

Economic Commission for Latin America and the Caribbean

ECLAC SUBREGIONAL HEADQUARTERS FOR THE CARIBBEAN



Report of the expert group meeting to review the study on “The use of technology and innovative approaches in disaster and risk management - A characterization of Caribbean countries’ experiences”



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**Economic Commission for Latin America and the Caribbean
Subregional Headquarters for the Caribbean**

Expert group meeting to review the study on
“The use of technology and innovative
approaches in disaster and risk management -
A characterization of Caribbean countries’ experiences”

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**REPORT OF THE EXPERT GROUP MEETING TO REVIEW
THE STUDY ON “THE USE OF TECHNOLOGY AND INNOVATIVE
APPROACHES IN DISASTER AND RISK MANAGEMENT -
A CHARACTERIZATION OF CARIBBEAN
COUNTRIES’ EXPERIENCES”**

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A. ATTENDANCE AND ORGANIZATION OF WORK

1. Place and date

1. The Economic Commission for Latin American and the Caribbean (ECLAC) convened an expert group meeting to review the study on “The use of technology and innovative approaches in disasters and risk management - A characterization of Caribbean countries’ experiences”. Due to mobility restrictions related to COVID-19, the meeting took place by WebEx (online platform) on 26 May 2020.

2. Attendance

2. There were 15 persons in attendance including representatives from the following organizations: the Association of Caribbean States (ACS), the Office of Disaster Preparedness and Management (ODPM) in Trinidad and Tobago, the Caribbean Natural Resources Institute (CANARI), APS Américas, Econometrica, ECLAC headquarters, ECLAC subregional headquarters for the Caribbean and external experts.

3. Meeting agenda

1. Online registration
2. Agenda item 1: Opening of meeting
4. Agenda item 2: Adoption of the agenda
3. Agenda item 3: Presentation of study “The use of technology and innovative approaches in disaster and risk management - A characterization of Caribbean countries’ experience”
4. Agenda item 4: Discussion
5. Agenda item 5: Conclusions and recommendations
6. Closing of the meeting.

B. REPORTING OF THE PROCEEDINGS

1. Opening of the meeting

3. The Coordinator of the Sustainable Development and Disaster Unit of the ECLAC subregional headquarters for the Caribbean welcomed participants. She explained the purpose of the meeting was to engage discussion on the study “The use of technology and innovative approaches in disaster and risk management - A characterization of Caribbean countries’ experience”, to identify data gaps and challenges and to propose recommendations to strengthen the research. The aim of this study is to assess and discuss the application of technologies and innovative approaches related to disaster risk management (DRM) in the subregion. The study addresses this analysis in relation to the five pillars of DRM: (i) risk identification, (ii) risk reduction, (iii) preparedness, (iv) financial protection and (v) resilient recovery in the Caribbean.

4. The Director of ECLAC subregional headquarters for the Caribbean addressed in her opening remarks “technology and innovation” as necessary and fundamental tools for disaster risk management. She highlighted the importance of debating the type of architecture and resources needed by governments

and civil societies in order to apply and foster technology usage and innovative approaches to DRM in the Caribbean. She reaffirmed the importance of strengthening the Caribbean Development and Cooperation Committee - Caribbean Council for Science and Technology as a regional resource supporting governments in the region in their science and technology initiatives, including for disaster and risk reduction and reinforced ECLAC's commitment in this regard.

2. Presentation of the report “The use of technology and innovative approaches in disaster and risk management - A characterization of Caribbean countries’ experience”

5. In introducing this presentation, the Coordinator of the Sustainable Development and Disaster Unit acknowledged the authors of the paper prepared by the Associate Environmental Affairs Officer of the ECLAC subregional headquarters for the Caribbean and Omar Bello from ECLAC headquarters in Chile, with technical inputs received from Colleen Weekes, an external expert.

6. The Associate Environmental Affairs Officer outlined the presentation and shared with participants the study objectives, methodology and research questions. She explained that the aim of this study is not to be a complete observatory of all projects in the region, but to bring the topic into debate and give the opportunity to discuss how the application of technology and innovative approaches related to DRM can take place in the Caribbean subregion. She highlighted examples of application of different technologies and innovative approaches in all five pillars of DRM globally. Further, she described regional and global initiatives related to the application of geospatial tools, digital platforms and knowledge sharing mechanisms, such as ECLAC's COVID Observatory, the Caribbean Weather Impacts Group (CARIWIG) web portal, and the Global information and Early Warning Systems on Food and Agriculture (GIEWS). Finally, she contextualized the Caribbean subregion situation in terms of disaster data and the status of technology and innovation, highlighting some relevant barriers and recommendations in addressing them.

