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CIMA
Research
Foundation

ANNUAL REPORT



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www.cimafoundation.org



**CIMA Research Foundation
Annual Report 2022**

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Cosimo Versace.**

Thanks go to all the CIMA Research Foundation staff

@CIMA Research Foundation

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2022 was a year full of achievements but also of great changes. We celebrated 15 years in operation, years dedicated to scientific research that has not been unto itself and isolated but capable of rising to challenges and providing information and tools for protection from natural hazards (floods, droughts, wildfires), including climate change.

Unfortunately, it was also a year in which we saw a war break out, the one in Ukraine. It erupted right on the day we were traveling to Ethiopia, where an important event awaited us in Addis Ababa: the inauguration ceremony for the Situation Room at the African Union Commission. Financed by Italy, it was set up in partnership with UNDRR Africa, along with the other two rooms present, in Nairobi (Kenya) and Niamey (Niger), and constitutes a stride forward for the Early Warning System For All, as hoped for by Antonio Guterres. In the presence of Deputy Minister Marina Sereni, we celebrated a fundamental step in international cooperation between Italy and Africa, on the issue of natural hazards: these severely affect the continent but nonetheless bring consequences for the rest of the planet.

But since disasters – human ones included – do not respect anniversaries or ceremonies, CIMA Research Foundation was, in parallel, making its expertise available for the humanitarian intervention by the Italian Red Cross in Ukraine and the neighbouring states. The provision of a clear, prompt and constantly updated picture of the weather and climate conditions has in fact made an important



Science as we understand it has to be placed at the service of society, but always with participation by the communities involved

contribution to management of the aid to the population during the state of emergency caused by the conflict. It has enabled better direction of intervention, highlighting possible risk situations, making it possible to operate more safely. Thanks to one of the European programmes we were already involved in, PPRD East 3, we were able to provide this to a brief timescale. Some of the activities originally planned in this geographical area were reshaped to respond to the emerging needs of the country. A joint effort, where science and the institutions responsible for planning and intervening work together – something we learnt from the Italian Civil Protection Department, which we are part of – and with pride.

Science as we know it has to be placed at the service of society, but always with participation by the communities involved: we saw and experienced this also during the national drills on the island of Vulcano and the Strait of Messina.

At the same time, we carried on predicting the natural and climatic occurrences that surround us. And in this sense, 2022 was a year when, steered by the climate scenarios emerging from our research and their impacts, we also focused on water, monitoring and predicting the snow on our mountains, because today's snow is tomorrow's water. We looked at drought not only in Italy and Europe but also in the world, such as in the Horn of Africa region, where the polarization between extreme water-related events causes forced migration. This situation requires management and so we are investigating its predictability connected with natural hazards.

These are just some of the projects and challenges that we faced in 2022, and that you will read about in the following pages. But first, we'd like to report another landmark moment in our history: the merger with Acrotec. This entity started life as a spin-off of the inter-university centre, and was then a CIMA in-house foundation, becoming a part of CIMA in 2022. A vital union that means we will be able to pursue further technological development capable of converting research results into operational tools all revealing that high level of innovation that has always been our hallmark.

Happy reading!

01.

CIMA RESEARCH FOUNDATION





We have always been convinced of the importance of partnerships and sharing knowledge

CIMA RESEARCH FOUNDATION INTERNATIONAL CENTRE FOR ENVIRONMENTAL MONITORING

OUR FOUNDERS



We are a research organization committed to the study, prediction and prevention of hazards related to climate change, such as flooding, forest fires, drought, and loss of terrestrial and marine biodiversity.

We use data and mathematical models to forecast extreme events and simulate the impacts caused by climate scenarios, both in Italy and worldwide. This allows us to alert communities and plan mitigation and adaptation actions in time. We develop innovative approaches by placing citizen participation central to civil protection plans and strategies for adapting to and mitigating the impacts of climate change.

We also carry out the regulatory review of complex national and foreign institutional frameworks, legal compliance, analysis of the legal risks in risk management, and forensic investigation.

Our organization was founded as a non-profit research entity in 2007, but our history first began in the mid-1980s when the then Minister of Civil Protection, Giuseppe Zamberletti, entrusted the study of risk mitigation strategies regarding landslides and floods to Franco Siccardi, an Engineering professor at the University of Genoa. The Inter-university Centre for Environmental Monitoring was subsequently established, thanks also to the commitment by

Bernardo De Bernardinis, Deputy Chief of the Italian Civil Protection Department at the time. In 2007, we became the International Centre for Environmental Monitoring (CIMA), with the Civil Protection Department (DPC), Liguria Regional Administration, University of Genoa, and Savona Provincial Administration as founding partners. In 2019, ARPA Liguria also joined the Board of Directors.

As of 2012, we have been a Competence Centre in the Civil Protection system for hydro-meteorological and wildfire risks as well as for the legal sector on civil protection operators' responsibilities. A few years later, in 2018, we also became an operational organ of the Italian Civil Protection Department. Since 2020, we have been a member of the weather network Italia Meteo, the recently created Italian national agency, while we have been a partner in the COSMO Consortium for weather modelling since 2021. We also have an office in Albania, set up in 2011, and can count on a staff of 133 people. We are members of CI3R (Italian Center for Research on Risk Reduction), the Copernicus Academy and Global Compact.

Over the years, our research has expanded from the hydro-meteorological sector to other risk-related

133

HUMAN RESOURCES FROM
VARIOUS COUNTRIES

113

EMPLOYEES AND
CONTRIBUTORS



67
MEN

46
WOMEN

13

PHD STUDENTS



4
MEN

9
WOMEN

7

INTERNS



4
MEN

3
WOMEN





People who make it possible to carry out our various activities and reach our goals

THE VALUE OF PEOPLE

Research is a team game: we are fully aware and convinced of the importance of the people who make it possible to carry out our various activities and reach our goals, from the smallest to the greatest ones.

This is why we place the utmost attention on the well-being of the people who work with us, and we are committed, day in day out, to achieving greater equality and inclusion. With this in mind, we embarked on a betterment process in 2021: this began with the drafting of the Gender Equality Plan, and continued in 2022 with a targeted policy to make our research centre constantly more inclusive and egalitarian.

It is because of the importance we recognize in the people who make up our team that we always strive to improve our welfare policies (flexible working hours for a better work-life balance, remote working, company canteen, guest accommodation, a swimming pool, language courses, energy inflation bonus) and we invest in training. Starting with the youngest – in fact we offer internships and training opportunities, such as our Cerasmus programme and the University of Genoa PhD scholarships that we partially fund. In this case too our approach is based on equality and inclusivity: we seek to ensure a gender balance among students and interns, and we encourage participation by people from emerging countries.



