



Meeting of the Group of Experts on Forest Fires in Latin America and the Caribbean III Dialogue - Sao Paulo, Brazil

MODERATION AND SPEAKERS

The third meeting of the Latin American and Caribbean Group of Experts on Forest Fires (GEFF LAC) was held in Brazil between the 29th and the 30th of November 2022. The leader of the European Forest Fire Information System and Global Wildfire Information System Team of Joint Research Centre (JRC), Dr. Jesús San-Miguel-Ayanz, officialized the discussions. The panelists listed below were present on the first day:

European Perspective:


- ✿ Honourable Mr Ignacio Ybáñez-Rubio, Ambassador of the European Union in Brazil, European Union

Regional Perspective:

- ✿ Honourable Mr D. Carlos Lazary, Ambassador of the Amazon Cooperation Treaty Organization - ACTO

Country Perspective:

- ✿ Mr Eduardo Fortunato Bim, President of the Brazilian Institute of the Environment and Natural Resources, IBAMA, **Brazil**
- ✿ Mr Jorge Heider, General Coordinator of the PSE Projects, Ministry of Environment and Sustainable Development, MAyDS, **Argentina**
- ✿ Mr Yhoban Salguero Oretea, National Head of Inspection and Fire Control, Forest and Land Authority, ABT, **Bolivia**
- ✿ Ms Flavia Saltini Leite, General Coordinator of the National Center for the Prevention and Combat of Forest Fires, PREVFOGO/IBAMA, **Brazil**
- ✿ Ms Maria Angelica Arenas, Director of Climate Change and Risk Management, Ministry of Environment, **Colombia**
- ✿ Mr Jorge Ellecer Arias Rincón, Cadastral Engineer and Geodesist, Instituto Amazónico de Investigaciones Científicas, **Colombia**
- ✿ Mr Juan Carlos Puerto Prieto, Administrative Technician, National Fire Fighter Coordination Department, **Colombia**
- ✿ Mr Daniel Segura, Coordinator of the Amazonia without Fire Program, Ministry of the Environment, Water and Ecological Transition, MAATE, **Ecuador**
- ✿ Ms Carmen Maria Sarango Jumbo, Forest fire analyst technician · National Secretariat of Risk Management, SNGRE, **Ecuador**
- ✿ Ms Zaira Massay Reyes, Operations Analysis Accreditations, Servicio Nacional de Gestión de Riesgos y Emergencia, SNGRE, **Ecuador**
- ✿ Mr Cesar Conafor, General Coordination of Conservation and Restoration Fire Management, National Forestry Commission, **Mexico**

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- ✿ Mr Alejandro Romain, Director General of Aerospace Development, Space Agency of Paraguay, AEP, **Paraguay**
 - ✿ Mr Rodrigo Fleytas GEO Lab, **Paraguay**
 - ✿ Mr Pablo F. Benitez, Head of Press and PR of the National Directorate of Firefighters of Uruguay, Uruguay
 - ✿ Ms Romina Liza Contreras, Coordinator of the Satellite Monitoring Functional Unit, SERFOR, **Peru**
 - ✿ Mr Wilder Canales from Servicio Nacional de Areas Naturales Protegidas por el Estado – SERNANP, **Peru**

INITIATION BY MODERATOR: DR JESÚS SAN-MIGUEL-AYANZ

IBAMA and PREVFOGO were recognized by the moderator for welcoming the participants in the state-of-the-art facilities. The workshop was the first event organized in the facility and therefore an honour for all participants. In addition, holding the meeting in Brazil was a great opportunity to strengthen cooperation with the Amazon Cooperation Treaty Organisation (ACTO).


The moderator then introduced the first panel, which consisted of the Ambassador of the European Union to Brazil, Mr Ignacio Ybáñez-Rubio, the President of IBAMA, Mr Eduardo Fortunato Bim and the Ambassador of the Amazon Cooperation Treaty Organisation to ACTO, Mr D. Carlos Lazary. The three key figures were thanked for their presence.

OPENING REMARKS: MR D. IGNACIO YBÁÑEZ-RUBIO

Ambassador Dr. Ybáñez-Rubio welcomed Ambassador Mr. Eduardo Fortunato, Ambassador of the Amazon Cooperation Treaty Organization, Mr. Carlos Lazary, Mr. Jesus San-Miguel Ayanz and all the participants of the Third Meeting of the Expert Group on Forest Fires in Latin America and the Caribbean. In his opening remarks, Dr. Ybáñez-Rubio expressed his gratitude for the existence of European Union funds that allow stakeholders to exchange best practises on forest fires. He further noted that the programme was organised in collaboration with IBAMA, Brazil's reference organisation for natural resource monitoring.

Dr. Ybáñez-Rubio said, in his introductory remarks, that forest fires are a common occurrence in the Caribbean, South America, and Latin America. He stressed that each year, an average of 50,000 square kilometres of land burns in South America alone. Climate change and its catastrophic consequences are a truth, as proven by the recent increase in droughts and fires across the region's countries. Dr. Ybáñez-Rubio went on to say that the discussions should be centered on the pledges made by the European Union, Latin America, and the Caribbean to reduce greenhouse gas emissions between 2030 and 2050 in the wider global environment in which heightened catastrophic climatic events occur.

Brazil, in the previous year, adopted the Glasgow Declaration on Forest Protection and reaffirmed its goals to combat illegal deforestation by 2028. President-elect Mr Luiz Inácio Lula da Silva said, during his visit to the 2022 United Nations Climate Change Conference, in Sharm El Sheikh, that "There is no climate action without a protected Amazon". The future government will prioritize the fight against deforestation and the preservation of all Brazilian biomes. Therefore, it is time to start with the most difficult step, which is to turn promises into actions. Record deforestation warnings in Brazil and the Amazon are a



foretaste of the problems ahead. Thus, sharing experiences and viewpoints among experts is crucial in an environment as fragile as the Amazon.

The Ambassador elucidated on the European Union and its member states collaboration with Brazil dating back many years. An example was the European Union's sustainability strategy and new cooperation programs, until 2028, that will prioritise forest conservation and Amazon development. In addition, the JRC is involved in the Amazon project Team Europe. The forest fire expert group project started two years ago, in December 2020, and will run until 2023, with support from the Foreign Policy Instrument (FPI) and as part of Team Europe, until 2028. Team Europe is an initiative that connects the European Union's and European institutions' efforts with those of EU Member States, which is especially essential in the case of Brazil. The concept arose from the successful construction of a wildfire expert group in Europe, as well as the usage of a regional information system, the European System on Wildfire Data. The Global System on Wildfires, a regional information system, was developed in 2021 to offer regional wildfire statistics and currently, 11 South and Latin American nations are actively working to attain the same objectives. Furthermore, the European Union is working with IMPI, the JRC, and the European Space Agency to improve biome monitoring capabilities. These synergies, together with the Copernicus Statistical System, form the foundation for an objective evaluation of the landscape, allowing for fact-based policy decisions.