7. The second part of the presentation focused on the examples of technology usages and innovative approaches throughout the DRM cycle in the Caribbean. It highlighted the use of geospatial analysis and hydro-meteorological tools to increase forecasting and accuracy, improved building techniques and construction standards, participatory studies on risk vulnerability assessments, advances in early warning systems, parametric insurance and microfinance, shock responsive social protection systems and resilient health facilities and schools. The challenges identified for the application of technologies and innovative approaches cited were highlighted and included for example: overall gaps in science, research and development (R&D) performance and deficiencies in developing long-term strategies; limited access to appropriate tools and infrastructure; insufficient connection to global networks of expertise and science in DRM; difficulties in collection analysing and sharing data; and limited human resources. Based on the findings, the recommendations emphasized the importance of strengthening science, technology and innovation, (STI) capabilities, connecting those with DRM policies and approaches, and modernising DRM infrastructure, including data collection and sharing tools. Other relevant points mentioned were the proposal for the development of a Caribbean subregional strategy and fostering engagement with other regional and international communities, guaranteeing community participation in vulnerability assessments and discussion of policies and strategies and, finally, exploring eco-infrastructures as a valid and feasible option in reconstruction and long-term planning.

3. Discussion

8. The Economic Affairs Officer noted that the Commission pioneered in developing a methodology and conducting disaster assessments globally. He explained that the disaster assessments carried out by the organization have made use of GIS applications and that ECLAC has recently made available an online training in the Damage and Loss Assessment (DaLA) Methodology. He highlighted the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC) as an outstanding

example of an innovative approach in disaster financing in the region and which has been replicated in other parts of the world. He also mentioned that the Caribbean Disaster Emergency Management Agency (CDEMA) has been effective with the creation of an active network for exchange of information and engagement in DRM in the subregion. He emphasized the significance of international cooperation and South-South cooperation as key avenues to overcome the regional challenges. He exemplified some regional organizations that have been relevant in fostering cooperation agreements, such as the ACS in the work done in collaboration with the Mexico Statistics and Geography Department, benefitting the Caribbean directly, and the Inter-American Development Bank (IDB) in developing financing products to assist the region in post-disaster recovery, such as in post-Hurricane Dorian in the Bahamas. He mentioned that ECLAC could possibly act as coordinator facilitating these cooperation agreements.

9. As the floor was opened for discussion, the Director of Econometrica expressed the usefulness of the study for future developments in disaster assessments. He explained how a geographic information system was used in DaLA assessments of Volcano de Fuego in Guatemala, in flooding in Argentina, and the Bahamas islands of Abaco and Grand Bahama in the aftermath of Hurricane Dorian. In the case of Guatemala, he detailed that there were several high-end tourist attractions inaccessible due to its closeness to the volcano and that the analysis was made possible with the use of satellite images. In Abaco, the assessment team flew to the island on a day trip, however, due to the extent of the devastation the team was unable to cover the entire island as site-visits. In addressing this challenge, the experts were able to use satellite imagery to complement the technical assessments of inaccessible areas. He mentioned that the geospatial information collected could be combined at a later stage with a random sampling study in the area to verify the accuracy of the estimates. He also encouraged countries to develop and maintain updated databases of infrastructure such as housing, hotels and public buildings that would assist in improving the quality, accuracy and speed of future assessments.

10. The GIS expert congratulated the authors on a very descriptive piece and explained that geospatial analysis has been key in complementing the technical work carried out by colleagues during the disaster assessments missions in Argentina, the Bahamas and Guatemala. He explained that in Argentina, the historical data obtained from satellite image over the year was very helpful in the analysis of flood patterns. In the Bahamas, the satellite image assisted in the identification and estimation of damaged to buildings. In Guatemala, he highlighted that the satellite images available, facilitated a more accurate assessment, pointing out that this was further supported with the data provided by the government. He emphasized that in the absence of accurate data, open sources databases of spatial information are very useful. He explained that for the successful collection and application of this type of data three factors need to be in place: (i) trained personnel, (ii) legislative and (iii) organizational structures to support the use of these tools. The Economic Affairs Officer of ECLAC noted that in post-disaster assessments, the field research and geospatial tools worked hand in hand.

