



HIGH SUMMIT COP26

International Conference on Mountains,
Climate Change and Sustainable Development

RESULTS and KEY MESSAGES





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From the International High Summit Conference the recommendations on the Mountains support the results of COP26

At the headquarters of the Minoprio Foundation, at the foot of the Lombard Alps, on September 25, the High Summit COP26, the International Conference dedicated to Mountains, Climate Change and Sustainable Development, was concluded. Around eighty Italian and international experts, young students, decision-makers and researchers gathered to discuss the role and future of the mountains.

Much has been said about the mountains in the IPCC Special Report on the Ocean and the Cryosphere, which was published at the end of 2019. Great attention is given to the impacts of climate change on mountain environments, thus showing a growing awareness of the fragility of these ecosystems, the importance of their resources and the need to act urgently to protect them. Moreover, the results of the first 2021 working table for the sixth IPCC report emphasise that the main impact of climate change is on hydrogeological cycles and, therefore, in the mountain environment. In fact, a few figures are enough to clarify what we are talking about: the mountains are the home of 15% of the world's population and it is estimated that from 60% to 80% of the planet's drinking water come from them, much of what quenches and irrigates the plains and cities. The survival of over 1 billion 900 million people, more than a quarter of the entire population of the Earth, depends on the resources of the mountain areas. The biodiversity of the planet is allocated in good percentage in the mountain areas and in the forests of high altitude.

And just water, biodiversity and human health, as well as the ability to create a network to face the imminent ecological transition with greater resilience, are the topics on which to focus emerged from the recent G20 held in Italy. The calls by the Secretary-General and many of the representatives of the member countries, at the recent General Assembly of the United Nations, to reverse the course by mitigating and adopting adaptation policies in order to face the approach of climate catastrophe, can't leave us indifferent.

The results of the COP26 summit have further prompted countries to accelerate their fossil energy reduction policies and to return to the negotiating table from year to year with national plans that provide for higher greenhouse gas reduction quotas. This would allow to limit global warming to 1.5 C at the turn of the century compared to 2.4 C to which would bring the current national plans, far from what is indicated by the IPCC which recommended a reduction of at least 45% by 2030 to remain within 1.5 C by the end of the century. The final document underlines the fundamental importance of nature-based solutions and ecosystem-based approaches, including the protection and restoration of forests, to reduce emissions, improve removals and protect biodiversity. In this context, it is clear, therefore, the role that the mountains can have in the drafting of the national plans to be brought already next year to the table of the negotiations of COP27.

HIGH SUMMIT COP26 was the international conference on mountains, climate change and sustainable development held on 24 and 25 September 2021, to support and integrate with a mountain vision the results of the United Nations World Climate Meeting, COP26 in Glasgow.

The message of Attilio Fontana, President of the Lombardy Region is significant: "We are finally

starting again with a look at the environment for the future of next generations. Today, respect for the environment and fragile territories, such as the mountains, is not only a necessity but it has also a moral and ethical importance, obliging national and supranational institutions to take serious and decisive measures. All levels of government, from cities to regions and states, must be involved. Internal policies will be all the more effective if they can be shared from the bottom, according to the bottom-up logic that interprets the principle of subsidiarity in the best possible way. Lombardy is a predominantly mountainous territory, the protection and enhancement of alpine places is for us a priority that we pursue through dedicated policies and resources. To avoid the depopulation of these wonderful but fragile places is an objective that we must achieve in order to promote a harmonious development of the entire regional territory.”

Mariastella Gelmini, Minister for Regional Affairs and Autonomies, pointed out:

“Mountain areas play a fundamental role in protecting the environment, they are in fact real natural reserves available to the planet. That is why it is essential to put the mountains back at the centre of the scientific and political debate. The challenge that awaits us is to succeed in reconciling the needs of development with those of safeguarding and managing complex territories, with obvious and unavoidable environmental and cultural specificities, the enhancement of which is an essential condition for the socio-economic growth and competitiveness of these areas. The elaboration of diversified development models, able to leverage on territorial specificities to preserve and enhance the variety and uniqueness of landscapes, services and products, is a strategic objective possible for Italy, that has in its diversity a strong point on which to base part of the very competitiveness of the country. We therefore need specific planning for mountain areas, with short, medium and long-term objectives, based on a systemic and integrated vision of these specific territories, to be implemented and monitored over time. A strategy that is able to “enable” local communities to address “historical” issues - such as depopulation, the ageing of the population and the constant and overall loss of services and competitiveness – and “recent” ones – such as the effects of climate change and the pandemic. All this will have to be implemented by innovating operating methods and tools and by promoting the ecological and digital transition. For these reasons, I can only give personal praise to the initiative High Summit COP26, wishing you good work in the interest of the Italian mountains.”

The main organizations involved were: Several groups of the agency in the United Nations (UNEP, UNDP, WMO, FAO - Mountain Partnership, UCN), Research Institutes including National Institute of Oceanography and Experimental Geophysics (OGS), CNR - Water Research Institute, CNR- Institute of clinical physiology, and several of the major Italian universities such as Università degli Studi di Milano, Politecnico di Milano, Università degli Studi di Cagliari, Università degli Studi di Torino, Università di Padova, Università di Chieti, Università di Siena, Università di Ferrara, Università Guglielmo Marconi. Several international organisations (World Bank, MRI, WWF, ICIMOD), national and international experts were also involved. The scientific committee of High Summit COP26 was composed of: Stefania Proietti, Chairman of the Scientific Committee Evk2minoprio, Università Marconi, Mayor of Assisi - Elisa Vuillermoz, Executive Coordinator of Evk2minoprio - Paolo Sdringola, ENEA - Maurizio Maugeri, Università di Milano - Guglielmina Diolaiuti, Università di Milano - Stefano Bocchi, Università di Milano - Andrea Lami, Institute for Water Research, CNR -Franco Salerno, Institute for Water Research, CNR - Rosalaura Romeo, Mountain Partnership - Efre Ferrari, World Bank Consultant - Gianantonio Arnoldi, CEO of CAL - Annalisa Cogo, Università di Ferrara - Anna Giorgi, Università della montagna - Maurizio Gallo, President of Evk2minoprio High Summit COP26 - Organizing Committee - Ignazio Perego, Minoprio Foundation - Stefania Cantaluppi, Minoprio Foundation - Sabrina Salvi, Minoprio Foundation - Alberto Cortinovis, Evk2minoprio - Pietro Coerezza, Evk2minoprio.

Key Messages for Policy Makers

The objective of the 2021 High Summit was to indicate possible priorities for mountain territories and to identify challenges, opportunities and actions in the fight against climate change and in the development of resilience in a post-Covid world to accompany the COP26 Conference of Parties.

Ten recommendations of High Summit to political leaders emerged at the end of the two-day conference:

1. Supporting scientific research in mountain areas is crucial to safeguard biodiversity, ecosystem services and water resources and to initiate a conscious ecological transition. Long-term monitoring is essential, even in its complexity, in order to know in depth the mechanisms underlying global warming, to increase the accuracy of future climate forecasts and thus to encourage better management of these territories. The mountains, in this perspective, are sentinels of climate change able to provide science (IPCC) and policy makers (COP) valuable knowledge on a global scale.

2. Adapting to climate change in the mountains means increasing resilience even at lower altitudes. A seasonal change in the availability of water at high altitudes causes effects in the agricultural sector, in the production of hydroelectric energy and in the tourism sector, which are also reflected downstream. Adaptation to climate change therefore requires an integrated approach, going beyond the flatland/mountain dichotomy.

3. Climate change mitigation is an opportunity to improve the quality of life and the environment in mountain areas. Electricity and the use of hydrogen in the transport sector, the conversion of energy sources from fossil to renewable, the production and consumption of goods and products designed to be used, repaired, recycled in the logic of the circular economy, are priority actions to be encouraged and supported.

4. Ecological transition must not overlook the areas considered on the margins of economic and social development, such as mountain areas. Instead, it is necessary to support these environments that live in a context of limited employment, energy dependence, reduced connectivity and are subject to high raw material and service costs, but which are natural conservation garrison and privileged laboratory of green technologies and practices.

