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Geospatial information for climate and resilience

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Note by the Secretariat

Summary

The present paper contains the report of the Task Team on Geospatial Information for Climate Resilience for consideration by the Committee of Experts on Global Geospatial Information Management.

At its thirteenth session, held in New York from 2 to 4 August 2023, the Committee of Experts adopted decision 13/110, in which it appreciated the commitments by Member States to contribute to the delivery of the workplan of the working group and to promote and implement the Strategic Framework on Geospatial Information and Services for Disasters as a means to provide quality geospatial information and services to support decision-making and disaster risk management efforts in support of the Sendai Framework for Disaster Risk Reduction 2015–2030 and achieving the 2030 Agenda for Sustainable Development. The Committee welcomed the proposal to examine and review the relevance and utility of the Strategic Framework every three to five years and for the Working Group to work towards integrating geospatial information with other relevant information for disaster risk reduction and resilience.

The Committee of Experts noted the call to assess the working modalities of the working group to identify strategies to strengthen its operations, including its membership, reviewing its terms of reference and to institute processes and structures to continuously manage the global disaster risk reduction inventory hub. Also noted were the efforts of the working group to engage a wider community of practice, to cultivate partnerships and to learn and develop various scenario options from experts within the different regions and to consider guidance on how geospatial and statistical information could be applied in the development of indicators that measure preparation, mitigation and adaptation, in order to monitor the long-term vulnerabilities of communities and infrastructure to disasters and climate change.

At the thirteenth session, the Committee also adopted decision 13/107, in which it commended the United Kingdom of Great Britain and Northern Ireland for authoring the discussion paper entitled “Geospatial Information for Climate Resilience – What Does UN-GGIM Do?”, which articulates the intersectional nature of geospatial information with the valuable role of the frameworks and policies of the Committee of Experts in combating the climate challenge, draws attention to the potential role that national geospatial and mapping agencies could play in delivering data and technologies that assist countries in mitigating and adapting to climate change. The Committee supported elements of all three options as presented in the discussion paper, namely: (a) establish a task team under the purview of the Committee of Experts to strengthen interlinkages between geospatial, statistical, climate and other relevant communities and organizations of the United Nations system; (b) convene an appropriate and relevant international forum or event on geospatial information for climate resilience that brings relevant stakeholders together to establish an effective programme of work; and (c) develop a more detailed concept paper that expands on the relevant initiatives, activities and frameworks under the purview of the Committee of Experts.

* *E/C.20/2024/1.

In its present report, the task team on geospatial information for climate resilience provides information of its efforts to strengthen the use of geospatial information, in all its forms, to address climate resilience. The task team details its progress and achievements during the intersessional period, including reviewing the paper on geospatial information for climate resilience and working with its membership to incorporate national examples of good practices, demonstrating the many different dimensions of geospatial information for climate resilience. The task team also reports on its engagement and contribution at the Fourth International Conference on Small Island Developing States as part of its efforts to raise awareness of the Committee's frameworks and policies, anchored by the United Nations Integrated Geospatial Information Framework, and its relevance toward increasing resilience.

I. Introduction

1. The importance and urgency of the topic of geospatial information for climate resilience was discussed and agreed upon during the thirteenth session of the Committee of Experts. This included a multi-stakeholder side event in the margins of the thirteenth session which raised the visibility of the topic and proposed practical solutions for how this item should be taken forward, and the substantive discussions under the agenda 'geospatial information for sustainable development and climate resilience' of the Committee of Experts. During the side event, participants from across the geospatial community shared their opinions, voiced their concerns, and shared their hopes for a more resilient future.

2. The Paris Agreement, adopted in 2015, represents a landmark international agreement to limit global warming to below 2°C above pre-industrial levels, but human activities have caused around 1.1°C of warming to date, and those impacts are already being felt in every region. Recent United Nations Climate Change Conferences[1] have underscored the need to fight the climate emergency, agreeing on the need for adaptation and mitigation (COP26 –Glasgow Climate Pact[2]) and establishing a loss and damage fund for countries most vulnerable to the climate crisis (COP27 - Sharm el-Sheikh Implementation Plan[3]). Further, COP28 – Dubai, marked the conclusion of the first 'global stocktake' of the world's efforts to address all areas of climate change under the Paris Agreement. Noting that progress was slow across all areas of climate action – including resilience to a changing climate – countries responded by agreeing on methods to accelerate action by 2030.