11. The Training and Educational Programme Officer of the ODPM referred to a GIS application being used in the University of the West Indies (UWI), St. Augustine Campus, Trinidad and Tobago, for seismic analysis of the urban area in Port of Spain. She explained that the study has been used by the Ministry of Planning and Development of Trinidad and Tobago and suggested that it be included in the paper. She shared another initiative led by the Digicel Foundation where a virtual reality game is being developed to teach special needs children to understand and respond safely to various hazards and risks. She further queried on the possibility of ECLAC conducting an online survey on the applications of DRM technologies as this can yield further information on work being done in these agencies. This exercise would also assist in accessing the knowledge gaps in the subregion.

12. The Director of Disaster Risk Reduction, Association of Caribbean States (ACS), elaborated further on the project collaboration between the ACS and the Government of Mexico using geospatial information. He explained that this USD 4-million project was financed by the Government of Mexico and ended

in 2018. However, there were plans to continue this work engaging UWI, the ACS, ECLAC and other regional organizations. Another Mexican funded project in collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA) benefited CDEMA and the ACS. He mentioned that the ACS was also working on a COVID-19 platform. The representative from the ACS, sought clarification on the way in which the issue of sargassum and events such as the COVID-19 pandemic were classified or considered in the DRM community. He also enquired about the application of the ECLAC DaLA Methodology in the case of these two examples, especially because sargassum was considered a slow onset ecological disaster.

13. The Economic Affairs Officer, ECLAC subregional headquarters for the Caribbean, conferred that there will be challenges in applying the DaLA Methodology to certain events such in the assessment of the ecological, economic and social (including human health) impacts of sargassum. He explained that the impacts are extensive (including land, coastal and ocean) and can occur over many months. In this regard, an assessment methodology for conducting the impacts of sargassum will have to include parameters to address this extensive range of impacts.

14. The Economic Affairs Officer, ECLAC headquarters, explained that ECLAC has been dealing with slow on-set disasters for a long time and that the DaLA Methodology itself includes a chapter dedicated to the analysis of pandemics. Moreover, unlike earthquakes the impacts of pandemics usually have no physical damages to infrastructure. He shared that ECLAC has conducted assessment of two epidemics: dengue in Bolivia (2010) and the swine flu (H1N1) in Mexico (2009).

15. The Technical Officer of CANARI shared on the DRM work of her organization including having a participatory strategy and engaging ICT in communities. She explained that one of CANARI's project encouraged communities to construct 3D models of their area and based on local knowledge populate the structure with identified vulnerabilities. This information was later complemented by more technical assessments. She also shared on their climate change adaptation initiative in the fisheries sector and being implemented in seven Caribbean countries. This fisheries project involved the preparation of toolkits and training community members to use handheld cameras to record and highlight relevant concerns for their communities. She suggested that this information could be added the study. She inquired about the definition of 'technology and innovation' and suggested that the study could identify and highlight best practices based and as an opportunity to advocate for the use of these tools in the subregion. She believed the paper successfully informed on and encouraged the use of technology and innovation for DRM and proposed a deeper cross-cutting analysis in the exemplification and application of DRM tools.

16. The Associate Environmental Affairs Officer acknowledged the statement made by the GIS expert emphasizing the importance of geospatial technologies for ECLAC's work and their usefulness for future initiatives. These tools needed to be advanced as they might be the only tools applicable for post-disaster assessments in the near future, considering the current travel restrictions. She thanked CANARI's Technical Officer for her intervention and asked whether there were other initiatives being pursued by the Institute that could be cited in the document. She welcomed the suggestion of the digital observatory of projects in the subregion and explained that this could be proposed as a longer-term plan. She projected that the next steps would be to examine best practices involving a broader range of stakeholders, but that it would have to go beyond the scope of this paper. She mentioned that the Commission could assist institutions to engage in this regard.