5. The mountain environment has ecological fragility higher than the plains; therefore, new transport solutions for people, goods and energy must be designed and managed in a more careful and sustainable way.

6. The response to climate change must be seen as an **opportunity to change our society by eliminating disparities between mountains and plains**, between local development and nature protection, by converging efforts to achieve the common goal of living more in balance with the environment.

7. **Human, animal and plant health are interdependent, and at the same time depend on the environment around them.** Scientific research and development projects must use a “One Health” approach, necessary to ensure an adequate level of health for all living beings that are part of the mountain ecosystem.

8. **The sustainable development strategy involves the establishment and strengthening of the management of sites of natural, cultural and landscape interest in the Community, areas which are otherwise protected, national parks**, especially in the mountains, where one third of the world’s protected areas are already located. The challenge, at a global level, is to protect at least 30% of mountain territories.

9. Only by biting our **lifestyle** and adopting **sustainable behaviour** we can **reduce our climate footprint**. This revolution will happen if we are able to spread awareness among all economic actors, on a global scale. Marginal territories, such as mountainous areas, and the most fragile contexts, such as the least developed countries, however, must not be left behind. Instead, they must be supported with specific investments and funds. Zero-climate regions, areas, valleys or villages should also be recommended and supported.

10. It is desirable that **young people who demonstrate a new sensitivity and transversal preparation for mountain issues and the world of political decision-makers will be given greater reciprocal listening**. Europe needs strong action for the mountains, recognizing their specific characteristics, adopting a fresh and active mentality, to secure the natural, cultural and social heritage of these territories and to share this experience with new generations.



Climate Change in the Mountains

Moderator: Maurizio Maugeri, Università degli Studi di Milano (Italy)

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

This session discussed the current state of knowledge about climate change in mountain areas and its impacts. Understanding the extent of climate change in the mountains is crucial to know and manage the effects of this change even at lower altitudes.

Maurizio Maugeri, University of Milan (Italy), opened the session by presenting the main results of the first working group of August 2021 for the drafting of the 6 report of the IPCC as well as the state of the art of the current knowledge of the extent of the rise in temperature linked to the altitude. The global surface temperature will continue to rise at least until the middle of the century in every emission scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO₂ and other greenhouse gases (SPM-17) occur in the coming decades. Carolina Adler, Mountain Research Institute (MRI) (Switzerland), presented the main research efforts currently being made to promote monitoring and research in mountain regions around the world with the aim of increasing the resilience and adaptability of mountain communities and ecosystems to climate change.

Oksana Tarasova, World Meteorological Organization (WMO) (Switzerland), then highlighted the value of high mountain observations for understanding the drivers of climate change, underlining once again the great importance that these observations have for a better understanding of these particular mechanisms. Long-term climatic observations on several peaks such as Monte Cimone (Italy), Monte Chacatláya (Bolivia) and the volcanic peak of Maito (Réunion Island, Pacific Ocean), made it possible to identify precisely the regional sources of pollution and climate change on a global scale.

Chen Fahu, Institute of Tibet Plateau Research, Chinese Academy of Science (China) and Kun Yang, Tsinghua University (China) then focused on climate change in the Third Asian Pole. The first

author presented the climatological network in Tibet, the second discussed the link between global warming and local winter cooling near the Himalayas, analyzing the role of snow/albedo feedback processes. This problem was also discussed by Franco Salerno, IRSA-CNR (Italy), who demonstrated that, due to the melting of glaciers, global warming induces local summer cooling in the Himalayas.

Franco Salerno, IRSA-CNR (Italy) illustrated the managed meteorological network of the Evk2minoprio in Nepal on the slopes of Mount Everest (Nepal), Pyramid, the scientific observatory positioned at the highest altitude in the world. There are currently 28 years of climate data available, a unique set describing climate change in the Himalayas.

Peter Van Oevelen, George Mason University (USA), then introduced the GEWEX (Global Energy and Water Exchange), the main project of the World Climate Research Programme (WCRP), on climate processes related to earth-atmosphere interaction. According to Van Oevelen, high mountain environments are among the most difficult to study as they are still poorly observed and understood. It is necessary to create observation networks (radioprobes, rainy and snowy precipitation, run-off, citizen science...) fundamental to optimize our knowledge. Models and predictions in complex territories such as mountains make it possible to link both regional and global natural phenomena.

Federico Bianchi, University of Helsinki (Finland), told the new and interesting insights on the atmospheric composition at high altitude, discussing the mechanism that allows the transport of aerosols in the upper troposphere and the formation of black carbon in the Himalayan region.

Valter Maggi, of the Università degli Studi di Milano Bicocca (Italy), then discussed the role of glaciers as climate and environmental archives, underlining once again the strong reduction that is currently undergoing the alpine cryosphere, bringing a serious loss of information (last 25 years) obtainable through observation of ice sheets of glacial bodies.

Sandro Lovari, President of the Scientific Commission Snow Leopard Network (Italy) finally addressed the impact of climate change on the wild species of mountain ecosystems. Two summarising examples have been used: in the first, it is shown how the impact on herbivorous species whose reproductive cycle is closely linked to the seasonality, while in the second, it is demonstrated how habitat loss for the snow leopard is due to the upstream movement of the tree line.

Overall, the session highlighted the importance of climate observations in mountainous areas, demonstrating that gathering the data needed to understand climate change and its impacts in these areas is indeed a challenging task, but fundamental, on the one hand to understand the underlying mechanisms of global warming and on the other to make more accurate future forecasts.

It is reiterated that the understanding of the extent of climate change in the mountains is a crucial aspect to know and manage the impacts even at lower altitudes being the mountains water sources that meet between 60 and 80% of the needs of lowland areas.

List of speakers with link to the video of the presentation:

Maurizio Maugeri, Università degli Studi di Milano (Italy)

Link Video https://youtu.be/9jYD3_V1f5c

Carolina Adler, Mountain Research Institute (MRI) (Switzerland)

Link Video <https://youtu.be/Xep-ndhTJuw>

Oksana Tarasova, World Meteorological Organization (WMO) (Switzerland)

Link video <https://youtu.be/vp3oUqVDEal>

Chen Fahu, Institute of Tibet Plateau Research, Chinese Academy of Science (China)

Kun Yang, Tsinghua University (China)

Link Video <https://youtu.be/fj6oP16YE5U>

Peter Van Oevelen, George Mason University (USA)

Link Video <https://youtu.be/bT5ZhN4928w>

Franco Salerno, IRSA-CNR (Italy)

Link Video https://youtu.be/v_DXCvyWVS4

Federico Bianchi, University of Helsinki (Finland)

Link Video <https://youtu.be/26KeY5cotlE>

Valter Maggi, Università degli Studi di Milano Bicocca (Italy)

Link Video <https://youtu.be/esHdsyUB1IA>

Sandro Lovari, President of the Commissione Scientifica Snow Leopard Network (Italy)

Link Video <https://youtu.be/EzMQu7e29W0>



Glaciers and Water Resources Management

Moderator: Guglielmina Diolaiuti, Università degli Studi di Milano (Italy)

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

We know that glaciers can be used as sentinels of climate change. In addition, they represent an important water reserve for mountain areas and for those more densely inhabited plains, useful for agriculture and hydroelectric power generation. They also regulate the flow of water and their dissolution contributes to the rise in sea levels. The glacial decline that will occur in the twenty-first century as a result of the further inevitable rise in temperatures will therefore have very intense impacts on the economy and society. Additional consequences of the increase in temperatures are the degradation of permafrost with an increase in natural hazards, changes in the landscape and the loss of biodiversity.

Frank Paul, University of Zurich (CH), cited the latest inventories of glaciers made from satellite images, which make possible increasingly frequent updates, useful to assess the health status of glaciers retreating more and more quickly. The last cadastre of European glaciers showed a withdrawal rate of 1.2% per year in the last decade, in line with the forecasts that see a loss of 90% of the mass of glaciers between now and 2100 without an adequate reduction in CO₂ production.

