adaptation projects to estimate the cost per beneficiary is entirely inappropriate and should be deleted. Core indicator for adaptation effectiveness is the number of (direct and indirect) beneficiaries differentiated by gender. It is not suitable to suggest a costing factor per beneficiary, as many of the broader components of resiliency and reduced vulnerability cannot be quantified/costed.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	The focus is not just on cost efficiency but on efficiency and effectiveness overall.
6.7	The focus on multistakeholder processes and collaborative spaces in this section is welcome. However as placed – literally at the end of the discussion – it is clearly presented as an afterthought when it should be a central framing part of the discussion about the GCF's approach to investing for impact in CIEWS. That this important section is placed where it is, shows the bias of the sector guide towards a financial approach to the discussion. Instead of using financial instruments as the tool for better CIEWS outcomes, they, and private sector finance leverage, are presented as the goal of the sector discussion.	GCF Observer Network of Civil Society Organizations, Indigenous Peoples and Local Communities (GCF Observer Network)	Disagree, There are references to the importance of stakeholder engagement throughout the guide.