7

**STRATEGIC
PROGRAMMES**

14

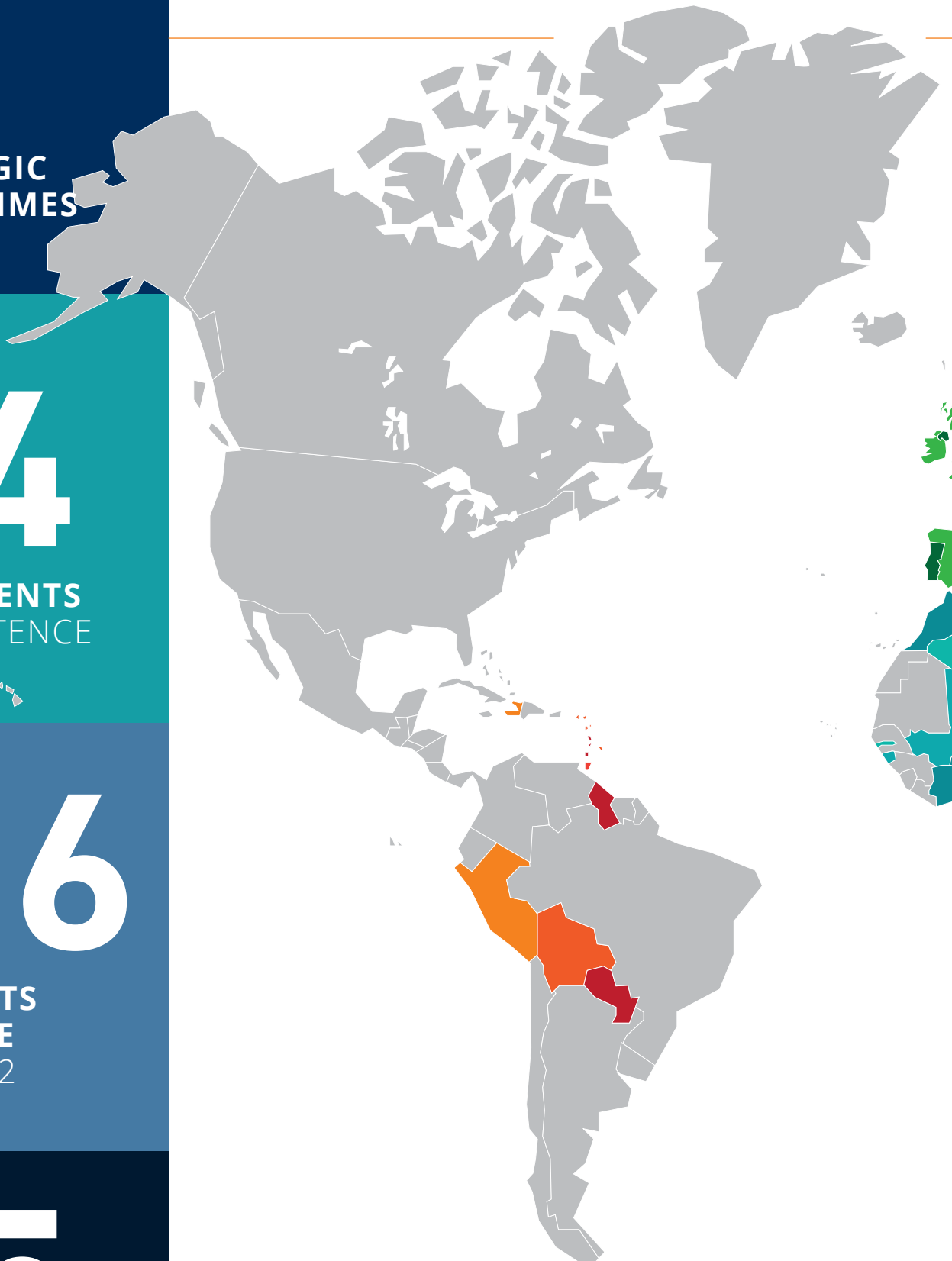
**DEPARTMENTS
OF COMPETENCE**

116

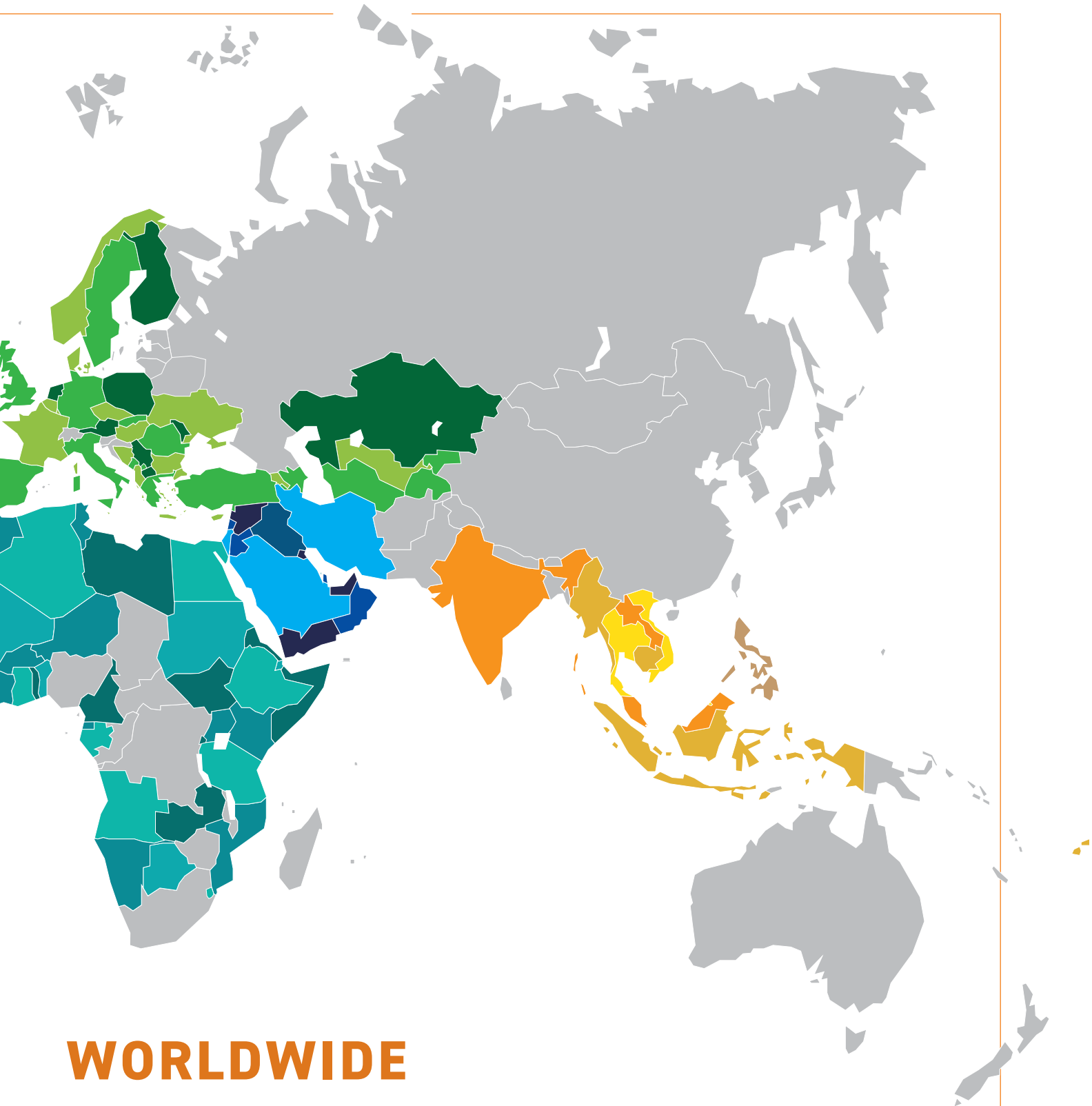
**PROJECTS
ACTIVE
IN 2022**

85

**ORGANIZATIONS
WE WORK WITH**



This map is for graphic representation only, and the borders shown do not imply official approval or acceptance by CIMA Research Foundation



WORLDWIDE

Risks, of any kind, know no borders. And likewise neither does scientific research, which is made up of international communities of scientists working together, side by side, for a common purpose: the safeguarding of life on our planet. This is why, although we began working on the specific nature of our national area and the frequent and devastating floods that affect it, we have also taken our expertise to Europe and other continents.

Natural disasters that occur in various parts of the world have an impact on all of us and our daily lives – not only in terms of migrations, but even on the price of tomatoes in our local shop.

MANAGEMENT AND ORGANIZATION

BOARD OF DIRECTORS

Luca Ferraris - University of Genoa
 Cosimo Versace - Acrotec Foundation
 Paola Pagliara - Italian Civil Protection Department
 Pierangelo Olivieri - Savona Provincial Administration