Ambassador Dr Ybáñez-Rubio reaffirmed that the Brazilian Ministry of Science's partners can count on the EU's assistance in this path of mutually beneficial cooperation. The speaker further mentioned that the European Union believes that the Amazon Collaboration Treaty Organization (ACTO), which seeks unified development of the Amazon, is an important partner for international cooperation in the Amazon. Finally, Ambassador thanked everyone for their time and wished everyone a great conference.

OPENING REMARKS: MR EDUARDO FORTUNATO BIM PREVFOGO BRAZIL


Mr Fortunato Bim representative of PrevFogo welcomed all participants. Both Ambassador Carlos Lazary of ACTO and Mr. Ignacio Ybáñez-Rubio, the European Union Ambassador to Brazil, received a special welcome.

Mr Eduardo Fortunato believes that initiatives to exchange best practices and use credible data sources are critical in developing mechanisms to combat forest fires. PREVFOGO in Brazil has substantial knowledge in both geo-technologies and direct forest firefighting and is eager to collaborate with its neighbours to build synergies between these programmes that will strengthen current efforts. PREVFOGO, according to Mr Fortunato, has concentrated on collaborating with brigades in Kulumbul regions, state settlements, and indigenous lands. It was further said that PREVFOGO has now access to the firefighting tactics employed in the areas as a result of this expertise, and this environment has allowed PREVFOGO to further enhance integrated firefighting and reduce the risk of large forest fires.

After his presentation, Mr. Fortunado Bin invited the participants to visit IBAMA, and the newly inaugurated PREVFOGO.

OPENING REMARKS: MR D CARLOS LAZARY – ACTO REPRESENTATIVE

Mr Lazary at the beginning of his remarks invited all participants to visit the ACTO headquarters, which also houses Amazon Regional Observatory. A visit was scheduled for all delegates at the closure of the first day.



He congratulated Ambassador Ibanez, Mr Eduardo Fortunato Bim and the organizers. ACTO's collaboration and continued interaction with the Joint Centre for Investigation, the European Union JRC, and the European Union Delegation were highlighted. Mr Lazary stated that the continuous work of IBAMA and PREVFOGO is critical since ACTO has always relied on the assistance of this outstanding organisation. The primary way of collaboration is South-South cooperation, which identifies regional centers of excellence. Mr Lazary also explained that the centers provide solid knowledge to address imbalances in the Amazon by improving public policies and institutions. He also stated that human resources at these agencies, which oversee Amazon's public policy, should be reinforced, particularly via capacity building. A special reference was made to Mr Carlos Salinas, Head of the Peruvian Forestry Department, Ms Gina Monroe, the regional observatory coordinator and Ms Modafinel Margarita for their extensive work and support to ACTO. Mr Salinas's leadership was critical to the negotiating process that led to the Memorandum of Understanding for Integrated and Holistic Fire Management in the Amazon. As a result, ACTO has institutional support to continue forward. This memorandum also ends the work begun in 2011 on a framework agreement on this subject.

TECHNICAL SESSION: ANALYSIS OF THE FIRE CAMPAIGN IN 2022

MODERATOR INTRODUCTION

Dr Jesus San-Miguel Ayanz thanked the Ambassador of the European Union to Brazil, the President of IBAMA and the Ambassador of ACTO for opening the session. Then he started the meeting's technical sections noting that this year's agenda included regional presentations on fires, with data available to each country. In 2022, the technical study of the fire campaign, including the campaign description, prevention measures, preliminary data on fires and burnt areas, partnership with regional nations, and lessons learned. The presentations began with Argentina and proceeded alphabetically.


PERSPECTIVE ARGENTINA: MR JORGE HEIDER

In the beginning, Mr Heider wished all participants a successful meeting. He also welcomed colleague Ms Noelia Ortiz from the National Fire Prevention Service division within National Fire Management Service (SNMF). In his presentation, Mr Heider presented the functions and structure of Argentina's forest fire management, the modus operandi, the legal context, the challenges and the analysis of the country's regional forest fire status and prevention methods.

Mr Heider outlined the fact that since Argentina is a federal state, each province has different roles in crises. He explained that the main cause of the fire is often human interference and lately, potentially due to climate change, other natural cycles, associated with droughts and impacts on regions with electrical charges, have developed. He also stated the main objective of the National Fire Service is to improve the provincial systems while respecting territorial boundaries.

On her side, Ms Noelia Ortiz noted that Argentina has colour-coded the different provinces, including regions associated with fire seasons. The entire system is based on the primary response, which includes the Civil Defence, provincial fire services and volunteer firefighters. She noted that the country has three National Service brigades spread across the country. The oldest and most historic has highly specialized personnel, which are urgently needed in the Chubuts region for the Golondrina. It is a relatively young brigade and has its vehicles. Another brigade, in Misiones, is also based at an airport. The crew originally consisted of 13 personnel, but now comprises 20 members.





Next, he explained that the first challenge for the country is the peak fire season and there are no zero-incident months in Patagonia, but May and June are quieter. However, this does not mean that there are no fires outside these months. This statement led to an overview of the national law on Fire Management under Act 26815. The Act with Minimum Environmental Protection Budgets for Forest and Land Fires Act was passed in 2012 after the law was amended, Argentina was able to manage its firefighting budget without constraints. The Act explicitly mandates that all provinces implement minimum expenditures for firefighting and defines the responsibilities of the various authorities. All insurance providers, except for special insurance, contribute a minor percentage of the related fund and the budget was more reliable, it led to the removal of financial constraints and changed the way human resources functioned. The legal framework outlined three levels: local, regional, and provincial. At level two, the municipalities and provinces can access resources, and at level three, the province requests support due to a specific incident. The SNMF has analysed and predicted fire patterns but has no legal recourse if the local jurisdiction does not allow it.


Mr Heider pointed out that the national early warning system for forest fires uses a formula developed by British Columbia. It has been modified to accurately reflect the area and functioning of the SNMF stations. The SNMF collaborates with the National Service of Argentina to obtain the Fire Weather Index (FWI) calculations. The speaker affirmed that this variety of instruments has enabled weather forecasting and monitoring evolution in variables. The data is shared with the provinces and allows for the reallocation of resources in other high-season areas when the high season ends. and is monitored twice a day. Meetings are held at night to review what happened during the day. Examples of summarised systematised images in PDF file format were presented. It was further noted that the forecasts of the early warning system are based on a study of the current situation in each region and intend to help adjustments: However, certain forest fires will be more difficult to contain in some places due to the flames. This was followed by an analysis of the different provinces with affected areas in Corrientes, Córdoba, Parana, by the topography of the regions.