3. The Fourth International Conference on Small Island Developing States adopted the *Antigua and Barbuda Agenda for SIDS (ABAS): A Renewed Declaration for Resilient* Prosperity which pledged to help SIDS achieve its priorities in the next ten years. The declaration reiterated that SIDS remains a special case for sustainable development and that progress requires enhanced global partnerships. Section G(iii) of the ABAS Declaration focused on enhancing science-based and innovative approaches, including sustainable development-oriented, inclusive, and responsible use of artificial intelligence, in the non-military domain, in full respect, promotion, and protection of human rights and international law, for the collection, storage, analysis, disaggregation, dissemination, and use of demographic data in small island developing States, including use of geospatial technologies[4].

4. In making decision 13/107 the Committee of Experts "emphasized that acting on climate resilience is now imperative for the Committee of Experts, that we should not delay this item further, and that it is critically important to advocate for and raise awareness of the potential of geospatial information for climate resilience". It is with this urgency in mind that the Task Team on Geospatial Information for Climate Resilience was established.

5. Recognising that climate resilience is a cross-sectorial topic with many actors across the political, scientific, and citizen communities, this report focuses on the Task Team's intersessional activities and outlines potential next steps by discussing the potential way forward for the Task Team's future. Points for discussion and decision are in paragraph 24.

II. Activities in the intersessional period

6. It was noted in *the Discussion Paper on Geospatial Information for Climate Resilience – What Does UN-GGIM do*?[5] that there are many actors working in the

[1] These conferences are yearly events held in the framework of the United Nations Framework Convention on Climate Change (UNFCCC). They serve as the formal meeting of the UNFCCC parties – the Conference of the Parties (COP)
[2] FCCC/PA/CMA/2021/10/Add.1 Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its third session, held in Glasgow from 31 October to 13 November 2021. See: http://undocs.org/FCCC/PA/CMA/2021/10/ADD.1
[3] FCCC/PA/CMA/2022/L.21 Sharm el-Sheikh Implementation Plan See: http://undocs.org/FCCC/PA/CMA/2022/L.21
[4] A/CONF.223/2024/4 Draft outcome document of the fourth International Conference on Small Island Developing States. See: https://undocs.org/en/A/CONF.223/2024/4
[5] Geospatial Information for Climate Resilience – What Does UN-GGIM Do? A Discussion Paper See: https://ggim.un.org/meetings/GGIM-committee/13th-Session/documents/Discussion%20paper_Geospatial%20information%20for%20climate%20resilience.pdf

climate and resilience domains. It was also agreed by the Task Team that the report should not seek to define climate resilience but work towards emphasising the role that geospatial information already plays in informing adaption and mitigation efforts. Many Member States are already using geospatial information, coupled with other information such as earth observations or environmental data, to make informed policy choices.

7. As the Task Team has established itself, it has focused on raising awareness and advocating for the role of geospatial information in global efforts to mitigate and understand our changing climate and build resilience. The Task Team has focused on engaging with relevant actors and fora (such as the Fourth International Conference on Small Island Developing States), contributing to discussions within the regional committees and functional groups of the Committee of Experts, and wider advocacy efforts. A short summary of these engagements is provided here.

Fourth International Conference on Small Island Developing States

8. The Fourth International Conference on Small Island Developing States (SIDS4) was held from 27 – 30 May 2024 in Antigua and Barbuda. The SIDS4 brought together Heads of States and Government, high-level representatives, civil society, private sector, youth, academia, and other relevant stakeholders to reaffirm commitments to support SIDS on their pathways to achieve sustainable development and resilient prosperity through a new 10-year agenda. *The Antigua and Barbuda Agenda for SIDS (ABAS) – a Renewed Declaration for Resilient Prosperity* was approved by the Conference and specifically acknowledges the need for geospatial technologies to be part of the solution to strengthen data collection, analysis, and use through enhanced science-based innovative approaches to data collection.

9. Recognising the importance of the SIDS4, the Task Team organised and ran an official virtual side event, which helped build awareness of the many innovative applications of geospatial information for climate resilience. Anchored by three high-level contributions by H.E. Permanent Representative of Barbados to the United Nations, H.E. Ambassador Extraordinary and Plenipotentiary for Climate Change, Small Island Developing States and Law of the Sea of Barbados, and H.E. Small Island Developing States Envoy of the United Kingdom, the side event helped showcase the Committee's work as a subsidiary body of the Economic and Social Council; highlighted the discussion paper "Applying geospatial information to climate challenges"; and shared examples of the use of geospatial information for climate resilience in SIDS from Singapore and the Caribbean. Presentation materials can be found on the Secretariat's website[6].