 Giacomo Raul Giampedrone - Liguria Regional Administration
 Carlo Emanuele Pepe - ARPA Liguria

PRESIDENT EMERITUS

Franco Siccardi

AUDIT COMMITTEE

Paola Tarigo - University of Genoa
 Cristiano Russi - Liguria Regional Administration
 Gaetano Mignone - Italian Civil Protection Department

Additional auditor:

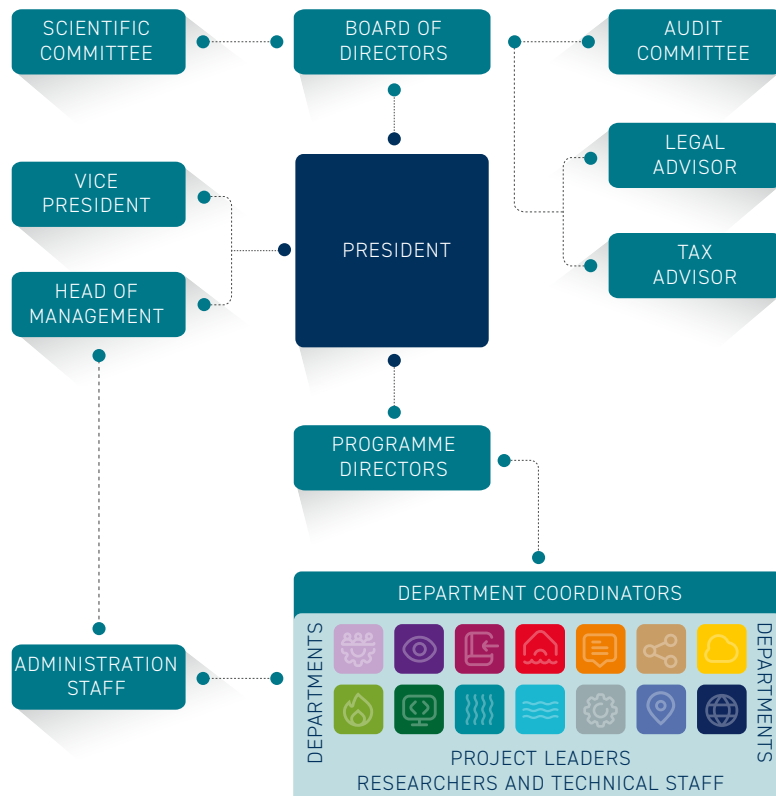
Fabrizio Valentini - Italian Civil Protection Department

SCIENTIFIC COMMITTEE

Luca Ferraris (President)
 Fabio Castelli (Secretary)
 Roberto Rudari
 Marco Massabò
 Lauro Rossi
 Simone Gabellani
 Marco Altamura
 Antonio Parodi
 Cosimo Versace
 Antonello Provenzale

DIRECTORS

Luisa Michela Colla
 Marco Altamura
 Marco Massabò
 Antonio Parodi
 Lauro Rossi
 Roberto Rudari
 Cosimo Versace



ORGANIZATION STRUCTURE

DEPARTMENTS COORDINATORS

Giuseppina Cappelluti
 Monica Corvarola
 Daniele Ferrari
 Paolo Fiorucci
 Simone Gabellani
 Marina Mantini
 Massimo Milelli
 Marina Morando
 Luca Pulvirenti
 Nicola Rebor
 Laura Rossello
 Federico Siccard
 Paola Tepsich
 Eva Trasforini

FINANCIAL SECTION

BALANCE SHEET 2022

REVENUE

Revenue from projects	12.888.136 €
Revenues from donations and 5x1000	5.455 €
Total revenue	12.893.590 €