Next, Mr Heider presented situations of cultural fires. A very simple analysis of the water masses instantly provides a picture of the same area. In this manner, one can localise the problem and find out what led to greater availability of fuel. This is because there is fine fuel in the rangeland that is quickly used up. Comparing 2019 with the following years, it was demonstrated a very serious reality: the lack of water and three years of drought which will lead to bigger problems in the future. He explained the complexity is even greater at the national level. Therefore, the SNMF is organising a new set of technologies, namely a portal that will allow direct viewing of fire data in each province and improve the flow of information. Provincial reports to the National Fire Management Service since 1 January indicate that nearly 100,000 hectares have been lost. SNMF has begun to address the problem of how a fire can mislead an analyst or the destruction of houses or agricultural land.

It was noted that the occurrence of fires over the years in Argentina and related hotspots from 2015 was quite stable. However, a dilemma occurred when comparing the year 2012 with the VIIR Census. In 2020, anomalous activity tripled globally, including in Argentina. These anomalies are assessed in different environments and are used to predict future incidents. In conclusion, more information with key links and technical data were provided at the end of the presentation.

PERSPECTIVE BOLIVIA: MR YHOBAN SALGUERO ORETEA





The context of Bolivia was represented by Mr. Salguero, from the Authority for the Inspection and Social Control of Forests and Lands (ABT). ABT is the public institution responsible for enforcing laws and technical standards for the conservation of forests and lands in Bolivia. Mr. Salguero presented the institutional competences and preliminary data related to fires and forest fires 2022. ABT is a decentralised institution with some irony. Due to cultural issues and national regulations, ABT can authorise fires for agriculture and livestock so that the organisation can control it, however despite all recommendations, lack of awareness and understanding leads to uncontrolled human fires.

It was further illustrated that by October, about 2 million hectares of land had been burnt in Bolivia but not all caused by forest fires. The map depicted 53 per cent of all burnt land in Santa Cruz and 43 per cent in the department of Beni. Santa Cruz is particularly important, as it is an agricultural growth zone. On the other hand, there is a lot of grassland in Beni Department, and every year ranchers burn pastureland in densely populated areas to gain fresh pasture. Comparing forest fires with agricultural fires, 73 per cent are agricultural fires and 27 per cent are forest fires or wildfires. Consequently, forest fires are classified as forest fires, while agricultural fires are classified as wildfires. This was followed by a detailed outlook on the Department of Santa Cruz.

Normally, ABT forbids or stops controlled burning at the end of July and because of its mandate, it no longer allows burning for agricultural purposes. Therefore, ABT has the power to issue and revoke burning permits. Nevertheless, due to the extent of the land, unauthorised fires do occur and are occasionally uncontrolled and if they cause damage to third parties, ABT has the power to initiate administrative or criminal proceedings, moreover if irregularities are found in monitoring, severe charges are filed. The fire scars are also evaluated, and administrative proceedings are initiated to hold people accountable.


The comparison of results between 2019 and 2022 for prevention is marginally optimistic. According to preliminary results, the number of burns and fires in Bolivia had decreased by 51 per cent compared to 2021. By the end of the year, a decrease of 70 to 75 per cent is expected. As prevention is believed to be more beneficial and the Ministry of Environment and the government are now prioritising preventive initiatives.

Mr Salguero Oretea confirmed that in Bolivia the Ministry of Civil Protection is responsible for disaster warnings. During a warning, financial resources can be used flexibly, as procurement processes are shortened. ABT provides the Ministry of Civil Defence with intelligence on fire sources, as it has offices throughout the country, and it also provides personnel, vehicles, GPS and other equipment for firefighting.

To conclude it was pointed out that like Argentina and other countries, the quiet season in Bolivia lasts until July, while the critical season is experienced between August and October. The comparison between 2019 and 2022 indicated the decrease in forest fires. However, other burnt areas, savannahs, pastures, continue due to human causes or other unknown causes.

PERSPECTIVE BRAZIL: MS FLAVIA SALTINI LEITE

Ms Saltini, who has been in service for 16 years, began her presentation by introducing herself as the General Coordinator of the National Centre for Forest Fire Prevention and Control (PREVFOGO/IBAMA). She noted that PREVFOGO monitors the development of firefighting in Brazil and in other countries due to cooperation and exchange of information t. and affirmed that



"we cannot develop and become stronger without support". As elucidated by Ms Saltini, IBAMA and PREVFOGO, both founded at the same time, have a very strong vision where both internal and external collaboration are valued... PREVFOGO/IBAMA is the national system for fighting forest fires, thus its responsibility is not federal and has the task of integrating the various institutions of the different states and coordinating national management activities as a joint body. However, with the change of administration over the years, a lot of attention was paid to fire management, regardless of environmental priorities. This explanation was followed by an overview of the organisational structure the organizations. The main departments are administration and logistics, surveillance, and firefighting. Other important departments are State Coordination Offices and the Centre for Forest Fire Disasters. Emergency services and related government coordination do not have a specific allocation.

After the short presentation, Ms. Saltini presented the programme for fire services and distribution.

. According to the 2020 results, a total of 85 brigades, 1792 personnel were recruited, and 19.8 million hectares of land were considered. At the beginning of the year, a survey of the hotspots, or fire hotspots, was conducted and the relevant areas were mapped.. Ms Saltini also noted that in the last five years, more than 95,000 people have participated directly or indirectly in relevant environmental education projects and More than 1792 brigade members and 3646 environmental education events have taken place. The intention is to intensify prevention work and training to fight the regular large fire and in addition, she outlined that the focus in improving management and planning was never short term since the objective is annual planning where targets are set.

Since the cooperation with Germany, basic courses on prescribed burning have been offered and it had a positive impact since now it changed existing paradigms, cleared the way for collaboration with experts, legislators and investment in biomes that allow the use of fire. Academia was also invited into the study of the social and economic impacts of fire. It was noted that there are no more fires in Brazilian savanna areas.

Additionally, the presenter confirmed that trained people from the state and volunteer fire brigades, that work with the municipalities and with regional partners, can act as instructors in their regions due to several courses that had been conducted to train the volunteer fire brigades in the use of the kite equipment, a unique device and innovation. The environmental education workshops, and the outcome of these workshops are the action plans within the community that provide unique results to qualify the prevention activities that are being intensified.