Tobias Bolch, University of St. Andrews (UK), pointed out that even in regions of Asia where glaciers showed contained mass losses in previous decades (the so-called Karakoram anomaly) In recent years there has been a tendency to losses in line with the rest of the planet, due to the increase in summer temperatures.

One of the global causes of the increased melting of ice is their blackening. This blackening has been identified in various regions of the world, from Polar ice caps to mountain glaciers. According to Davide Fugazza, of the Università degli Studi di Milano (IT), blackening has several causes, some of which are certainly man-made, such as the production of black carbon, coming from forest fires, combustion of diesel engines and industrial activities, and compromises the ability of glaciers to reflect solar radiation, or albedo, leading them to melt faster. In a study of the Ortles-Cevedale glaciers using satellite data, albedo has halved from the 1980s to the present day, and has declined for almost 70%

of Alpine glaciers since the early 2000s.

Massimo Frezzotti, Università degli Studi Roma3 (IT), examined the contribution of glaciers and polar ice caps to the rise in sea level, which is unprecedented in the last millennium. At the moment, this increase can be quantified at 3.5 mm per year on average, and is linked to the melting of ice sheets and glaciers (60%), and to the thermal expansion of seawater (30%). Since 1993, glaciers and ice caps have contributed to about half the rise in sea level, and this fraction is expected to increase.

How much more the sea level will rise depends on the warming of the atmosphere and oceans and how this affects the polar ice caps. The forecasts, considering the current emission scenario (+3°C from pre-industrial levels), indicate a strong increase in the reduction of the Antarctic ice sheet after 2050, and a contribution to the rise of the sea level by an order of magnitude higher than today in 2100.

Martin Beniston, University of Geneva (CH), reported the importance of ice and snow as components of the hydrological cycle in mountain regions. The retreat and loss of glaciers, together with a shorter duration of the nival season, will cause significant variations in river flow and its seasonality, causing economic impacts on water use in lowland regions, in relation to agriculture, hydropower generation, tourism and manufacturing.

In his speech, Daniel Viviroli, University of Zurich (CH), emphasized the interconnection between the mountain and lowland regions, which depend on the former for water supply. Due to climate change, the seasonality of snow melt-related flow peaks is changing rapidly, and now these peaks occur several weeks earlier. This causes less favourable conditions for agriculture, and a similar effect is expected for basins where water supply has a strong contribution from melting glaciers.

Studies have already been carried out on the possible impact of variations in the extent of the effects of climate change on ice and snow fusion. According to Daniele Bocchiola, of the Politecnico di Milano (IT), in the basin of the river Adda, in Lombardy, glacial fusion contributes up to 50% of the water resource used for the production of hydroelectric energy. The contribution of glaciers is particularly important in the drier summer periods, and their disappearance will require adaptation strategies.

In addition to their function as a water reserve, glaciers are also little known ecosystems, and host a unique biodiversity. Roberto Ambrosini of the Università degli Studi di Milano (IT) explained that organisms living on glaciers, mainly microbes, also perform important ecological functions, such as the degradation of pollutants even in extreme ecological conditions. This biodiversity is at risk of disappearing due to the retreat of glaciers even before being described and studied. For this reason, glaciers and their still largely unknown biodiversity should be protected as endangered environments.

Finally, Stephan Gruber, Carleton University, CA, highlighted that permafrost-related ecosystem services play an increasingly important role in a climate change context. Adaptation strategies to the melting of permafrost are needed in the Alpine and polar areas. This will allow new collaborations between states and a strong input to research on permafrost and its carbon cycle.

Overall, the session highlighted that glacier variations are among the most obvious signs of climate change. The sharp decline of the glacial fronts and the volume losses in recent decades as a response to the rise in temperatures are visible to anyone.

Urgent measures are therefore needed to reduce the intensity and speed of glacial melting. Since direct interventions such as ice cover are only applicable to small portions of selected glaciers, only the reduction of greenhouse gas emissions would reduce the melting of most glaciers.

We therefore call on policy makers to suggest and adopt national strategies and plans to reduce

greenhouse gas emissions and on all citizens to do their part to reduce their climate footprint.

Only by changing our way of life and adopting sustainable behaviour can we reduce our climate footprint, and perhaps protect glaciers from collapse. The glaciers that survive will tell us if we have succeeded in our intent.

List of speakers with link to the video of the presentation:

Guglielmina Diolaiuti Università degli Studi di Milano (Italy)

Link Video <https://youtu.be/slrwYMS6GE0>

Tobias Bolch, University of St. Andrews (U.K.)

Link Video <https://youtu.be/-oSwdvsNF2g>

Frank Paul, University of Zurich (Switzerland)

Link Video https://youtu.be/tmwAi4zJ1_8

Stephan Gruber, Carleton University (Canada)

Link Video <https://youtu.be/rYIFZsnEbew>

Massimo Frezzotti, Università degli studi Roma3 (Italy)

Link Video <https://youtu.be/VqiaMGqvw84>

Davide Fugazza, Università degli studi di Milano (Italy)

Link Video <https://youtu.be/sD6KQV3SN7A>

Martin Beniston, University of Geneva (Switzerland)

Link Video <https://youtu.be/uXsqmze5ARc>

Roberto Ambrosini, Università degli Studi di Milano (Italy)

Link Video <https://youtu.be/6u6oLtG6LZA>

Daniel Viviroli, University of Zurich (Switzerland)

Link Video <https://youtu.be/VrllrE89QUU>

Daniele Bocchiola, Politecnico di Milano (Italy)

Link Video https://youtu.be/dB_c1WXfGHY

Panel Discussion

Link Video https://youtu.be/4_-774WiV8



Ecosystems, Biodiversity, and Protected Mountain Areas as Development Opportunities

Moderator: Andrea Lami, IRSA-CNR (Italy).

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

The Mountains, or more generally the high lands, are defined “water towers”, representing the primary sources of this precious and inalienable asset. The effects of climate change on the mountains are dramatic and often very visible (for example glacial recession, development of glacial lakes, plant migration) and derive from the combination of multiple stress factors related to their physiographic, morphometric, hydrological and edaphic characteristics. High mountain environments are among the most sensitive ecosystems in the world to air pollution, changes in land use and heating trends, so as to be often referred to as the “canaries in the coal mine” in terms of early warning.

The session is composed of 9 contributions from different thematic areas that have well represented the challenges to understand the complexity of ecosystems within high mountain environments in the world. In particular, meeting the development needs of local communities, while mitigating the impacts of climate change and human stress factors, will be one of the key challenges for mountain populations and environments in the near future.

The role of Italian Cooperation for the promotion of Mountain Protected Areas was illustrated by Councillor Emmanuele Farruggia of the Directorate General for Development Cooperation of the Ministry of Foreign Affairs (Italy). <https://youtu.be/Uelsglw1hxc>.

Global changes such as climate change, soil degradation and deforestation, as well as the increasingly frequent environmental disasters and population migration, are affecting the mountains in an unprecedented way, putting their natural resources under increasing pressure. At the same time, the recent pandemic crisis has had an even greater impact in poor regions, where it will have a further

long-term negative impact. This leads us to argue that the economy, food security and biodiversity in mountain areas are at risk.

The promotion of the mountain economy and food security, the protection of biodiversity and the strengthening of international cooperation in favour of fragile ecosystems, have always been one of the objectives of the International Cooperation of Italy and led in 2002, on the occasion of the International Year of Mountains wanted by the United Nations, the establishment at the FAO of the Mountain Partnership. A global alliance of 57 governments and 215 civil society organisations from 80 countries. There are three objectives: The promotion of mountain products with a focus initially on Bolivia, then expanded to several other Asian and South American countries. The development of biodiversity monitoring tools for reducing emissions from deforestation and forest degradation. The sharing of knowledge with the dissemination of innovative tools that are being developed in the context of projects for the sustainable management of mountain ecosystems and local communities, and their replicability in other countries.

How scientists can share more quickly and effectively the results of their research on mountain hazards with policy-makers and how decision-makers and governments can provide more timely mitigation programmes, These are issues that should be addressed further.