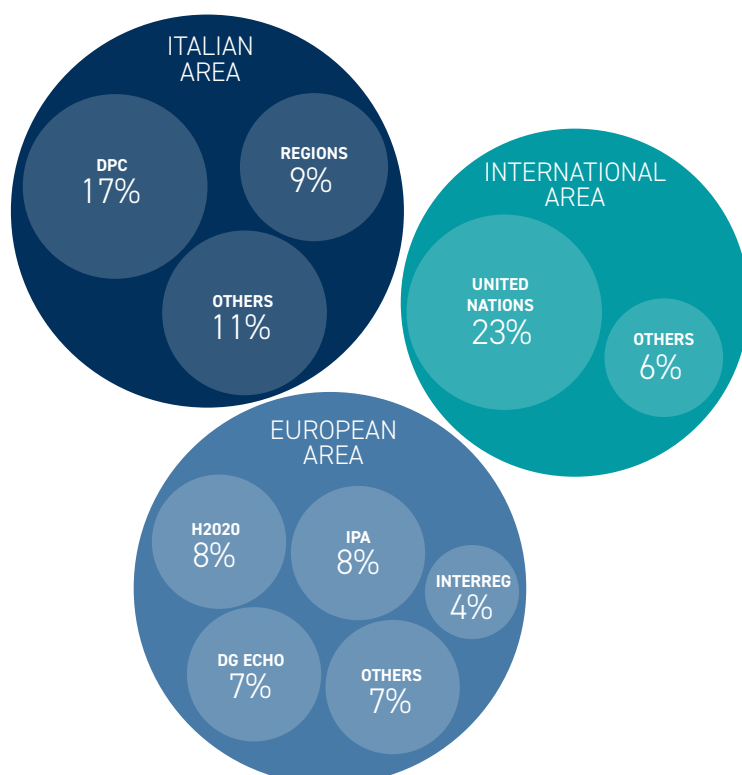
EXPENSES

Consumables (a)	382.387 €
Services (b)	4.805.360 €
Rentals (c)	263.727 €
Personnel (d)	6.655.770 €
Other operating expenditure (e)	553.267 €
Total expenditure (a+b+c+d+e)	12.660.511 €

PROFIT (NET OF TAXES)

96.555 €

FUNDING 2022



02.

ACTIVITIES

*Regione Liguria
Protezione Civile
volontariato*

cimα





Seven research programmes, which guide our work and are based on the experience we have accrued over time

OUR RESEARCH

The activities we conduct cover various areas of risk reduction and management, and therefore require different skills and tools that nonetheless work in unison. The perspective of our work is encapsulated in our seven programmes, which guide our research and are based on the experience we have accrued over time.

This is the case of the experiences gained in numerous centres for emergency and risk management, first in Italy and then all over the world. These stand as the foundations to the **Capacity Development for Resilience & Climate Adaptation** programme. The main programme aim is the structuring of a support process for capacities in prevention, prediction and adaptation to the impacts of climate change. Shaped by a scientific co-design approach and verification of the predicted impacts, the outcome is the fine-tuning of tailored strategies that enable the skills built together to be consolidated even beyond the end of our interventions, thus ensuring that the results are long-lasting.

These same issues are tackled in close synergy with the **Governance & Responsibility in Civil Protection Systems** programme, which identifies innovative and participatory pathways to serve communities. The programme also addresses the question of legal responsibility in civil protection activities, and also seeks to define a framework of regulatory tools for adaptation, as set out in the Italian context, and from the national to a local level. While in the meantime trying to identify recurring patterns of integration between the different administrative levels and, where existing, the responsibilities allotted to the various subjects, also comparing the Italian context with other systems.

Management of climate-related risks increasingly highlights the need not only to develop adaptation and resilience strategies, but also to deploy multi-risk methodologies.

These methods have to offer the scope to take into account different types of risks, their interactions, and their repercussions for society and the environment, while maintaining consistency between the scale and accuracy of the assessments and managing to deal with different levels of uncertainty. This is the approach taken by the **Multi-Risk Assessment and Data-Informed Policies** programme: it aims to provide solutions for correct policies for managing risks resulting from extreme weather events, through a series of targeted actions, which range from profiling on national and regional levels to assessment of the repercussions on emerging issues at an international level.

At the same time, we recognize the essential role that early warning systems (EWS) play in risk reduction. CIMA Research Foundation has been working on and with these tools since it was first founded, and it has channelled its know-how into **Impact-based Early Warning Systems on Climate Threats**.

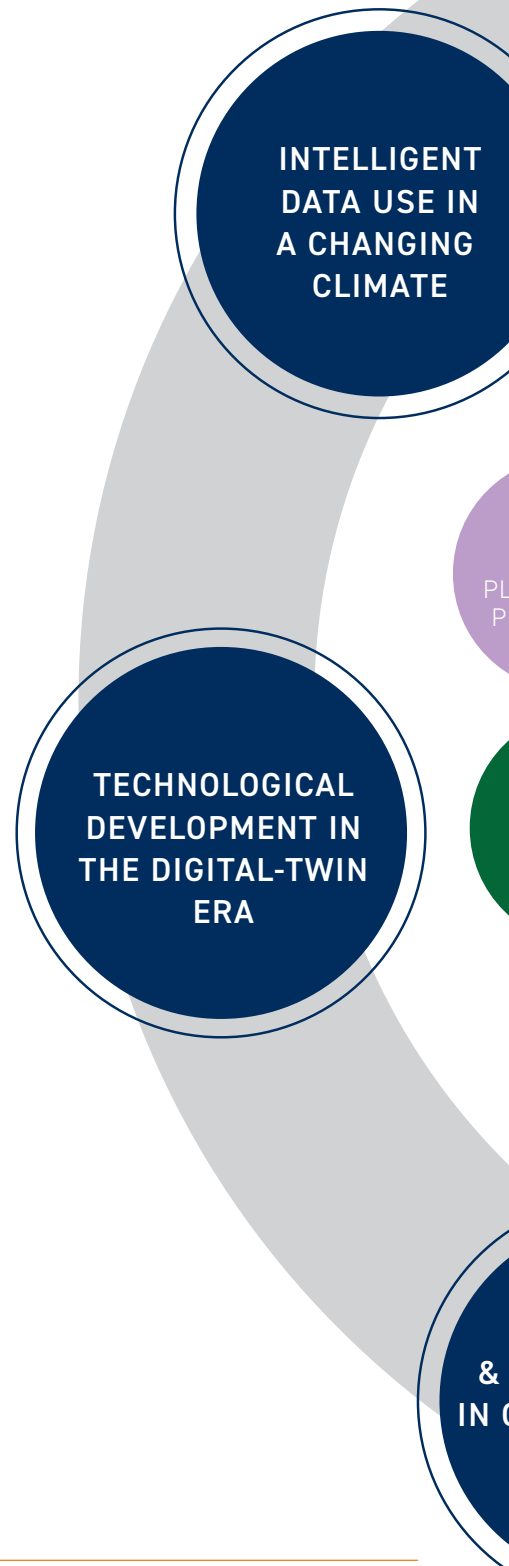
This programme involves the updating and development of the EWS forecast and monitoring components to provide detailed quantification of the impacts of weather and climatic events (floods, droughts and wildfires).

The programme plans to expand the forecasting range – from nowcasting to seasonal predictions – towards creation of seamless prediction systems, in order to meet the needs of different users and sectors, such as agriculture, hydropower, insurance and transport.