Another interesting initiative related to prevention was related to mapping areas with hotspots and critical areas. Households are notified, in advance, and when the fire gets out of control inspection teams are dispatched. The results are very interesting when comparing the pre and post implementation data of the project. CIMAN, the Multi-agency Integrated Centre for National Operational Coordination, is crucial for these operations and it is important to discuss solutions together, optimise human and financial resources and involve new stakeholders related to prevention measures. In addition, there are institutions that represent the fire services, and the intention is to share information with these agencies to enable integrated operations. Ms Saltini referred to the technical document produced by CIMAN and all the institutions to guide the government. Data confirms that, with the exception of the Amazon, the number of hotspots have decreased in all other regions. At the federal level, two major operations took place on indigenous lands in Mato Grosso and Aradiboyal. Additionally, Brazil has several systems for monitoring fires, including systems for hotspots and systems for matching satellite information from IMPI.

However, Ms Saltini identified that Brazil is not yet at the cutting edge of firefighting technology. Technical guidance from different institutions is needed to decide or implement a policy. The goal is to create an integrated national system within five years that will include cross-referencing information and perhaps flexibility in changing colour codes. Brazil wishes to share information with experts who work with systems and include this in the annual planning process.

To conclude, Ms Saltini revealed that PREVFOGO/IBAMA is currently working on a project with the BMDS that includes all the information related to firefighting, such as the location of firefighters, who should be the contact for information, where the hotspots are, etc. The final goal is an integrated system that provides all important information and data access to information.

PERSPECTIVE COLOMBIA: MS MARIA ANGELICA ARENAS

Ms Arena, on behalf of the Colombian Ministry of Environment, thanked Minister Susana Muhamad and the Ministry of Environment for the invitation. The presentations that Colombia made represented three different interconnected government departments. Forest fire management and prevention were the main topics of the presentation.

As part of its commitment, Ms Angelica Arenas attested that forest fires were set as a priority linked to a law passed in 2021. She also assured that efforts will be made to reduce the regions damaged by forest fires by 30 per cent compared to 2019 and that this is the result of several inter-institutional initiatives and actions.

Ms Arenas outlined that as a result, the strategy was developed with three objectives in mind: Prevention, Control and Eradication, and Rehabilitation. An evaluation of the plan involving the population was carried out as part of joint initiative with WWF and a research group from the National University. Several workshops were organised across the country to gather experiences, knowledge, and community use of fire. The interest was to incorporate this into the core responsibility approach.

She further detailed that at the national level, the Ministry urged everyone to comply with Law 1523, to adopt preventive methods such as risk identification, risk mitigation and disaster management. Everything feeds into public and private society and communities. It is based on a social process that seeks social well-being and quality of life, as well as sustainable growth. The law also outlines the organisation of the national system for risk and disaster management and the cooperation between the three levels of government, namely the President of the Republic, National Council for Risk Management, the Ministry of Environment and Sustainable Development which includes the National Committee for Disaster Risk Reduction and Management. The governor level is responsible for risk and disaster management at the local level, as departmental governors, and mayors at the municipal level. As a result, each of these local councils relies on the support of local environmental authorities. The body for national management, the Disaster Management Committee, has established a National Technical Committee for Forest Fires based on Resolution 373, which sets the objective, goals, and work plans. It is carried out with the participation of 17 institutions and will be submitted for approval before being rolled out nationwide.

Ms Arenas further explained that the first version of strategy had already been produced and the first edition was to be published in December. It will serve as the basis for building a 2030 strategy that aims to reduce greenhouse gas emissions and address climate change commitments made. Therefore, formulation of the strategy has been crucial, and the implementation of the strategy even more, as a



result, to regional and national institutions it was crucial that all communities, especially indigenous African communities, participate.

The implementation structure is evolving, and the country is working with the US to create a preventive package with funding from USAID. Colombia is grateful to the government and is working to update the technology so that each of the items offered are appropriate for the country in terms of information and material language. She further outlined that the methodology is characterised by its didactic nature, and it is envisaged that congregations or community leaders who are already established in different places will participate.

At the national level, Ms Arenas remarked that the first phase of the forest monitoring programme is budgeted at \$784.3 million. The initial activity is expected to involve trained local authorities, forestry brigades and environmental protection groups, and communities, as well as equipment and tools. There is also a programme in Colombia with 11 park rangers and organisations in the department of Caguán, two groups in Guania and the large department of Meta which is divided into two groups. There are also two groups dealing with indigenous people. The Colombian Amazon is one of the most visible issues. Colombia is interested in identifying how much natural forest survives, the deforestation trends, and how many families benefit. Therefore, efforts to identify deforestation areas continue as part of this endeavour, owing to German aid. The data would be utilised in cooperation with SIMSIA to monitor unlawful crops.

In summary, Colombia has 23 priority intervention areas implemented in line with the new vision of the Colombian government. It includes the Colombian Amazon regions growing hotspots and deforestation.

PERSPECTIVE COLOMBIA: MR JORGE ELLECER ARIAS RINCÓN

Mr Arias made a presentation on behalf of the SINCHI Amazon Institute about the Colombian Amazon, overseen by the Ministry of Environment. He noted that constant monitoring is carried out under the direction of the scientific research institute and the structure generates environmental data that is used to guide regional policy decisions.

He further noted that the Colombian Amazon covers 483,000 square kilometres, representing 42 per cent of the country's total land area and together with the marine area and other boundaries, it would represent 23 per cent of the country's total land area. Natural forest cover in the Colombian Amazon is 1.6 per cent, with large national forests intact. Land converted to pasture accounts for 30 per cent of the total area, whether the other 30 per cent is associated with agricultural or livestock activities. Other types of cover such as rivers or natural Savannah account for 5.3 per cent. Another important aspect is that 55 per cent of the Colombian Amazon is indigenous land, with reserves managed by the indigenous population. Further 6.7 per cent of the land area has been designated as a recognised, protected or forest reserve. Thus, the Amazon has always been protected within this framework since the territorial organisation was founded in 1959.

Delving into the data, Mr Arias Rincón explained the information on hotspots in the Colombian Amazon was automatically generated and mapping data is produced daily and can be accessed through open data sources that Colombian authorities receive by email from the systems. Furthermore, investigations are carried out to bring individuals responsible for their actions to justice and measures are taken in line with territorial crime. The speaker stressed that most hotspots are concentrated in a region known as forest reserves and that they were established to give people more freedom and make it easier to obtain land

titles in the region. If one observes the maps, the region is quite like the grazing areas. Typically, out-of-control fires are caused by agricultural and livestock activities where land is torched to rejuvenate pastures.