In this session it is evidenced the necessity to maintain, through adequate financings and logistic support, long-term ecological research in remote mountain sites to detect and track the impact of anthropogenic pressures on biodiversity and ecosystem services. Monitoring programmes are a key tool in the management of high mountain environmental resources to enable targeted planning and evaluation of the performance of the measures and programmes adopted.

Protected areas around the world, including more than a third in the mountains, can play a significant role in developing the strategies needed to protect and promote nature conservation, sustainable development and respect for local cultures.

Session speakers unanimously support IUCN declaration “mountain communities will have to build ecological resilience and resilience to withstand the loss of biodiversity and the reduction of ecological service due to climate change and human impact”. In addition, there is a need to develop the capacity of mountain communities to adapt and mitigate the increased frequency of high mountain hazards, such as floods, landslides and avalanches. Building sustainable management capacities of people living in mountain ecosystems will be crucial for the development of a multidisciplinary and rigorous scientific approach addressing all aspects of the ecosystem, such as water quality, biodiversity assessment, soil conservation and reduction of environmental risk. In this context, protected mountain areas can play a substantial role in providing a framework in which different issues of ecosystem conservation, local culture conservation and sustainable development can be effectively summarised.

The main problems that emerged were: (1) the increase in temperature can increase biological processes, both in soil and water, leading, among other things, to a greater absorption of nutrients. Mineralisation and nitrification are also temperature-dependent processes and can be accelerated by climate warming. The climate also influences physical-chemical processes such as erosion of rocks and soils, changing the quantity and type of solutes released from the river basin

to lakes. In this context, in addition to the direct role of temperature, the indirect effects of the variation of the rain-snow ratio, or of the quantity and duration of the snow cover, which influence the nutrient status of the soil, are important, the survival strategies and life cycles of the biota selected from the same environmental conditions. (2) Changes in biodiversity can alter the functional traits of species and increase the likelihood of a shift to an alternative regime due to reduced resilience. Typical changes may be the loss of a major functional group or the addition of species in a system that lacks a specific functional group. As biodiversity has been identified as one of the key factors determining environmental resilience, revealing its control factors will be a crucial issue for the proper management of high-altitude ecosystems. (3) The understanding and management of ecosystems and biodiversity generate a growing interest in ecological history. The historical range of variability of an ecosystem and its biodiversity can be used for the definition of baselines, sustainable restoration goals and conservation policy in the current context of global change. Given the scarcity of documentary data available, paleoecology is often the only possible approach to unveiling changes in ecosystem status and biodiversity on long time scales. (4) A better understanding of mountain dangers such as glacial floods, avalanches and landslides could be reinforced through the use of more field studies through the investigation of dangerous events timely after their occurrence and the incorporation of the insights and experiences of the local population.

List of speakers with link to the video of the presentation:

Andrea Lami, IRSA-CNR (Italy)

Link Video <https://youtu.be/CggVJ2X0zfY>

Ashiq A. Khan, IUCN, EvK2CNR-Pakistan (Pakistan)

Muhammad Aurang Zaib EvK2CNR-Pakistan (Pakistan)

Link Video <https://youtu.be/JQS9yzLfIOE>

Emanuele Farruggia, DGCS Asia, Foreign Affairs Minister (Italy)

Link Video <https://youtu.be/kA9P30uem4M>

Luca Corlatti, Parco Nazionale Gran Paradiso (Italy)

Link Video <https://youtu.be/8nTlIdT-1vg>

Franco Mari, Protected mountain areas expert (Italy)

Link Video <https://youtu.be/YjD2YF4ZXbY>

Emmanuel Rocchia, Parco Nazionale Gran Paradiso (Italy)

Link Video <https://youtu.be/RqzEzcVI9Zo>

Michele Freppaz, Università di Torino DISAFA (Italy)

Link Video <https://youtu.be/F4lGOBG3xlg>

Alton Byers, The Mountain Institute (USA)

Link Video <https://youtu.be/0HDQA-WxjhQ>

Eryuan Liang, Institute of Tibet Plateau Research, Chinese Academy of Science (China)

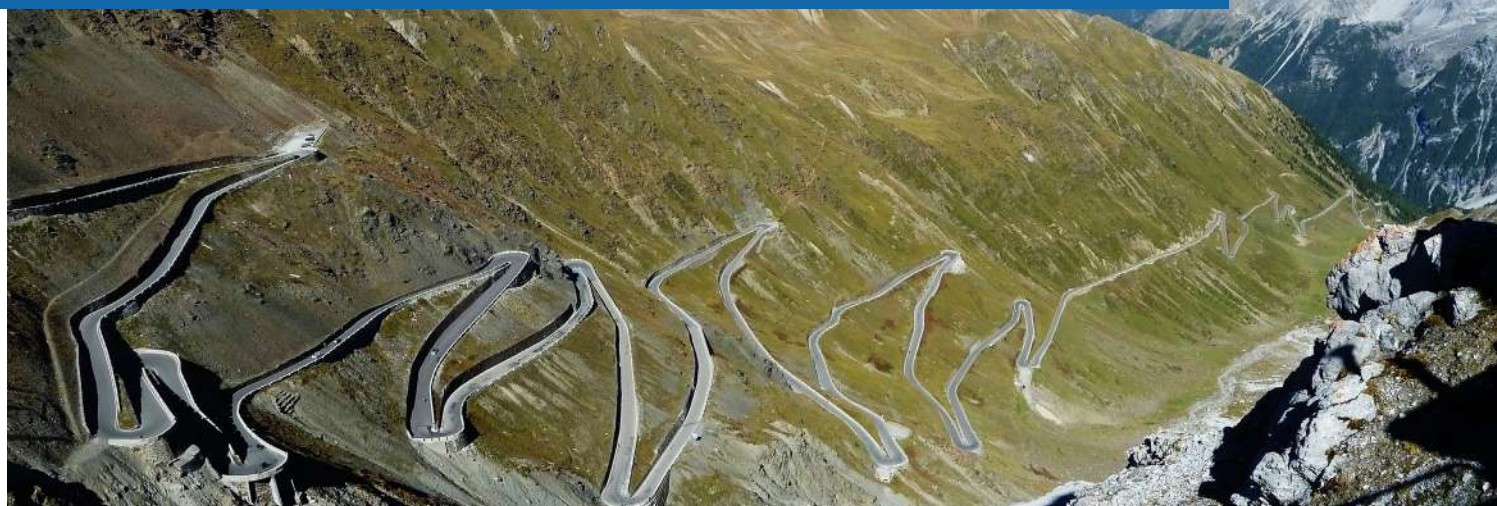
Link Video <https://youtu.be/M1CBCGPNZpM>

Paolo Tizzani, Università di Torino (Italy)

Link Video <https://youtu.be/i3QFSXjS6eM>

Panel Discussion

Link Video https://youtu.be/4___-774WiV8



Connectivity, Energy and Transport: New developments and future prospects

Moderator: Marco Bocciolone, Politecnico di Milano (Italy)

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

Improvements in road networks and transport are connecting many mountain communities to national, regional and global markets. In these areas, the impacts of these changes on the environment and health are higher than elsewhere. It is therefore essential to promote more sustainable connectivity and a more sustainable transport solution in mountain regions.

Isabella Tovaglieri, European Parliament (Italy), opens her speech with some data: the mountain municipalities occupy 54% of the Italian territory, there are 8,000,000 inhabitants, which produce 13% of the national GDP. Mountain communities face many challenges in different business areas. We need to develop internal connectivity between mountains, valleys and urban centres and external connectivity between European countries. New technologies are needed through internal combustion or electric mobility, decarbonisation and the use of hydrogen as fuel. There are no connections such as the Brenner railway, Turin-Lyon, Austria-Italy. Finally, let us not forget infrastructure for the Milan-Cortina Olympics and new airports.

According to Giancarlo Morandi, President of COBAT (Italy), Italy can boast the first complete recycling process of the lithium battery in the world. COBAT, in one of its projects, provided as much lead as a 20-kilometre mine through the recycling of car batteries. While there are several production processes, there are few recycling processes, one of which is component recovery. Giancarlo Morandi concludes his speech with the word “resilience”; the temperature will increase for a while and we have not yet begun to worry about changing our infrastructure to make it RESIST climate change.