The **Emerging Nexus: Risk Resilience, Green Deal & UN Decade Ocean Actions** programme is another initiative tackling challenges in the context of climate change. This brings together projects related to the estimation of wildfire risk on all time scales, the effects on terrestrial biodiversity and the carbon cycle, and the link to the hydrological cycle. Instead, in the marine environment, it aims to boost biodiversity monitoring and strategies for analysing the ecological interconnection of marine areas, developing ecosystem integrity indices as support tools for estimating the sustainability of the Blue Economy.

By contrast, two CIMA Research Foundation programmes are more strictly technological and advanced research-oriented. **Technological Development in the Digital-Twin Era** traces out a path for enhancing existing high-tech solutions and services, as well as for developing new products and IT architectures. The main goals in this direction are: production automation, to shorten the chain between research, application and full operation; a better response to stakeholders' needs; and support for environmental monitoring activities. All this with a holistic approach that enables an increasingly realistic simulation of the individual processes that contribute to the development of natural phenomena, as with 'digital twins' – models that make it possible to provide increasingly complex but ever more realistic representations.

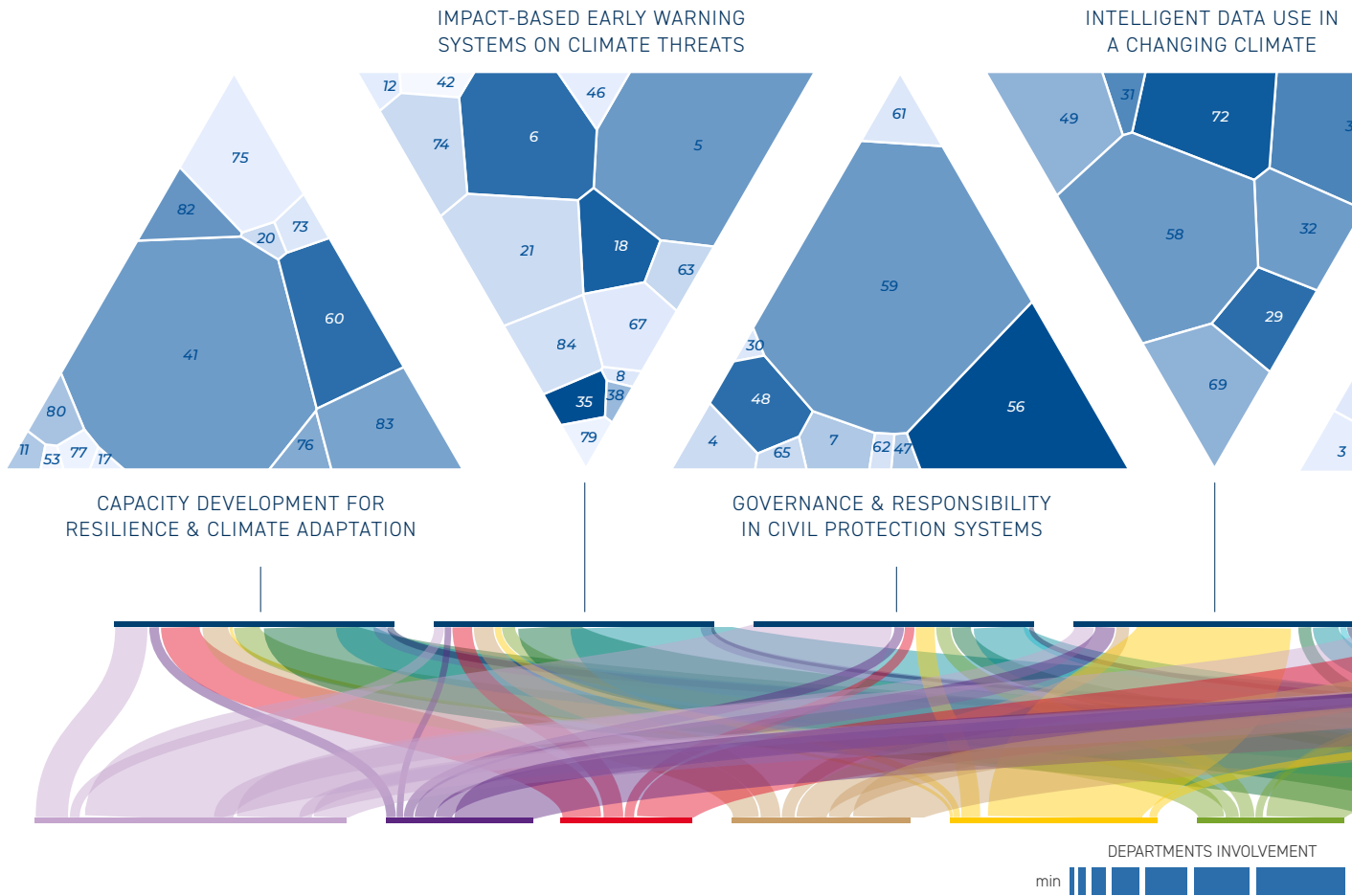
Lastly, the **Intelligent Data Use in a Changing Climate** programme is developing ever greater computational processing capabilities that can be applied to high-resolution space-time modelling, from nowcasting to climate modelling. This is alongside a more sizeable contribution by artificial intelligence techniques for climate scenario applications. The programme has a marked data-centred approach so that it can cross-connect other CIMA Research Foundation programmes and policies, and support the new paradigm on data and information use and sharing – key actions required by various stakeholders we work with, as well as by the international scientific community. The modelling capabilities and knowledge of processes at a detailed local level, experience in data assimilation techniques, and the development of platforms for data sharing, integrated with AI techniques (machine learning, in particular), enable their application both in impact-based real-time prediction and in the context of multi-risk profiles with a probabilistic approach.