It was noted that the map, which shows the legal status of the area, is colour coded. The indigenous land in orange and national parks with populations in light green and yellow for places that are no longer forested. Forest reserves, mapped since 1959, are coded in dark green. The agricultural regions with the most hotspots are associated to places with the greatest number of hotspots, which is very much related to the productive activities of the region. February, March and April are related to the climatic conditions in the Amazon. He next described local cultural activity related to stock building and stock burning activities.


Mr Arias pointed out that one of the most critical issues in Colombia is whether to remove or burn vegetation to preserve pasture. Data from all sensors was recompiled and the years 2022 and 2021 were compared and nearly 40,000 new hotspots were monitored in the region. In addition, it depicted an increase in hotspots and increased deforestation rates earlier in the year. The colour red is highlighted because it represents regions where vegetation has been ripped out of the forest. Since 2017, the footprint has been monitored as part of a fire scar exercise following training at ACTO and IMPI. To determine the origins of fires and connect the reason to grazing, the footprint is compared to pre-fire maps after the fire. As a consequence, more than 70 per cent of fires are related to different types of plant cover, 81 per cent of which are related to grassland, and 70 per cent are related to forest cover. It was also discovered that secondary vegetation is colour coded in red and burnt pastures in yellow. He also mentioned that by 2020, geo-referencing the data on the map revealed 260,000 hectares of burn scars. The technology available is restricted, therefore it is probable that certain places will not be captured. Finally, it was stated that all monitoring data, including statistical data, maps, reports, geographic locations, and automated reports, was made accessible to the public on a daily, monthly, or annual basis by SIAT-AC.

PERSPECTIVE COLOMBIA: MR JUAN CARLOS PUERTO PRIETO

The representative from the National Firefighter Coordination Unit of Colombia, Mr Puerto Prieto presentation covered the Disaster Management Legislation 1523 and the areas of assistance. Mr Prieto mentioned that the Coordination Department, that operates under the national system, is responsible for the three components: the volunteer firefighters, official firefighters who work directly with communities, and aviation firefighters, who make up 5 per cent of the organisation and aid aircraft and airports in Colombia. The National Department of Firefighters was created by law in 2012 and it is a unit governed by the Ministry of Interior.

Mr Puerto Prieto noted that Colombia is required by Law 1575 to build a data collection system. As a result, it enables firemen to report emergencies in the deployed area, making it simpler to analyse the scope of the operation, the circumstances, and what occurred. In terms of seasons, there are three which consist of a low rainfall season, a wet season during which La Nina and El Nino occur, and a heavier season with more rainfall. In addition, cyclones, and rain from the Amazon is experienced particularly in November.

He further noted that a data collection and inventory of the capacity of the national fire brigades is undertaken, as a solution to the crisis response capacities of cities and neighbouring municipalities. There is also a registry for forest accidents and officially formed fire units. The project registry contains



information on projects for reinforcement, infrastructure, and machinery.. As a result, the National Fire Coordination Unit organises and supports these programmes. With over 15,000 workers and 854 fire units, there is also user management to help firefighters. Furthermore, the number of fire departments has grown thanks to the backing of municipal and local governments, with the inclusion of voluntary officers. According to data, the year 2022 experienced over 400 operations with landslides and floods and each season had its own set of situations. Choco was the only department that did not encounter severe issues and the Andean area was the hardest impacted when broken down by region.

Mr Puerto Prieto noted that air support process for forest fires responds to a variety of ground events based on topography. It was also necessary to develop a protocol for complicated procedures. When Article 57 is used to declare a public disaster, the department is additionally supported by the Colombian Air Force, the Army and the National Armada. This policy allows the use of private aircraft to provide assistance in severe situations.

Speaking of other technological advances, the presenter cited the placement of Saturn V 802 satellites with US government support and funding. A system located under the fuselage of the aircraft allows the transfer and release of water using gravity. This mat system can hold up to 10,000 litres of water and used in forest fires and other emergencies. Other recent developments include efforts to improve firefighter capacity, crew vehicle infrastructure and forest fire detection technologies across the country. The indigenous firefighter programme has been modified and effectively working thanks to the Brazilian government and firefighters. Currently, 15 villages are involved, and the aim is to train and disseminate the best practises of indigenous firefighters in fighting forest fires.

In conclusion, training and capacity building has been crucial in both communities and official institutions. The country has 14 official fire training institutions, and the aim is to professionalize and certify the work of firefighters. There are still 15 municipalities that are not certified. The certification process is carried out in collaboration with global partners such as the US Forest Service, Brazil, Peru and other government platforms.


PERSPECTIVE ECUADOR 1: MR DANIEL SEGURA

Ecuador's presentation was introduced by the National Risk Directorate of the Ministry of Environment, Mr Daniel Segura. The presenter discussed the background, data, concerns facing Ecuador, bilateral cooperation, efforts undertaken at the national level in 2022 and prospects.

Mr Segura noted that Ecuador is a small South American country with 20 million hectares of forest cover. He listed that there are also 73 protected areas, and 70 million people living in the country. It was further noted that the country suffers from forest fire problems and the most common cause of forest fires is man-made, either through negligence or intentionally. However, they are not comparable to those in Argentina and Brazil.

According to the presenter risk management data indicate adverse events and forest fires are common in the Andean region, in the mountain ranges and on the coasts. Data from 2002 to 2019 show that 500,00 hectares of land were affected by various forms of fires and in recent years, forest fires have also occurred outside the typical seasons. La Niña was responsible for the decrease in fires from 2021 to 2022.

It was noted that data on damaged areas is broken down by province and allows the identification of locations with a higher probability of forest fires. There are ones coded in red, for example the Pinchicha



in the Andean Province, and documented per area. For example, level one records fires with an area of up to two hectares, while level three records fires with an area of more than ten hectares.

In terms of responsibilities, Mr Segura said the Ministry of Environment has been coordinating overarching fire management, since 2009, under the Ecological Code Regulation. Several instruments have been created, including a national policy for integrated fire management, a corresponding national programme, and a national strategy for continuity planning. This was followed by a description of activities that will be carried out in 2023. To name a few the government is planning to create an in-service training, fire management during fire operations, training in conjunction with firefighters, incident command and control systems and controlled burning.