10. The geospatial community had a visible presence on the side event programme with two separate events focused on different elements of geospatial information management. This included an event co-organised by the United Nations Global Geospatial Knowledge and Innovation Centre on "Geospatial technologies for sustainable development in SIDS" and an event co-organised by the United Nations Global Geospatial Information Management regional committee for the Americas (UN-GGIM: Americas) on "Location intelligence - the panacea to accelerated development in SIDS".

Engagement with the regional committees and functional groups

11. The Task Team was also invited to share their work during several plenary meetings of regional committees and meetings of functional group. These included the eleventh plenary meeting of the United Nations Global Geospatial Information Management regional committee for the Arab States (UN-GGIM: Arab States) from 6 to 9 February 2024 in Qatar; the United Nations Global Geospatial Information Management regional committee for Europe (UN-GGIM: Europe) Data Integration and SDGs meeting from 15 - 16 April 2024 in Portugal; and the second expert

[6] 4th International Conference on Small Island Developing States virtual side event: Leveraging geospatial information for climate resilience, See: https://ggim.un.org/meetings/2024/SIDS4_GICR#documents

meeting of the Working Group on Policy and Legal Frameworks for Geospatial Information Management from 20 – 22 February 2024 in Belgium.

12. During each of these events, a presentation on the background and progress of the Task Team was presented, the importance of the topic was reaffirmed, and participants were asked to contribute their national experiences to build up the body of knowledge around how geospatial information is used for climate resilience activities.

Outside engagement at other related fora

13. Addressing climate resilience requires a cross-sectoral approach, and there are many organisations and domains already active in this context. In seeking to widen the awareness of the Committee's programme of work in this area, the Task Team participated in several conferences and events outside its normal audience. These included the International Forum on Digital Infrastructure for Climate Resilience (Australia, 20 October 2023) and the ISO/TC 211 Standards in Action Event (United Kingdom, 26 June 2024).

The Seventh High-level Forum on United Nations Global Geospatial Information Management

14. The seventh High-level Forum with the theme *Accelerating Implementation: Achieving Resilience*[7] will be convened in México City from 8 - 10 October 2024. An advisory committee has been established to develop and promote the agenda for the High-level Forum. The Task Team convenors participate on the High-level Forum's advisory committee and are responsible for delivering a substantive part of the agenda. This will include keynote presentations and discussion opportunities as well as a platform to launch the paper 'Applying geospatial information to climate challenges'.

III. The paper 'Applying geospatial information to climate challenges'

15. Through the Task Team's work, it is clear that geospatial information already plays a vital role in informing resilience, adaption, and mitigation efforts. Many Member States are already using geospatial information, coupled with other information such as earth observations or environmental data, to make informed policy choices. With the intent to demonstrate and emphasize this role, with only a short timeframe to develop an output, the Task Team decided to take an iterative and open approach to collecting national experiences. Members of the Task Team were encouraged to submit case studies to be used in the paper. It was also decided not to limit the focus of the case studies to a specific theme or geography; this meant we received case studies from Member States[8] which cover many different domains to highlight the variety and scope of how geospatial information can be applied to climate and resilience.

16. The draft version of the paper contains case studies covering forest biodiversity; human health; land subsidence; flooding; the Arctic (Arctic Spatial Data Infrastructure); heavy rainfall; digital twins; community empowerment and ecosystem services; street addressing; coastal change; early warning, drought, and vulnerability indexes; wildfires; cyclone response efforts and resilience to natural hazards. These case studies have underscored the role that authoritative fundamental geospatial data currently plays in strengthening climate resilience for Member States. The paper provides an initial analysis of the case studies. It also identifies and draws out common themes such as the use of dashboards and data portals; cross-sectoral collaboration, the use of in-situ data and recording stations. Smaller themes such as data access and interoperability, the integration of satellite and LiDAR data as well as the importance of national policies, and the role of trusted data can be observed.

[7] the Seventh High-Level Forum on UN-GGIM. See: https://ggim.un.org/meetings/2024/7th_HLF_Mexico/#overview

[8] Case studies were received from Austria, Barbados, Brazil, Canada, Chile, Germany, Mozambique, South Africa, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

17. A draft of the paper ‘Applying geospatial information for climate challenges’ is included as a background document to this report. The Task Team welcomes the Committee’s views and guidance. Further, the case studies will be made available through an interactive ‘Storymap’, which will be enhanced with more information and case studies in the lead-up to the Seventh High-level Forum.