PROGRAMMES AND DEPARTMENTS



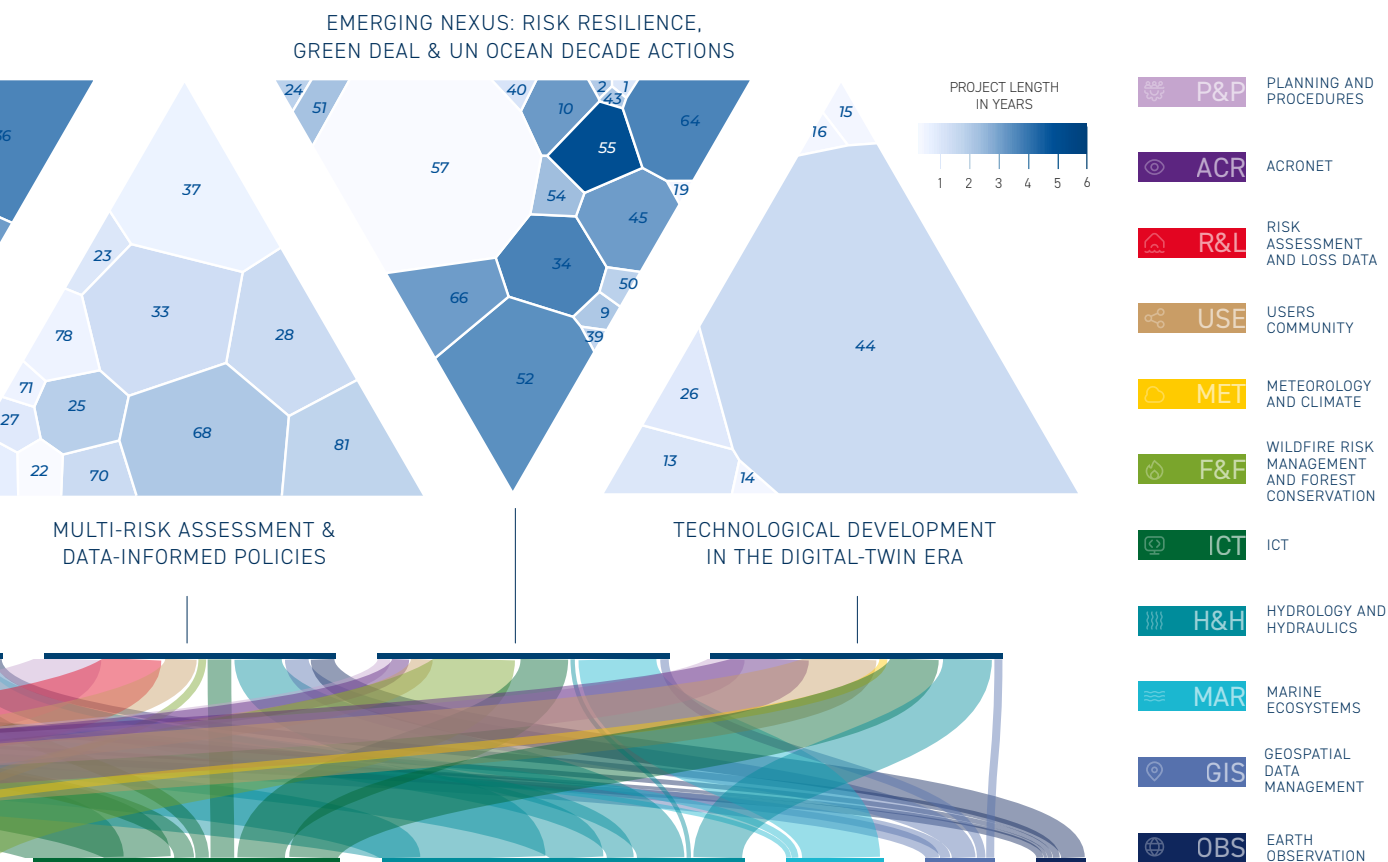
PROGRAMMES, PROJECTS AND DEPARTMENTS



- ACCOBAMS - Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
- InterMeD - Dataset collection and upload on Internet platform
- Empowering Developing Member Countries to Use Multispectral Satellite Images and Artificial Intelligence for Land Use and Coastal Planning - Senior Remote Sensing Expert (Applied Hydrology)
- AdriaClim - Regional plan for adaptation to climate change, by Marche Regional Administration (Interreg Italy-Croatia)
- APIS - Early warning and civil protection regarding flooding and drought in Sudan
- ARISTOTLE-eENHSP - All Risk Integrated System Towards Trans-boundary hoListic Early-warning - enhanced European Natural Hazards Scientific Partnership
- Prediction and monitoring of natural-original risks for civil protection and environmental issue purposes (ARPA Liguria)
- Strengthening disaster risk management at community level in Burundi
- Developing a universal beaked whale genotyping panel for assessing population level impacts of anthropogenic activities (Auckland University)
- Monitoring of nature and the coastline of Vado Ligure Port
- BORIS - cross BOrder RISk assessment for increased prevention and preparedness in Europe
- Implementation of Caribbean Dewetra Platform, training and workshops in Belize
- Scientific and methodology support in data input and output for the civil protection sector of Genoa Local Administration
- Water monitoring stations for Lecce Local Administration
- Relocation of water monitoring station for Quiliano Local Administration
- Weather alert for the Municipality of Stella
- CRISPRO - Security and Protection through Knowledge Synergies
- Flooding prediction, water resources assessment and analysis of the impact of climate change on the water cycle (Valle d'Aosta)
- Support in ONR tagging project (Duke University)
- ECOFRIENDS - Environment and Climate Operative Friends
- EDORA - Development and implementation of a drought impact database, a drought risk assessment methodology and a drought risk atlas
- EFLIP - Economic impacts of Flood risk in Lombardy and Innovative risk mitigation Policy
- Provision of an automated, global, satellite-based flood monitoring product for the Copernicus Emergency Management Service
- Weather and vegetation forecasting index (RISICO) for Lombardy
- 4MED Hydrology
- DTE Hydrology Evolution
- e-DRIFT - Expand Demand - Disaster Risk Financing and Transfer
- INDRA - Research and development of INtegrateD RAInfall measurements platform for application in agriculture, hydro-meteorological hazard prevention and mitigation, and water management
- E-SHAPE - EuroGEOSS Showcases: Applications Powered by Europe. A cloud-based contribution to Earth Observation
- Innovative automated seismic technologies for the safety of buildings and production plants
- Eurec4-0A - elucidating the role of the ocean meso- and submeso-scale in air-sea interactions and in the related exchanges of heat, carbon, oxygen, water and momentum, in cloud formation, and their overall impact in the climate system
- EVEREST - dEsign enVironmEnt foR Extreme-Scale big data analyTics on heterogeneous platforms
- Consultancy and operations services to create risk models for the whole of Italy, for Generali Spa insurance
- Flagship Report on Disaster and Climate Change Infrastructure (CDRI initiative)
- HSAF - Fourth Continuous Development and Operations Phase (CDOP 4) for the Satellite Applications Facility (SAF) on Support to Operational Hydrology and Water Management (H SAF)
- I-CHANGE - Individual Change of HABits Needed for Green European transition
- Flood-induced displacements in Somalia and Sudan
- RESERVAQUA - Optimizing water management in the agricultural sector
39. - 40. InterMeD-Dataset collection on Internet platform
- IPA Floods and Fires. EU Support for Prevention and Forest Fires Risk Reduction in the Western Balkans and Turkey
- Monitoring of weather and climate conditions for catastrophic events with damage production
- Human-animal-environment interactions in the Pelagos Sanctuary: potential climate change mitigation strategies and data collection
- IT-alert - public alert system for population
- CONCEPTU MARIS - CONservation of Cetaceans and Pelagic sea TUNA. Managing Actions for their Resilient Sustainability
- Data input and output platform for civil protection sector and promoting digitalization for the local police department of the Administration
- Scientific research applied to Local Administration services for preventing, monitoring and mitigating civil protection and wildfire prevention, enhancement of forest biodiversity, regional planning, monitoring and management initiatives