He next outlined the international cooperation between Ecuador and its partner countries which had increased in recent years. Ecuador is making similar efforts because of its cooperation with Brazil on fire prevention systems and community brigades. These includes the development of independent fire plans, technical fires, and management lessons. Ecuador is one of the most biodiverse countries in the world and efforts are being made to prevent forest fires during the dry season, namely controlled fires are in process of developing. Other workshops focus on developing firefighting strategies and establishing protection zones are also being created and international activities were conducted with the support of the US Forest Service. Other collaborations are with Italy, the US Forest Service, and the Picasa Foundation, as well as Technical Cooperation with the European Union. The speaker mentioned that they also had training on fuel mapping and early warning systems for forest fires with participants from IBAMA and PREVFOGO. The speaker also mentioned other international exchange programmes that included a trip to Mexico's International Wheat and Maize Centre to learn more about conservation crops and minimising agricultural fires.

He explained that from 2017 to 2019, integrated fire management was changed in line with the organic code for environmental protection. Strategies and national tools were developed to meet environmental requirements, and this led to institutionalisation within the Ministry of Environment and the introduction of the organic code for firefighting in 2022. Other attempts were the development of a national qualification system and a firefighting curriculum to prepare for territorial management and forest firefighting. The goal is to consolidate aggressively between 2023 and 2025.

In closing Mr Segura discussed prospects that include promoting territorial management through the implementation of integral fire management measures, recognising the role of fire as an element to be managed, and promoting inter-institutional articulation at local, national, and international levels, as well as developing context-specific regulations. He stressed on the importance of strengthening roles and actors in addressing the issue, gathering knowledge, and conducting studies. Such examples include, supporting decision-making by making fire management plans more explicit in terms of climate change mitigation and adaptation, and the issue of ancestral knowledge by incorporating ancestral information in all activities.

PERSPECTIVE ECUADOR 2: MS CARMEN MARIA SARANGO JUMBO

Ms Sarango Jumbo, the risk management representative, gave a brief presentation of the challenges Ecuador faces in risk management. The issue of forest fires has been studied for five years, with different obstacles and opportunities. She noted that, historically, SGIAR was called the Civil Defence and was exclusively responsible for fighting forest fires. The situation has gradually improved as knowledge on how to reduce the threat of forest fires has grown. However, there are still difficulties in transferring the



principles to the local environment. As in other South American countries, human activities are the cause of forest fires in Ecuador and despite the COVID reduced the number of burnt areas is still necessary to raise awareness in local societies.

In this context, Ms Sarango Jumbo detailed the importance of understanding concepts and application to the environment. As such, the role of representatives of the National Agency for Risk Management is to ensure that individuals and society are protected from the harmful effects of any of these natural disasters, including forest fires. Therefore, the focus was on nineteen important components related to the implemented concepts. The cornerstone of each step is the analysis and assessment of the situation, which enables action to be taken in both emergencies and preventive measures. It was additionally mentioned that fires are marked in red and orange for hazards. They rage throughout the Andean chain, and in some provinces and municipalities in the Amazon region, which lies between the Andes and the Amazon where several water sources are also located on sites.

The presenter further briefed on the SGIAR wish to go beyond just producing statistics highlighting the importance of adapting technology and tools. As the institution is not a research institution, it is difficult to establish links with universities, being also hampered by budget constraints and lack of political will.

The presentation was concluded by citing another endeavour that required political will, specifically, weather forecasting which has several flaws. For forest fires, precision is essential, therefore, this year, it was made possible due to research that is now being validated. There are five distinct hazard indices employed and so far, the Mounger index has been the most accurate reflection of reality. The results are not exhaustive, but they do assist to understand how this hazard index works. In operational dynamics, information is gathered, analysed, and aggregated, including weather forecasts and threat behaviour. As a result, different coordinated movements are possible depending on the level. Thus, the index has lowered the number of key other provinces. In conclusion it was noted that the created reports are circulated to the mayors of each province.

PERSPECTIVE ECUADOR 3: MS ZAIRA MASSAY REYES

The next part of the Equatorial presentation was imparted by Ms Massay Reyes from the division in charge of national emergency services accreditation processes that establishes the certification of fire brigades, as well as the mission and scope within SGIAR. Therefore, according to Article 275 of the organic code, the goal of the agency is to enhance both planning and response procedures.

In her presentation, Ms Massay Reyes mentioned that Ecuador has a public fire policy, with 221 municipalities and 290 fire departments, which equates to one fire department in every municipality and city. Approximately 10,000 firefighters battle both wildfires, about 1900 qualified firemen, and structural fires.

Next, it was noted that there is a mechanism in place used in times of forest emergency requiring specific resources. There are operational resources, such as air support, with equipment and tools that involves community as well as inter-institutional collaboration. Therefore, as per Ms Massay Reyes an important result was the solid connections formed between the accrediting division and the country's 221 fire departments.

She mentioned that, nationally, there are stringent safety manuals for maintaining fire and specialised equipment, such as helicopters, tankers, and fire engines. Another critical feature is the self-sufficient



elite brigade that is activated during unmanageable fires. Rapid deployment is enabled by training, accreditation and flexibility with a chief leading the brigade and additionally other officers overseeing logistics and support. The brigade is mobilized based on three conditions such as in situations when the site reaches level three warning, when the fire surpasses the location capacity of firefighters. Notably, the more complicated brigade A, has 8 units and brigade B has made 7 units. Furthermore, as per statistics, there are 499 firefighters certified during the pandemic and due to the lack of fires that period, there was increased attention on awareness initiatives that continue to this day. As a result, between 2020 and the present, there were roughly 686 heightened awareness creation efforts on forest fires.

Finally, Ms Massay Rey presented future advancements saying that the key components were research and technology, particularly as it relates to boosting the early warning system improving fire departments, certification of fire departments, strengthening the use of predictive technologies, working with operational staff, training the personnel, and reinforcing the equipment.

PERSPECTIVE MEXICO : MR CESAR CONAFOR

The speaker Mr Cesar Conafor introduced the context of forest fires in Mexico. The presentation focused on a general overview, of how it works, national and international cooperation, and insights into the forest fire season in 2022. He mentioned that there were 197 million hectares of forest fire-prone land in Mexico, with another 67 million hectares at risk. This was due to the abundance of fuels in temperate and tropical forests.

He next introduced the legislative perspective mentioning that the term "fire management" was introduced in 2018 and includes both an environmental and socio-economic perspective. The aim is to promote fire as a tool for forest management while minimizing economic difficulties not only to curb damaging fires that affect ecosystems and infrastructure but also to regulate fire burning where necessary. He confirmed that it was under development as part of the environmental programme. As fire management is included in the law, the aim is to minimise prohibitions through the management of fires. Thereafter the presented detailed the fire programme which consisted of seven components, with coordination as the backbone. Other components include early warning and planning tools, infrastructure development, technical capacity development, coordination of international capacities and cooperation with the secretariat of agriculture and wellness, which relates to livestock and agricultural areas.