Marco Bussone, President of UNCEM (Italy), adds that there is a need for strong institutions, municipalities that communicate with each other and work together. It defines as a historical occasion,

the possibility of uniting territorial systems through ecosystem services, but in order to realize such an ambitious project we need guarantees, development, rebirth.

Andrea Gibelli, President FNM Spa and President ASSTRA (Italy), presented two emblematic projects of FNM. The first deals with the construction of the first Hydrogen Valley in the country. The design involves the use of 14 trains and 40 hydrogen buses in the mountain community of Valcamonica, but to lower the cost of hydrogen must involve the entire economy of the valley. The second section of Oxygen, urban regeneration, with reforestation and redevelopment of the Lombard territory through solutions such as chimneys to reabsorb pollutants and synthetic forests to reabsorb CO₂.

Gianantonio Arnoldi, CEO of C.A.L (Italy), says that to relaunch mountain tourism, road transport has a central role. This objective is in the sights of C.A.L. (Connessioni Autostradali Lombarde), which deals with several motorway companies such as the A36 Pedemontana Lombardy, the A35 Brescia-Milan (BREBEMI) and the A58 outer ring road of Milan. Along the route of BREBEMI, C.A.L. with the Politecnico di Milano is experimenting with a new Electric Road System (ERS) with induction charging of electric vehicles through a charger installed directly inside the highway.

Pierluigi Coppola, Politecnico di Milano (Italy), offers us the perspective of the university. Connectivity and accessibility are essential for economic development and life, especially for mountainous areas that see a gap in accessibility and a phenomenon of depopulation. We must invest, find effective solutions and ensure that these solutions are sustainable and environmentally friendly. There is no single solution to deal with all cases, the solution must be customized and specified compared to what is the starting point.

In High Summit Pre-cop26 not only Italy but also other countries of the world were discussed. Amrit Ratna Shakya, a member of the European Economic Chamber EEQ, recalled that Nepal is a country heavily dependent on tourism. Nepalese locations such as Shangri-La and Mount Everest, bring 2.5 million tourists a year. The Covid has greatly reduced the influx of tourists leading to serious difficulties in the economy of the country. Now the Nepalese are vaccinated and Nepal needs to regain its tourist flow. Connectivity is also essential for Nepal.

The ecological transition must not leave anyone behind, neither mountainous territories nor southern Italy. We are running towards unemployment, energy dependence, relocations and increases in the cost of raw materials, it is our duty to change, but it is also our duty to ensure that everyone can change.

This is not just a change, but an evolution of our society towards technologies, infrastructure and economies based on the production and use of clean and renewable energy and emissions 0. The use of FNM's hydrogen-powered means of transport and COBAT's circular economy are examples of how all this is not only possible, but it's already happening.

The implementation of an innovative project requires careful planning to create a healthy and possibly circular economy. It is necessary to invest; as for living beings a new society needs support to grow, after which, it will have to be able to feed itself while remaining in balance with the ecosystem.

List of speakers with link to the video of the presentation:

Marco Bocciolone, Politecnico di Milano (Italy)
Isabella Tovaglieri, European Parliamentary (Italy)
Link Video <https://youtu.be/qwSyrm9YBcY>

Marco Bussone, UNCEM President (Italy)
Link Video <https://youtu.be/ZHb1fedZIVM>

Giancarlo Morandi, COBAT President (Italy)
Link Video <https://youtu.be/jOwmvK7-oHk>

Andrea Gibelli, FNM Spa and ASSTRA President (Italy)
Link Video <https://youtu.be/z-FhQsyut2M>

Gianantonio Arnoldi, C.A.L CEO (Italy)
Link Video https://youtu.be/HYf-wWx1_eE

Pierluigi Coppola, Politecnico di Milano (Italy)
Link Video https://youtu.be/NaR_gP0zFps

AmritRatnaShayka, European Economic Chamber EEQ, Nepal; IEG EXPO Dubai President (Nepal)
Link Video <https://youtu.be/ESqzrOHvPoE>



Disruptive technologies and socio-economic sustainability – challenges and opportunities

Moderator: Efrem Ferrari, World Bank consultant for Pakistan and Afghanistan

The session dealt with technology and economics. Two issues apparently different from each other but in reality intrinsically linked to each other and - above all - both necessary to successfully face the two great challenges of this century: defeating climate change and poverty. Technology is an opportunity to address both climate change and the challenges of sustainable development.

Efrem Ferrari, consultant for international institutes of the World Bank (Italy), identifies the main factors enabling the spread of disruptive technologies - such as photovoltaic panels- in the least developed countries: funds - to identify, testing and disseminating disruptive technologies; investment - in human resources and infrastructure to support technology; strengthening the presence of the private sector, restructuring incentives and subsidies and reducing market entry barriers; specific information on the risks and benefits related to the use of technology and finally collaboration - multisectoral, multidisciplinary and between research and application.

Massimo Tellini, Head of Circular Economy at Intesa San Paolo Innovation Center (Italy), explains how a credit institution can become an innovation engine with particular reference to technology for the circular economy. The institute has mobilized six billion Euros in favor of companies engaged in circular technologies and founded in 2018, together with Fondazione Cariplo, the Circular Economy Lab (CE Lab). CE Lab aims to identify and test new circular economic models, able to combine business and economic development with the protection of human, natural and social capital. Training, collaboration and exchange of information - key issues for the CE Lab and that Intesa Sanpaolo has taken as pillars of its development strategy.

How finance approaches environmental sustainability is the theme treated by Giuseppe Vegas, former Deputy Minister of Economy who was also president of CONSOB. For some years now, financial companies have been investing preferably in sustainable societies, in other words, companies that produce goods and services that are perceived as sustainable. In the future, even marginal territories such as those in the mountains will be increasingly valuable. It will therefore also be necessary for the financial industry to define and develop investments directly dedicated to the redevelopment and

green promotion of these territories. From these considerations it is proposed to launch investments “territorial” or related to the green needs of a specific territory.

Communicating sustainability is just as important as investing. Lifegate Environmental Communication and Action Group, has made communication a key aspect and through a clear, shared and explained vision has succeeded in helping companies in diversified economic sectors to reduce and mitigate their environmental impact. Simone Molteni, Scientific Director of Lifegate (Italy), also highlights how the time has come to move and do it with courage: the demand for green services is in fact much ahead of both politics and companies. The National Observatory on Sustainable Lifestyle promoted by Lifegate describes how 78% of respondents are interested in and passionate about sustainable products and solutions to protect environmental ecosystems.

When we talk about climate emergency and sustainable development in mountain areas, we cannot fail to address the issue of energy generation, one of the sectors that contributes most to global CO₂ emissions. Lorenzo Giussani, Head of BU Generation & Trading at A2A (Italy) addresses the issue of green energy generation and the increasing importance of hydroelectric plants in energy systems of the future. Such plants can act as huge energy accumulators - by pumping water at times of overproduction from renewable sources and then releasing it at times of peak demand. They also make an important contribution to mitigating the effects of climate change - flooding, hydrological cycle management during dry periods. Hydropower is therefore an opportunity to address and mitigate climate change. A2A, a leading multi-utility in Italy, also faces the energy transition through a systemic approach based on collaboration with territories and communities.

Maria Teresa Melis, professor at the Università di Cagliari (Italy) discusses about digital mountains and how satellite technologies can provide accurate, essential and necessary information for the knowledge of the natural environment, monitoring the effects of climate change and, increasingly, contributing to the improvement of people's lives. The University of Cagliari catalyzes the use of these disruptive technologies also in developing countries, promoting crowd mapping campaigns through specific mobile apps. Because it is only through collaboration with local communities and the transfer of their know-how that the information produced can really produce knowledge.