The projects represented in these infographics have been clustered, therefore the number shown

The infographics illustrate the relationship between the CIMA Research Foundation **PROGRAMMES, PROJECTS** and **DEPARTMENTS**. Each programme is represented by a triangle that has been divided into as many areas as there are projects belonging to it; size is proportional to 'weight' within the programme. Connecting lines are then drawn to represent the use of each department in relation to the various programmes: if there is a line, it confirms department activation, while line thickness quantifies the commitment in terms of time and resources.



max

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- 2. Water resources use
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- 5. Risk Management
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- 21. mitating risks for
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- 64. 14
- 65. 15
- 66. 16
- 67. 15
- 68. 44
- 69. 13
- 70. 14
- 71. 16
- 72. 15
- 73. 15
- 73. Strengthening the environmental information system in Haiti
- 74. GIRI - Development of a Global Infrastructure Risk Model and Resilience Index
- 75. AMHEWAS - Programme for a Continental Coordination, Early Warning and Action System in Africa
- 76. Strengthening disaster and climate resilience in Central Asia, and Establishment of National Disaster Loss Databases (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan)
- 77. Improving disaster preparedness and trans-boundary risk management in Malawi and the Southern Africa and Indian Ocean region
- 78. Development of a regional flood risk profile to support the Horn of Africa Partnership for Early Warning for Early Action
- 79. Development of a National Environmental Information System for Haiti
- 80. Development of a National Environmental Information System for Iraq
- 81. Addressing Drivers and Facilitating Safe, Orderly and Regular Migration in the Contexts of Disasters and Climate Change in the IGAD Region
- 82. RED EDUCAMA - Disaster Reduction and Education in Cabo Delgado and Manica (Mozambique)
- 83. Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin
- 84. CREWS - Climate Risk and Early Warning Systems, a Caribbean initiative
- 48. MAELSTROM - Smart technology for MArinE Litter SusTainable RemOval and Management
- 49. Meteorological Assimilation from Galileo and Drones for Agriculture
- 50. MED PSS - Developing a culture of wildfire risk
- 51. MED COOPFIRE - Mediterranean cooperation for the defence of forests against fire
- 52. MED Star - Strategies and measures for mitigating fire risks in the Mediterranean area
- 53. Support to the Science and Technology Museum of Addis Ababa - Guidelines on the setting up of the 'Water ' expo area
- 54. Vital Rates of Cuvier's Beaked Whales
- 55. Monitoring the effects of climate change on environmental factors to actively fight the risk of wildfires in Mediterranean ecosystems in the Cinque Terre Park
- 56. PITEM RISK - Thematic integrated plan (PITEM) for 'RISK': 'Resilience, Information, Sensitization and Communication to citizens'
- 57. National Biodiversity Future Center: scientific research for terrestrial and marine biodiversity
- 58. RAISE - Robotics and AI for Socio-economic Empowerment
- 59. RETURN - Multi-Risk Science for Resilient Communities under a Changing Climate
- 60. PPRDEAST3. Prevention, Preparedness and Response to natural and man-made Disasters in Eastern Partnership countries
- 61. Rural development programme: participatory strategies for adapting to climate change for Liguria Regional Administration
- 62. TO BE READY - Prediction, prevention and monitoring of natural and man-made risks for civil protection and wildfire prevention (Lombardy Regional Administration)
- 63. STREAM - Strategic development of flood management (Marche Regional Administration)
- 64. Activities related to prediction, prevention and monitoring of natural and man-made risks for civil protection, wildfire prevention and environmental purposes (Molise Regional Administration)
- 65. ROADMAP - European observatory on disaster risk and crisis management best practices
- 66. SAFERS - Structured Approaches for Forest fire Emergencies in Resilient Societies
- 67. Supply of Integrated Data for Hydro-meteorological Data and Information Dissemination Equipment, Software, Training and Manuals in Saint Lucia
- 68. Development of a multi-sensor precipitation grid for the Caribbean
- 69. SINOPTICA - Satellite-borne and IN-situ Observations to Predict the Initiation of Convection for ATM
- 70. Study and evaluation of risk scenarios for managing health emergencies on railway routes in Emilia-Romagna
- 71. Study and evaluation of risk scenarios for managing health emergencies on railway routes in Piedmont
- 72. TRIGGER - SoluTions foR mltiGatinG climate-induced hEalth thReats

own does not correspond to all the projects managed by CIMA Research Foundation in 2022.



AMHEWAS

Africa Multi-Hazard Early Warning and Action System for Disaster Risk Reduction

Funded by the Italian Ministry of Foreign Affairs and International Cooperation and the Italian Agency for International Cooperation, and helmed by UNDRR and CIMA Research Foundation, the African Multi-Hazard Early Warning and Action System (AMHEWAS) is a project implemented by the African Union to develop a continent-wide warning system.

The project has resulted in the creation of three centres so far. The first is the Continental Situation Room in Ethiopia (Addis Ababa) at the African Union Commission (AUC) headquarters. This is linked to the National Disaster Operations Centre in Kenya, at the Intergovernmental Authority on Development (IGAD), and to the Multi-Hazard Advisory Centre in Niger (Niamey) at ACMAD.

Based on the myDEWETRA.world platform, developed by CIMA Research Foundation and owned by the Italian Civil Protection Department, the system enables the decision-making bodies of the African Union Commission, the Regional Economic Communities, nations and international organizations to be informed of and updated on hazards and their potential impacts as floods or extreme weather situations.



ARISTOTLE-eENHSP

All Risk Integrated System TOwards Trans-boundary hoListic Early-warning - enhanced European Natural Hazards Scientific Partnership

The ARISTOTLE-eENHSP project is a fitting continuation of the previous ARISTOTLE project, implemented until 2018, and is led by the Italian National Institute of Geophysics and Volcanology (INGV); CIMA Research Foundation is the only other Italian partner. Funded by DG ECHO, the project aim is to provide the European Emergency Response Coordination Centre (ERCC) with a system of services on hazards deriving from natural occurrences (tsunamis, earthquakes, volcanic eruptions, flooding, extreme rainfall or wildfires), providing risk assessments and real-time information.

This network brings together both people working in research and those carrying out operational activities, focusing on multi-risk to strengthen prediction and prevention tools and to improve response to natural disasters. In this context, the project also aims to ensure knowledge exchange and coordination among partners, as well as to establish dialogue between the various national civil protection authorities.