17. The Director of APS Américas shared his experience working on infrastructure related assessments in two DaLA missions in the Bahamas. He explained that the availability, consistency and accuracy of the data received from government agencies were all critical, but difficult to obtain. He explained that the Caribbean is a very diverse region, geographically and morphologically, so it would be challenging to offer a one-fits-all approach related to data collection and research to inform land use planning. He gave the example of the Bahamas, where building codes must be strictly applied, and cost-effective robust

construction techniques are critical, however, the geographical spread of the islands make it difficult to access local materials and to supervise construction standards. Empowerment of the people, training for the government authorities, and exchange of information with other countries are all critical in this regard. Special consideration needs to be given to certain national buildings such as schools, government buildings and hospitals, as they must all adhere to robust building codes, since they serve the public in post-disaster care. He emphasized the importance of having baseline data on all utilities, such as the water and power sectors as these are important and costly sectors. In this regard, there is a large data field that should be made available for analysis at the national and subregional level.

18. The Deputy Director, ECLAC subregional headquarters for the Caribbean, highlighted that in the subregion, the subject of disasters has a broader developmental scope beyond storms and pandemics, and that institutional strengthening is a fundamental requirement in managing these events. He noted that there are diverse and various projects being undertaken in the subregion and that local governments can be a powerful source of DRM information. However, the results of these projects are often dispersed, under-reported, and are not adequately reflected in DRM policymaking. He suggested that integrated data management platforms backed by robust legislation would facilitate access and use of information across institutions. Monitoring and evaluation should also be institutionalised and ongoing. In this regard the recommendation was made to have more robust institutional forums that could communicate and document these stories. He further mentioned that the proposed Caribbean Resilience Fund stemming from the ECLAC's proposal of a Debt Swap Initiative,¹ could present a considerable pool of resources for the subregion and in support of these requirements.

19. The Technical Officer, CANARI, shared her organization's vision to continue engaging community groups utilizing information and communications technologies for DRM. CANARI intended to expand the existing platform on community resilience. She agreed that strengthening the connection between disaster offices, policymakers, researchers and community was the way forward. This is also in keeping with the sustainable development goals.

20. The Coordinator of the Sustainable Development and Disaster Unit inquired whether CANARI's platform could be accessed regionally. In response, the Technical Officer informed that the platform focused on Caribbean initiatives with respect to SDGs and it was still being conceptualized. It would be made accessible to the subregion and hopefully provide another venue for DRM practitioners to exchange relevant information.

4. Conclusions and recommendations

21. In his concluding remarks for the event, the ECLAC Economic Affairs Officer recalled recent initiatives of the Commission in disaster assessment and including having an online DaLA Methodology training. He also underscored the important role that institutions in Latin America and the Caribbean have played in fostering South-South cooperation for DRM, including the Andean Development Bank (CAF), the ACS, ECLAC and the IDB. He emphasized the importance of South-South cooperation in facilitating the incorporation of technology and innovation in DRM, especially in light of the considerable financial and human capital challenges faced by the subregion. He reminded the meeting that the purpose of the paper was to broadly highlight technology and innovations in DRM in the Caribbean. He noted that the study was a starting point, giving attention to innovations in DRM for the national institutions. He shared that institutions such as the ACS, IDB and CAF could assist in resourcing and promoting South-South cooperation. He emphasized that the sharing of experience between Latin America and the Caribbean countries could be mutually beneficial. He also acknowledged the importance of considering the

¹ ECLAC's proposal involves harnessing concessionary flows to transform the debt of the region into a source of investment in resilience building and related projects. The Initiative proposes the creation of a Caribbean Resilience Fund (CRF) whose major function will be to channel pledged climate funds and other contributions to gradually write down the Caribbean's debt stock.

establishment a database for DRM initiatives in the region. Finally, he thanked all the participants for their interventions.

22. The Associate Environmental Affairs Officer thanked participants for their inputs and sharing information on data challenges and funding options. Concerning community outreach, she supported that community self-resilience as an important aspect in DRM. She also underscored the importance of connecting the scientific communities, DRM practitioners and end-users to open the space of a more productive dialogue and exchange of information. She thanked the participants for their substantial contributions for the further elaboration of the draft study.

23. The Deputy Director took the opportunity to thank the experts for their contributions and the authors for their work. He informed the meeting that the COVID-19 outbreak curtailed the scope of the study which originally catered for engagement with communities. Nonetheless, the contributions shared during this WebEx would indeed improve the value of the study.

5. Closing of the meeting

24. The Coordinator of the Sustainable Development and Disaster Unit endorsed the final comments and thanked all delegates for their interventions and for participating in the WebEx. The meeting was adjourned at approximately 12.30 p.m.

Annex I**List of participants**

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