The use of drones in the collection of environmental data has revolutionized the way of doing research, especially in remote environments such as the mountains. A disruptive technology, which has allowed to significantly increase the type and quality of environmental data collected, through a series of specific sensors for photogrammetric surveys of detail, thermal infrared analysis, multispectral analysis and LIDAR systems. Luca Greggio, technical manager of TIDALIS (Italy), demonstrates through various case studies the application of this technology in monitoring mountain ecosystems.

In developing countries, disruptive technologies offer the opportunity to reduce greenhouse gas emissions and at the same time improve the living conditions of rural populations. Paolo Sdringola, of the Energy Efficiency Department of ENEA (Italy), presents examples of energy efficiency for heating and cooking. High-efficiency stoves can also help to improve the quality of air inside the home, exponentially reducing the spread of diseases to the respiratory system. In the mountains of Nepal, ENEA has demonstrated how the increased efficiency of the stoves allows at the same time to reduce the consumption and therefore the extraction of timber, allowing this technology to be financed also through the carbon credits of the voluntary market.

If humanity has been experiencing for centuries the disruptive effect of technology on its own life, it is only in recent decades that this innovation becomes green - or green. Electrification in the transport sector - the conversion of energy sources from fossil to renewable - the production and consumption of goods and products designed to be reused, repaired, recycled.

Successfully addressing the challenges of the coming decades will require an ever more widespread use of green technology that will be able to prevail only if the economic context favours its development: green economy. This global effort must necessarily also be of interest to those parts of the world which have so far been on the fringes of economic and social development. One inhabitant of the earth in ten has no access to electricity and one in three still burns wood or coal in traditional stoves that are highly polluting and inefficient, as well as damaging to the environment.

List of speakers with link to the video of the presentation:

Efrem Ferrari, Consultant for Istituti Internazionali della Banca Mondiale (Italy)

Link Video <https://youtu.be/F5HRfAjKHnQ>

Massimiano Tellini, Intesa San Paolo Innovation Center (Italy)

Link Video <https://youtu.be/LxLzgVpNzRI>

Giuseppe Vegas, ex Economy Viceminister, ex CONSOB President (Italy)

Link Video <https://youtu.be/GWGmr9R4nC8>

Simone Molteni, Lifegate (Italy)

Link Video https://youtu.be/s6CvJ0d_t9g

Lorenzo Giussani, A2A (Italy)

Link Video <https://youtu.be/mfMrJPcfl8c>

Maria teresa Melis, Università di Cagliari (Italy)

Link Video <https://youtu.be/K4I7haZosQw>

Luca Greggio, Tidalis (Italy)

Link Video https://youtu.be/_F0Y_uKXZHY

Paolo Sdringola, ENEA Energetic Efficiency Department (Italy)

Link Video <https://youtu.be/7GsPI53GWCw>



Mountains of Europe: European strategies for Alpine regions

Moderator: Raffaele Cattaneo, Environment and Weather Councillor for Lombardy region (Italy)

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

The Alpine area is one of the symbols of European Unity, a place of encounter and union but also a border capable of preserving cultural riches and singularities. The economic, social and demographic differences present today in the different territories of the Alpine regions require the adoption of shared governance strategies and instruments of cooperation between the different states of the macro-region.

Raffaele Cattaneo, Environment and Weather Councillor for Lombardy and Councillor with political delegation to the European macro-regional strategy EUSALP (Italy), opened the session with a technical and political reflection on the vulnerability of the Alpine region to climate change, wondering how effectively the consequences of these processes are understood. In addition, Cattaneo highlighted the need for a paradigm shift, that is, change in the basic assumptions within the dominant political theory. The evolution will happen if we are able to spread the awareness, person by person, family by family, business by business, of the change we are going to encounter, especially in the mountains.

Sumair Ahmad Syed, Secretary forest, Wildlife and Environment Gilgit-Baltistan (Pakistan), exposed the difficulties of his region in facing major dangers due to climate change such as the retreat of glaciers and the increase in the number of lakes at risk GLOF. He also stressed the importance of further protection of Gilgit-Baltistan through the management and defense of wildlife and vegetation, concluding with a phrase addressed to all present: "Joining in efforts we can fight for the future".

Arno Kompachter, President of the Autonomous Province of Bolzano (Italy), adds that climate change marks the time when Europe can once again play an important role in the world, leaving the role of the "old Europe". Ecology for mountain environments can be a great lever on which to act, not only

for tourism, but also for the quality of life and for mountain agriculture that meets the new needs of the market and consumers. The president of the autonomous province of Trento also speaks of the need to give up lifestyles that do not respect the environment and ignore climate change, pointing out that in the end it will not be a lack but a change, we will not give up our quality of life, but we will improve it.

Mario Tonina, President of the autonomous province of Trento (Italy), points out that the scientific evidence on climate change is now clear, and now a political response is needed. The complexity of mountainous areas, both beautiful and fragile, requires common objectives and shared efforts. It is necessary to achieve the balance between valleys and cities and the mountain must establish itself as a laboratory of lifestyles to seek and allow a future in respect of the environment and the new generations. Urgent action is needed to implement appropriate mitigation and adaptation measures to climate change through the reduction of greenhouse gas emissions and increasing the resilience of the provincial territory.

Anna Giorgi, UNIMONT - University of Milan (Italy), has identified the strategic areas for the development of effective research and an innovation system in the mountain regions of Europe. It states that the mountain is the perfect living lab where to test effective solutions to adapt to the effects of climate change and promote ecology and ecological transition. It also recalls that the Alpine macro-region is not a poor region of the world; on the contrary, EUSALP comprises 7 countries, 42 regions, 80 million inhabitants and a GDP equivalent to that of Germany, where issues such as the green economy, innovation and cross-border cooperation take on a more rewarding meaning.

Rosalaura Romeo, Mountain Partnership Secretariat (Italy), spoke about the impact of climate change on the mountain economy at a global level, with depopulation and damage to food security. Much of the water that is used comes from the mountains, but this awareness is lacking in large international meetings. 1.9 billion people live in the mountains, and these people are migrating. Some 500 million people live in mountain areas affected by environmental disasters caused by climate change, environmental degradation and desertification.

Agostino Da Polenza, Evk2minoprio (Italy), argues that the mountains globally are the area where to immediately adapt to climate change, will be the high lands to suffer enormous demographic pressure in the event of rising sea levels. In view of this, Europe must recognize the specific nature of the mountains, in order to secure the natural and cultural heritage of these territories and to share its experience also with global actions. Italy, for example, has for years supported Pakistan's ambition to create large natural parks and to preserve its water resources, which have a formidable water reserve in the glaciers with the creation of the land registry of the 5300 glaciers of the Karakoram.

Overall, the session highlighted that a key factor among the various European strategies for the Alpine regions was dialogue. Policy and research need to understand the challenges to be faced so that new ideas and new opportunities can be realised. The scientific world is highlighting the major issues that climate change is bringing to mountain populations and pointing to solutions. Institutions such as the autonomous provinces of Trento and Bolzano, the Lombardy Region and EUSALP are working to implement new policies based on scientific knowledge and the participation of the territories at local level.

EUSALP is the first major cross-border collaboration project involving 7 countries, 42 regions, 80 million inhabitants and a GDP equivalent to that of Germany. The small mountain areas, which until now have been seen as relatively weak and isolated, are working together, joining forces and putting themselves at stake to become a competitive and self-sufficient reality. Collaboration is not only European but also global. Pakistan and Nepal, for example, are facing a serious crisis caused by climate change and the COVID-19 pandemic, for which aid from Europe and Italy in particular is needed.

The response to climate change must be translated into further change in our society. Differences and inequalities of opportunities between valleys and cities, between men and women, between progress and protection, must be resolved in respect of every specificity to unite efforts and achieve the common goal of living in balance with the environment that surrounds us.