Mr Conafor clarified that Mexican law provides for activities related to preventive measures. These include protection against forest fires on 80 to 90 per cent of the land, owned mainly by settlement communities that often lack support from the federal or state government. In terms of resources, they are reliant and there is a strategy at the provincial level with the establishment of firefighting centres led by technical response teams. The provincial committee is a technical and operational organisation made up of several agencies such as the state and provincial governments, the Civil Defence, and the Environment Secretariat. There is also an inter-secretariat group that has a fire management framework that oversees the national fire programme. The resources provided by the state for planning, prevention and management, detection, resources, and qualification systems based on the management activities are at the heart of the system. He noted that other developments include technical innovation, applied research, an early warning system, infrastructure and resources for planning systems, and financial capacity. Mexico also has physical, cultural, and legal preventive measures to identify sensitive regions, such as prescribed burning. The mechanical teams have a capacity development catalogue for forest fire control and has international cooperation and support from the United States, Canada and Colombia. Additionally, discussions are ongoing with the Ecuadorian government to collaborate on a prevention

programme. Further, coordination activities in conjunction with the Secretariat for Agriculture and Wellbeing are helping to reduce fires caused by agricultural activities.

Speaking next about the fire season, he noted that Mexico deploys 23,000 firefighters, 1500 of whom are directly funded by the government. In addition, there are rural brigades with 2500 members who deal with preventive, fire-fighting tasks and receive training. About 10,000 fire brigades in the environmental protection areas receive regular training. In Mexico, the fifth season saw the highest number of wildfires. The fourth season was dominated by forest fires. As a result, all resources are being directed to more fire-sensitive systems. However, the country is divided when it comes to adapting to fires. In forested areas, 10 per cent of forest fires are due to fire-sensitive ecosystems that lack adaptation, and each type of fire accounts for 30 per cent of mortality in these areas. The country has had 18 forest fires that required nationwide mobilisation of fire brigades and armed forces. He further elucidated that during the year, the main initiatives are divided into different phases, starting with preventive, cultural and dissemination measures. Other measures include a controlled burning programme, capacity building of rural fire services, firefighting with state-level response and management teams, and a forest fire prevention campaign. During the main fire season, national mobilisation programmes and exchange programmes are held with the USA and prescribed burning and preparation for international events are conducted. In terms of public outreach, the cultural prevention programme is promoted through social media and other government channels. There is also a programme of training with the armed forces that participate in pilot programmes that require technical personnel to operate helicopters. According to statistics, there are 25 courses with over 700 people trained and over 300 basic courses with over 6000 learners. The Academy of Prescribed Burning involved firefighters and technical staff. The training involved teaching operational staff how to handle fuels through prescribed burning and how to use the command and incident system. It was a 10-day training covering over 270 hectares in the north of the country. He clarified that applied research is currently underway to improve the assessment of the primary and secondary consequences of forest fires. Work continues with sentinel and satellite photos, as well as a home-grown study strategy with universities that allow firefighters to analyse a sample area in less than 30 minutes. Another technique was developed after the 2020 and 2021 forest fires in the North. Specific examples were the first and second-order evaluations that were carried out, including in Boquillas. The photos show a significant variation in plant species and how these regions recover after the fire. It is comparable in Nuevo Leon, where plant species are currently recovering from severe damage. Finally, in terms of lessons learned, Mr Conafor stressed the fact that Mexico believes that it is better to control the use of fire and not only focus on suppression.

PERSPECTIVE PARAGUAY: MR ALAJENDRO ROMAIN

The presentation on Paraguay was imparted by Mr Alejandro Romain. He reported on the ongoing work of the Paraguayan Space Agency (AEP) in relation to the forest fires. Paraguay has a national secretariat for emergencies and AEP has technical representation in this secretariat. The agency focuses on earth observation and spatial planning and its mission is to monitor the development of these activities using space technology, especially in the case of forest fires. The Paraguayan Space Agency works with a variety of institutions such as the Ministry of Environment and the Secretariat for National Emergencies. Eight institutions are involved, including a technical committee for responses. Also involved are the armed forces and other institutions responsible for mobilising firefighters to fight forest fires in emergencies. AEP plays an important role through its Earth Observation Laboratory by providing the best information and tools. Additionally, it was noted that AEP also works with international agencies as they are a source



of valuable information and resources. Under Paraguay's international charter, AEP, together with the national secretariat, is authorised to have international collaborations. The agency is in the process of building capacity and therefore international cooperation is crucial for further development. The agency's interest is to learn from partner countries and transfer knowledge to the local context in Paraguay leading to accelerated growth in the region. Currently, there are over 70 cooperation agreements that include both national and international partnerships.

Mr Romain recalled that prior to the establishment of the AEP, reports from the various ministries and institutions were distorted by the media due to the lack of coordinated efforts within the country. Moreover, discrepancies in the reports, which could be resolved by a technical committee in consultation with other agencies, were a chaos because no consensus was reached. This led to massive criticism of the government. In conclusion Mr Romain gave insight to the Agency's contribution to Paraguay. When the international charter was launched in 2019 and the data was monitored, earth observations showed an increase in floods followed by national outbreaks with forest fires. The number of fire disasters decreased. However, the index of 50 per cent referred to weather problems. Another aspect is the mindset in agricultural activities where waste is burnt. Sometimes fires get out of control due to climatic conditions. Therefore, an important awareness campaign on burning has been conducted. Accordingly, the international charter was activated in two situations. The Agency received 200 products for the National Emergency Secretariat, which is responsible for responding to these incidents.

PERSPECTIVE PARAGUAY: MR RODRIGO FLEYTAS

GeoLab was represented by Mr Rodrigo Fleytas who spoke about its partnerships with AEP and universities, as well as its contributions to innovation and products with a focus on forest fires. In his presentation, he referred to Copernicus and NASA, which were among the data sources used by the GEO lab to develop solutions for decision-making in Paraguay.

GeoLab conducts multi-temporal analyses using data to compare how forest fires behave in different seasons by analysing fire indices using information from the Sentinel satellite and monitors land use in locations where fires are detected in communities across the country. This is done in coordination with the Forestry Department, and the Forest Fires and Fire Management Regulatory Authority.

Next Mr Fleytas presented examples of the NDWI and NDVI index from the Saint Rafael area. GeoLab has developed a platform for an early warning system based on the resources needed to respond to these events, a prototype for the Nyambuku Municipality Department that was affected by three disasters. As a result, a risk index map and a population density map were produced for use in surveys. The inclusive approach considers the economic situation of the population, jobs, the number of people living in the area or a house, and data on people with disabilities in households. All data is collected automatically and published on the dashboard.