IV. Working modalities

18. It was clear from the discussions at the thirteenth session of the Committee of Experts that there was a broad level of support for this activity. This support was reflected in the membership and participation of the Task Team, and there are now nineteen (19) Member States[9] actively participating in the Task Team. Barbados, Tonga, and the United Kingdom of Great Britain and Northern Ireland act as the Convenors of the Task Team. The Task Team conducted its business virtually during the intersessional period, with five virtual meetings. These meetings focused on agreeing upon the initial setup and composition of the Task Team, preparing for the meeting of the Bureau of the Committee in February 2024 (inclusive of providing a Terms of Reference and an outline of the proposed paper), and making progress on the substantive tasks and activities required of the Task Team.

19. At the start of the Task Team’s journey, it was anticipated that it would naturally close following the development of the paper ‘Applying geospatial information to climate challenges’ and its presentation at the seventh High-level Forum. In its deliberations and work, the Task Team proposes to continue until the upcoming fifteenth session of the Committee, in 2025. In doing so, it would seek to widen participation to include the entire community of the Committee of Experts to complement its existing membership, inviting representatives of the Committee’s thematic networks and standards organisations to participate.

V. The proposed way forward

20. Acting on climate resilience is not just an imperative for the Committee of Experts; it is an imperative for the world. Through the work of the Task Team, it is hoped the Committee has an enhanced means to advocate for and raise awareness of the potential of geospatial information for climate resilience. In the coming intersessional period, the Task Team proposes to expand its membership and continue its work, focused on the collation of good practices of how geospatial information can be applied to climate and resilience. The Task Team wishes to invite participation in its work from the Committee including from its thematic network.

21. This proposal would continue the development of the paper "Applying geospatial information to climate challenges’ toward its release at the forthcoming seventh High-level Forum, incorporating the diverse perspectives of the Committee of Experts. Beyond this, the Task Team would continue its work to collect good practices and case studies in the area of geospatial information for climate and resilience, as a means of creating a comprehensive and enduring resource that holistically promotes the Committee's work on climate and resilience to its stakeholders.

22. The Task Team opines that its stakeholders are not just the Committee but the broader global community that would benefit from the increased awareness and implementation of the Committee’s work, anchored by the United Nations Integrated Geospatial Information Framework. As demonstrated by the Task Team’s participation at SIDS4, there is a significant demand for geospatial information as an enabler for other data and a clear recognition of its importance. However, to effectively promote the Committee’s work, improve coordination and coherence are needed. This can be achieved by enhancing existing collaborations and forging new ones where circumstances allow, beginning with the work of the Task Team.

[9] Argentina, Australia, Austria, The Bahamas, Barbados, Brazil, Canada, Chile, Ethiopia, Germany, Mexico, Mozambique, Nepal, Singapore, South Africa, Tonga, Türkiye, The United Kingdom of Great Britain and Northern Ireland, United States of America

23. The Task Team also opines that the Committee could acknowledge that a changing climate is one of the critical threats facing the world and reiterate the importance of the Committee's frameworks, norms, principles, and guides as mechanisms that can be deployed to enable national agencies to benefit from geospatial information, technologies and innovations, and tools to support climate-resilient outcomes. The Task Team will consider how the Committee's frameworks, norms, principles, and guides contribute to climate and resilience discussions, including shaping the strategic direction of the Committee to support the development of any post-2030 development agenda. Additionally, the Committee can-

(a) Encourage Member States to continue to share with the Task Team their national, regional, and global experiences demonstrating the role of geospatial information for climate and resilience, building up the body of evidence to demonstrate the cross-cutting impact of geospatial information through to the fifteenth session of the Committee in 2025; and

(b) Support the Task Team's efforts to contribute to the successful convening of the seventh High-level Forum and encourage Member States to use this body of evidence to advocate for local, national, and regional actions underpinned by the principles of diversity, equity, and inclusion.

VI. Points for discussion

24. The Committee of Experts is invited to:

(a) Take note of the present report and express its views on the progress by the Task Team including to develop a paper 'Applying geospatial information for climate challenges' to include national experiences;

(b) Express its views and provide substantive inputs for the paper 'Applying geospatial information for climate challenges', a draft provided as a background document to this present report; and

(c) Express its views and provide guidance on the proposed way forward including expanding the membership of the Task Team to include additional Member States and thematic networks.