List of speakers with link to the video of the presentation:

Raffaele Cattaneo, Assessore Ambiente e Clima di Regione Lombardia (Italy)

Link Video <https://youtu.be/CCR1SQogssU>

Sumair Ahmad Syed, Secretary Forest, Wildlife and Environment Gilgit-Baltistan (Pakistan)

Link Video <https://youtu.be/DTAkW-QMZRw>

Arno Kompatscher, Bolzano Autonomous Province President (Italy)

Link Video <https://youtu.be/6WJNx3b63RY>

Mario Tonina, Trento Autonomous Province Vicepresident (Italy)

Link Video <https://youtu.be/0F3l6R5qn9Q>

Anna Giorgi, Unimont - Università di Milano (Italy)

Link Video <https://youtu.be/vaqxIAm4DjM>

Rosalaura Romeo, Mountain Partnership Secretariat (Italy)

Link Video <https://youtu.be/n2Q6sVhmfqM>

Agostino da Polenza, EvK2Minoprio (Italy)

Link Video <https://youtu.be/FBcydaOiD3o>



Wellness in the mountains: an integrated approach to improving the well-being of high mountain communities

Moderator: Annalisa Cogo, Centro Studi Biomedici Sportivi, Università di Ferrara (Italy).

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

Over the past two decades, the dramatic consequences of destructive events including earthquakes, avalanches, forest fires, landslides, floods and other disruptive hydrogeological processes have highlighted the vulnerability of mountain communities to disasters, particularly in low-income countries.

The COVID19 crisis is now revealing how the vulnerabilities affecting the multiple dimensions of the community's well-being, have exposed hundreds of millions of people to risks and disasters and have made it more crucial than ever to improve risk reduction and implement resilience strategies. The theme of a "One Health approach" is deepened and represents a winning strategy of action.

Annalisa Cogo, Centro Studi Biomedici Sportivi, Università di Ferrara (Italy), explained that the mountain environment is an optimal context for respiratory rehabilitation, thanks to the low presence of allergens and low level of pollution. Climate change will have an impact on the health of the planet. As far as the mountains are concerned, the main problem is the heating of mountain areas. The increase in average temperatures can allow mosquitoes, ticks and other pathogen vectors to affect the inhabitants of higher altitudes, spreading diseases and allergens in new areas.

Giacomo Strapazzon, Deputy Director of the Institute for Mountain Emergency Medicine (Italy), discussed about the impact of Covid-19 in mountain communities and the distinctive features typical of pulmonary edema caused by Covid at high altitude.

Filippo Boroli, reanimator anaesthetist, Aitut Alpin Dolomites Italia and Hopitaux Universitaires de Genève, (Switzerland), highlighted the relationship between climate change and civil protection aspects such as the instability of the slopes and the increased risk of avalanches. At the same time, the increase in the number of tourists, often inexperienced, who practice mountain environments without adequate equipment and training, increases the incidence of the risk associated with destructive events.

Buddha Basnyat, medical director at the Nepal International Clinic (Nepal), shared some pathologies that are taking hold in Nepal, including COVID-19, tuberculosis, typhoid and dengue. In particular, because of climate warming, the mosquitoes of the genus *Aedes*, vectors of the dengue virus, are invading also the mountain regions infecting the local populations.

Bibiana Vilà, National University of Lujan (Argentina), who works in the Andes on Covid-19, shared the difficulties brought by COVID-19 to the pastoral populations endemic to the Andean highlands. The professor then discussed new research on the possible use of Lama glama antibodies to combat the infection of COVID-19, derived from testimonies of local populations regarding the healing effects of camelid blood.

Luana Giordano and Francesca Gaffuri, Servizio Fitosanitario Regione Lombardia (Italy), discussed the effects of climate change, human activities and globalization on the incidence of parasites and pathogens of plants. In order to address these problems, it is necessary to implement some key strategies such as developing and supporting the implementation of international standards for phytosanitary measures, reporting the occurrence, epidemic and spread of pathogens/parasites and inspect consignments of plants, plant products and other regulated articles. Finally, they recall the importance of the health of this kingdom, for which preventive interventions are rarely planned.

Alessandra Gaffuri, DVM, Committee for Small Grants of the European Association for Wildlife Diseases (Italy), stressed the importance of communication between the various actors, especially local, translating a local thought of action to a global "Think global, act local. The local action of many individuals can help to make the concept of One Health become a reality".

Summarizing:

the mountain is an optimal environment for health, in particular for the respiratory system, thanks to low or no pollution, the absence of allergens and other factors that provide the mountain air different and interesting properties at risk from climate change.

Through climate change, certain pathogens (diseases and allergens) such as ticks and mosquitoes, can reach previously inaccessible environments such as mountain environments, exposing the health of local populations to new dangers.

The increase in temperatures, due to climate change, is affecting the cryosphere and increasing the incidence of catastrophic events such as landslides and avalanches and therefore the risks to visitors, creating problems for the rescue system.

The Covid-19 pandemic also affected high-altitude populations with a continuous impact on resident population and tourism (economic impact). Animal and plant health is also essential to human health and is endangered by climate change.

Human and animal health are interdependent and at the same time both depend on the environment. One example is diet and food safety, intensive farming, the use of antibiotics, water pollution, deforestation and climate change that cause migratory population flows. A “One Health” approach is needed to ensure an adequate level of health for all living beings that are part of the mountain ecosystem.

List of speakers with link to the video of the presentation:

Annalisa Cogo, Università di Ferrara (Italy)

Link Video <https://youtu.be/l1vaSew86nw>

Giacomo Strapazzon, Istituto per la medicina d'emergenza in montagna (Italy)

Link Video <https://youtu.be/iOn1Hghz2Rk>

Buddha Basnyat, Nepal International Clinic (Nepal)

Link Video <https://youtu.be/VBHL86zSfDo>

Filippo Boroli, Aiut Alpin Dolomites (Italia) e Hopitaux Universitaires de Genève, (Switzerland)

Link Video <https://youtu.be/2rKzeTADti8>

Luana Giordano e Francesca Gaffuri, Servizio Fitosanitario Regione Lombardia (Italy)

Link Video <https://youtu.be/aTZCHaCBhXk>

Bibiana Vilà, Università Nazionale di Lujan (Argentina)

Link Video <https://youtu.be/woUux9Gtv-w>

Alessandra Gaffuri, DVM, Comitato per le piccole sovvenzioni dell'Associazione europea per le malattie della fauna selvatica (Italy)

Link Video <https://youtu.be/w39rbalLnrc>

Panel Discussion

Link Video <https://youtu.be/HXPTXIJOCok>



Youth for Climate (Youth4Climate) and the mountains

Moderator: Stefano Bocchi, Università di Milano (Italy)

You can see the full speeches of the individual speakers by clicking on the links next to the names at the bottom of this session.

On the morning of September 25, with the session YOUTH4CLIMATE wanted to give the stage and the word to the young people. To the reports of the students of the Minoprio Foundation were added two by students of the Università Statale di Milano (Edolo and Milan) and one by students of the Politecnico di Milano of the Lecco office.

The session was coordinated by Prof. Stefano Bocchi of the Università degli Studi di Milano, who started the work recalling the important role that, during the various training procedures, is covered by the so-called transversal skills. In order to achieve the results of education programmes for sustainable development and active citizenship, it is necessary, in fact, to strengthen four types of competence: knowing how to imagine a better future, through the formulation of possible scenarios; develop two forms of thinking: critical and systemic and complex; know how to participate and plan participation, interpreting democracy as a place of critical reflection; build and strengthen local and global partnership.

The students of the courses of the Foundation had the opportunity to present their interventions with group work prepared during the previous months. Their contribution was characterized both by a high numerical participation (already from the day before they proved attentive listeners in the different sessions), and by a high quality.

They opened the session with a journey through the main historical stages concerning climate and climate change, moving from the first conference of the parties, COP1, towards the approval of the Kyoto Protocol of 1992 to date with COP 26, an opportunity to concretize actions and strategies to really change course towards a safer future and a time to bring to attention the importance of mountains

as part of the “Earth” ecosystem. Subsequently, two major reflections are opened, on why we must act now and what we must do concretely. The action must be immediate and concrete because for a long time adverse climatic events, such as Typhoon Jolanda, have bent the populations before the concept of limited resource and the impact on the quality of life of the populations is always higher. The impacts of our actions are visible, for example, on the glaciers of the Italian Alps, just think that the ice of Forni over 150 years has had a retreat of about 2km. Although it is less evident to public opinion that the invasion of highly harmful insect species such as aphids in agricultural production is making the agri-food chain increasingly fragile and increasing efforts are needed to maintain biodiversity and biological control integrating different solutions.