Finally, it was noted that the space agency works with other institutions to produce a report on hotspots in the national area. The 2022 figures show a significant decrease in the number of hotspots from 2012 to 2021, with the yellow code indicating the discovery of hotspots in 2022.

PERSPECTIVE URUGUAY: MR PABLO F. BENÍTEZ

Mr Benitez thanked the organisers and IBAMA before presenting on the key areas of Uruguay's organisation, the fire seasons, the benefits, the limitations, the opportunities, the threats, the problems

and finally the overall strategy along with related campaigns. He mentioned that the working group is made up of three members: the firefighters, the national emergency system, which is coordinated with all institutions, and the Forestry Directorate, which oversees the forest. The use of the SWOT analysis led to a strengthening of opportunities and threats. It was an unusual season in Uruguay, with major fires occurring from late December to early January 2022. The situation was complicated as on certain days where there were over 100 fires burning concurrently. To fight the crisis all organisations worked together providing important resources, and transparency between institutions is a strength in planning the responses. He noted that the national firefighters are not only involved in fire prevention and suppression but also in fire investigation. Next, the presenter discussed the unique opportunity the fire created in an area not prone to it. The people demanded to be trained and equipped, leading to changes in national regulations. Climate change and lack of knowledge about it are key issues in the country. People's complacency has been replaced by concern as most fires are caused by people. Thus, the lack of knowledge must be addressed. He further noted that the strategy incorporated prevention, protection, capacity building, response and awareness raising. Awareness campaigns and inspections of forests were conducted, and open-air burning was banned between November and April, punishable by fines. Additionally, A fire prevention plan is being developed as some do not comply due to pre-conceived beliefs. The prevention plan includes an analysis of forest fires, a protection plan, and capacity building. Also, a multi-faceted campaign involving social media has been launched to reach as many communities as possible. In conclusion, Mr Benitez discussed fire protection. The goal is to improve fire protection zones and promote courses. He mentioned the weaknesses identified in resource management and as a result, Uruguay is adapting Incident Command tools nationwide, which are used by other countries. To end, he noted the response capacity had improved with emergency teams and an incident command system, confirming the countries acceptance and advancement of the new volunteer fire brigade.

PERSPECTIVE PERU : MS ROMINA LIZA CONTRERAS

Ms Liza Contreras in her presentation noted that the Satellite Monitoring Functional Unit is responsible for various tasks and is part of a multi-sectoral platform. As such, Peru has a roadmap for working with forest fires and different institutions that include SEFOR, INDECI, the National Institute of Firefighters in Peru, the Ministry of Culture, the Ministry of Agriculture and Development and the Ministry of Irrigation and Environment.

According to Ms Liza Contreras, Peru is conducting prevention workshops, maintaining the ban on prescribed burning, and promoting alternatives to burning through publications and courses. Additionally, technical assistance programs in the modular form are conducted on forest fire risk management, and a qualification system with courses for firefighters has been set up. Peru is also developing a national preparedness and control plan in line with international commitments. Furthermore, it was noted that the Satellite Surveillance Functional Unit (SEFOR) uses GOES 16 and 17 to detect and monitor fires. It provides coordinates to confirm locations and determine if they're extinguished or not, as well as performing filters to eliminate wrong positions. For prevention, SEFOR works with hotspots, providing geo-support on the ground and information for the platform and national forest information systems. Monitoring reports contain weather forecasting and analysis, and a code identifies affected areas. Further, she noted that the Lancet system used currently will be replaced with Sentinel and automation was enabled by the code list.

At the end of her presentation, Ms Liza Contreras outlined the progress in hotspots within Peru. The hotspots and scars have shifted to the southeast of Peru and forest fire warnings are identified in Ukiahalley and Cusco. As per records, from 2017-2021, 2020 saw tripled areas affected, with events

doubled. The season which usually starts in October has advanced to April and it was further noted that there is a deficit in the public budget, resulting in a lack of information and reporting from particular areas. Finally, the major risks were identified as priority hotspots due to the geography and climate the fires spread. In 2021, affected areas increased significantly, with a 15 per cent sample covering 50,000 hectares. It is estimated that in 2022, 300,000 hectares will be affected, which exceeds the 190,000 hectares in 2021.

PERSPECTIVE PERU: MR WILDER CANALES

In his speech, Mr. Wilder Canales noted his belief that coordination and joint activities contribute to success. The presentation was a brief outline of progress in Peru in the field of risk management, highlighting international and inter-sectoral coordination. According to Mr. Canales, there is increased cooperation and joint agendas to leverage support for the benefit of all and mitigate forest fires. and further recognised that Peru is in the process of approving the multi-sectoral fire management plan.

He explained that the working group became more active because of the increasing incidents in Peru. Due to the limitation in special equipment for teams, alternative mechanisms were needed. The emergencies that the country experiences led to the Presidency of the Council of Ministers' approval of protective equipment for the armed forces, and the qualification system is in the approval process. Therefore, there is partnership with the US Forest Service and Quantum, and joint initiatives with Spain, and the US on forest fire response and hotspot brigades. Additionally, capacity building of fire-fighters academy is underway. The speaker confirmed that Peru is progressing with data generation, but it is not integrated into a system. Additionally, the authorities lack the expertise to share the data. To raise awareness in traditional communities, prevention backpacks were initiated. The relevant projects are in partnership with the US Forest Services, Colombia and Brazil and aim to develop prevention activities to reduce impacts on protected natural areas. The presenter also noted that the Ministry of Environment is working on a project that includes drones and other equipment to assess climate conditions and microclimates in rural areas. In Peru, due to topography and wind conditions, the risk of fires is higher during the La Nina phenomenon and the emergency fund aims to reduce the risk for firefighters. Next, he mentioned that Peru has 300 brigade members, and 50 firefighters, who manage about 17 per-cent of the national territory. This corresponds to about 20 million hectares. In the last five years, Peru has had forest fires in 37 territories. To prevent fires in Machu Picchu, the fire brigade has been involved in five fires in the region, particularly in the buffer zone. Even though the mandate pertains to protected areas and fires, there is an obligation to prevent fires beyond those areas. Thus, there is a need for prevention activities, preparedness, and capacity building with an emphasis on participation. In November, 10 members participated in a two-week course in Spain and special trainers in the USA. 200 personal protective equipment and units were delivered in collaboration with the mining company. Peru is strengthening staff capacity and promoting awareness-raising workshops. In ending his presentation Mr Wilder once again stressed the partnership and cooperation that can continue. He congratulated the partnership and the formation of the expert group, which is a bridge to talk about all the joint projects.