The students of the Minoprio Foundation have proposed several “natural-based” solutions that bring social, environmental and economic benefits based on a greater enhancement of green areas through different technologies including green roofs, a type of roof garden, useful to capture CO₂, filter pollutants. Beyond the green roofs, there are so-called rain gardens to make the most of plant species able to withstand high levels of humidity and recover rainwater.

From the lads of the school of Minoprio comes a strong and clear signal of the growing interest of young people in climate change and the related crisis in place for populations and planet earth. Governments are asked to respond, to take concrete action and to listen to those who really care about their future.

With the reports of the students of the Statale were added the issues related to high-level training that addresses, integrating specialist courses, the complex issues of climate change and sustainability.

The students of the Università degli Studi di Milano address the impacts of climate change from a zoological point of view, for example, by observing the variation of the reproductive cycles of some species of birds as a function of the increase in temperatures, then moving on to the study of microorganisms in glacial environments. It is essential to integrate multi-level skills and knowledge to fully understand the consequences of climate change.

From the headquarters in Edolo, it is stressed that the mountain is a place of opportunities in different fields, from scientific research, economic development as well as education and training. The mountains remain a place to be respected and which requires careful planning with a view to sustainable development in order to achieve the objectives of the 2030 Agenda (Sdgs) relating to the mountains.

From the Politecnico an interesting contribution has been expressed on the modern techniques of planning, requalification, static consolidation and extension of a mountain refuge.

They were all useful and interesting contributions that allowed to understand and deepen the topics proposed by the conference. There were very intense phases of the session, phases that made it clear how many young people are carrying out their training courses with passion, seriousness and systematity, and how they are already making use of those transversal skills mentioned above. It is to be hoped that there will be greater reciprocal listening between this world of young people, which shows sensitivity and preparation, and the world of political decision-makers.

List of speakers with link to the video of the presentation:

Stefano Bocchi, Università di Milano (Italy)

Link Video <https://youtu.be/LUjWytCJBp4>

Emmanuele Romanò, Melany Galbiati, Alessio Torturo, Riccardo Bracci, Matteo Ammonini, Mattia Cappellato, Studenti Fondazione Minoprio (Italy)

Link Video <https://youtu.be/bY-wNkTMXSk>

Federico Garbagnati, Simone Bartoli, Alice Bianchi, Amos Vittori, Giorgia Ragazzini, Studenti Fondazione Minoprio (Italy)

Link Video <https://youtu.be/EsB0JS3mqr8>

Pietro Confalonieri, Giacomo Gatti, Elena Colzani, Iris Cazzaniga, Mathieu Mangiagalli Studenti Fondazione Minoprio (Italy)

Link Video <https://youtu.be/OKtYhx0n6qM>

Arianna Costa, Università di Milano (Italia)

Giacomo Campana, Unimont Università di Milano (Italy)

Niccolò Pirovano, Politecnico di Milano (Italy)

Link Video <https://youtu.be/gAZdFkPHsV0>

Video Studenti Fondazione Minoprio

Link Video <https://youtu.be/fBxOhUiOvjE>

CONCLUSIONS

Agostino Da Polenza EvK2Minoprio (Italy)

Maurizio Gallo EvK2Minoprio (Italy)

Benedetto Della Vedova, Foreign Affairs and Cooperation Ministry Secretary (Italy)

Link Video <https://youtu.be/TPAwc2rQcc4>

Stefania Proietti, Università Marconi, Assisi Mayor (Italy)

Link Video <https://youtu.be/CRFkoURuXIY>

JavedManwa, Minister Finance delGilgit Baltistan (Pakistan)

Link Video <https://youtu.be/rRTVoPhVbzs>



High Summit Pre-COP26 Workshop at KIU

August 25, 2021- Gilgit-Baltistan - Pakistan

EvK2CNR and KIU jointly organized Pre-COP26 Workshop at KIU on August 25, 2021. Mr. Fateh Ullah Khan Minister Planning and Information Gilgit Baltistan was the Chief Guest on this occasion. Whereas, Professor Dr Engineer Ataullah Shah, Vice Chancellor KIU was the Guest of Honor. Mr. Muhammad Naeem Vice Chancellor University of Baltistan (UOB) and Mr. Ashiq Ahmad Khan, Scientific Representative EvK2CNR were also present among other guests.

Mr. Fateh Ullah Khan, Minister Planning and Information Gilgit Baltistan said that the federal and GB government are taking the environment related issues and challenges very seriously and thus have taken several initiatives to cope with it. Ten Billion Tree Tsumani is one of such examples. He appreciated the role of Italian Government in conservation in Pakistan particularly in Gilgit Baltistan through several development and environmental projects in the past and those are executed presently. He hoped for the same cooperation in the future. He said that the EvK2CNR and now EvK2Minoprio are doing a great job in liaising between GB and Italian people and government contributing enormously in environmental and livelihood improvement in the region.

The Ambassador of Italy to Pakistan H.E Andreas Ferrarese addressed the audience through Zoom and expressed his appreciation for organizing a workshop addressing number of important thematic areas related to environment. He mentioned about the support from the Italian government to the Pakistan and particularly to GB in the past and also being implemented currently. He said that the Italian government would be financing Glacier and Students Project in Pakistan and GB to be started very soon. He assured to extend support in environmental conservation and livelihood improvement in the future.

Prof Dr Ata Ullah Shah said that KIU is carrying out several initiatives together with the local, national and international partners. He said that KIU, being the pioneer academic institution of GB, will continue to contribute to the research and development aspect of GB. He applauded the role of Government of Italy, and EvK2CNR in continued efforts and support for the sustainable environmental development in GB.

Professor Dr. Muhammad Naeem Vice Chancellor University of Baltistan, highlighted the activities the UOBS is carrying out to achieve the targets to tackle the challenges of environmental changes being an academic institution.

Mr. Ashiq Ahmad Khan, Scientific Representative of EvK2CNR delivered the keynote speech on mountain ecology, associated challenges and mitigation strategies. He, while speaking on the occasion, said that protection of forest in GB can lead to improved mountain ecology. The local communities, institutions and the civil society at large need to be more aware of the importance of natural heritage of the region.

Mr. Maurizio Gallo, President of EvK2Minoprio, while addressing the audience on zoom mentioned the efforts and initiatives of EvK2CNR and particularly the support from the Italian Government in the past couples of decades and that has continued till date. He said the Glacier and Student project will be implemented in Pakistan together with UNDP and local partners. He said the Twinning Project will aim at integrating the experiences from different national parks in Nepal, Pakistan, Kurdistan Iraq and Italy.

Earlier, Mr. Arif Hussain, Regional Manager EvK2CNR Gilgit Baltistan expressed thankfulness to the participants in the workshop. He also highlighted the background and objectives of the workshop that intended to highlight the environmental and mountain related challenges and practical solutions from several stakeholders.

Mr. Aurangzeb Buzdar, thanked the chief guest, guest of honor and other participants for their presence in the workshop.

Later Mr. Shahzad Shigri, Director Environmental Protection Agency Gilgit Baltistan, Mr. Yasir Hussain, Director Tourism and Youth Affairs Gilgit Baltistan, Dr. Farrukh, Director Pakistan Meteorological Department GB, Dr. Babar Khan, Ecosystem Specialist ICIMOD, Dr. Aftab Ahmad, Head of Department, IT Department KIU, Dr. Saeed Ahmed Representative of IUCN, Dr. Farasat Ali, Gilgit Baltistan Disaster Management Authority GB, Dr. Sher Sultan, Dr. Maisoor Nafees, Dr. Qamar Abbas, and Dr Shaukat of KIU presented their research work and proposed different solutions at local, national and international levels.

Mr. Sumair Ahmad Syed Secretary Forest, Wildlife and Environment GB participated in the closing session as a Chief Guest and presented the souvenirs to the speakers of the workshop.

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