The project partners provide their expertise through the Multi-Hazard Board (MHB), a multi-risk virtual operations centre in service round the clock, seven days a week. In particular, CIMA Research Foundation makes use of its 'Franco Siccardi' Situation Room during the periods when it is responsible for forecasting and monitoring events worldwide, tracking real-time predictions and potential flood and wildfire risk situations, with emergency activations and detailed reports upon request by ERCC.



Strengthening Hydro-Meteorological and Early Warning Services

The project is part of the broader Climate Risk and Early Warning Systems (CREWS) initiative – an international partnership for strengthening climate resilience and warning systems in the island states that are most fragile and vulnerable to disasters.

In this framework, the project stands as the component specifically dedicated to the Caribbean. CIMA Research Foundation has worked closely within this context with regional partners, in particular the Caribbean Institute for Meteorology and Hydrology (CIMH) and the Caribbean Disaster Emergency Management Agency (CDEMA), developing an innovative multi-sensor method for estimating rainfall in a region that includes Barbados, Saint Lucia, Saint Vincent and the Grenadines, and Martinique.

CIMA Research Foundation fully designed the data acquisition system, defining not only the quality control algorithm but also the one for merging the data, since these data come from various sources (in situ, radar, and satellite products). It then set up the operational product, which has high spatial-temporal resolution (500 m and 30 minutes) and enables users to have a real-time rainfall forecast. The data are made available for visualization and analysis on a dedicated portal (also put into effect by CIMA Research Foundation) as well as on the myDEWETRA Caribbean platform – the national version of the platform set up in the region and managed by CIMH.



Development of a regional flood risk profile to support the Horn of Africa Partnership for Early Warning for Early Action

Financed by the Swedish Ministry of Foreign Affairs and structured in conjunction with UNDRR, the project is part of the partnership for Early Warning for Early Action in the Horn of Africa, with the aim of establishing an Intergovernmental Authority on Development (IGAD) operational centre for disasters.

CIMA Research Foundation's work focused on defining a shared methodology for a regional flood risk profile for the Horn of Africa. Developed in 2021, this profile has been devised so that it can also be connected with food security, thanks to collaboration with the World Food Programme (WFP) and the IGAD Climate Prediction and Applications Centre (ICPAC).

This work continued in 2022, with the project activities brought together under UNDRR-IGAD: Enhancing Applications of the IGAD Regional Flood Risk Profile (Support to the Horn of Africa Partnership for Early Warning for Early Action, Phase II). This second part saw validation of the regional risk profiles developed during the first phase of works, and their bringing into operation, so that they could and can be used for ICPAC impact predictions and for food security purposes with WFP.



DTE Hydrology Evolution

Led by CNR-IRPI and funded by ESA, DTE (Digital Twin Earth) Hydrology Evolution pursues creation of a digital-twin prototype, this being a virtual replica of the Mediterranean Basin hydrological system. The project is the natural continuation of the previous DTE Hydrology project, which had already illustrated its potential for reconstructing the water cycle with high spatial and temporal resolution, using advanced tools such as cutting-edge satellite imagery, hydrological and hydraulic models, AI techniques, and advanced features of the digital platform.

While the first project focused its study solely on the Po Basin, DTE Hydrology Evolution has expanded its scope by creating a digital twin prototype for the entire Mediterranean Basin. This may be used for predicting hydrological extremes, managing water resources, and simulating the variations that the water network may undergo.

Within this context, CIMA Research Foundation provides its hydrological expertise and the modelling tools developed over the years. More specifically, this was the Continuum hydrological model, which incorporates data from European and global datasets, from satellites and from the atmosphere analysis by the European Centre for Medium-Range Weather Forecasts (ECMWF). It also supplied evaluation of the water balance on basin and regional scales, and simulated, by using satellite data and hydrological models, the flood event caused by the Apollo 'medicane' (Mediterranean hurricane) in October 2021.



I-CHANGE

Citizen Actions on Climate Change and Environment

Involving citizens in addressing the challenges posed by climate change and sustainable development is one of the cornerstones of European policies – and CIMA Research Foundation has always recognized its importance. This awareness is well expressed in the I-CHANGE project, funded under the Horizon 2020 (H2020) programme and coordinated by CIMA Research Foundation.

The project seeks to strengthen active participation and awareness on the climate crisis, environmental protection and sustainable development. The approach chosen is multi-disciplinary and participatory: several initiatives are included, from citizen science activities to educational and informative pathways that prompt understanding of the impact day-to-day habits can have on the environment.

So as to ensure the availability of the data, the tools and the apps developed, the

I-CHANGE Environmental Impact Hub will be created. This will also allow interoperability with the main European initiatives for data sharing and computational infrastructure.

In addition to coordinating the project, CIMA Research Foundation is also responsible for citizen science initiatives organized in Genoa, in conjunction with ARPAL, Liguria Regional Administration, and the Metropolitan City of Genoa Administration. These include: the setting up of web portals and smartphone apps that enable weather data to be collected and surveys to be distributed and compiled; the scope to provide residents with personalized and local information on possible environmental risks, and instructions on how to face them; the creation of climate change adaptation plans to improve risk perception and to strengthen the authorities' capacity to convey information clearly and effectively.



Flood-induced displacements risk assessment in Fiji e Vanuatu

In 2022, CIMA Research Foundation was commissioned by the International Displacement Monitoring Centre (IDMC) to conduct a study to assess the population displacement risk due to river floods in different climate change scenarios in the Fiji and Vanuatu islands. This work resulted in a report that highlights how, even in the most 'optimistic' climate change scenario (with a one-degree temperature increase by the end of the century), forced migration could at least double already by 2060.

Nonetheless, the most important aspect of the work carried out for IDMC is not the results themselves but the method used to assess the risk of forced displacement. For the study, our researchers in fact deployed a probabilistic methodology that provides comprehensive analysis of possible impact scenarios and their relative probability of occurrence.

A particularly innovative aspect of the work is the choice to consider not only physical vulnerability but also livelihood vulnerability, estimating the damage that could occur to an asset (such as a building or a crop field) and the loss of functioning that may result from this. Again within an approach of trying to integrate as many of the local area's aspects as possible, the study has also begun to investigate the effects on services to the population, such as schools and hospitals. This aspect has not been incorporated within the risk assessment methodology yet, but it nevertheless stands as an important factor for future studies, which will aim to understand how the unavailability of primary services increases the tendency to displacement.



Integrating Flood and Drought Management and Early Warning for Climate Change Adaptation in the Volta Basin

Financed by the Adaptation Fund, the project is implemented by the World Meteorological Organization (WMO), the Global Water Partnership and the Volta Basin Authority. Its goal is to improve the flood and drought warning system in countries sharing the Volta River Basin, which in recent years has experienced increasingly frequent and intense flooding and drought events. Managing and developing the entire basin poses various difficulties: besides being very large (covering approximately 400,000 km²), it crosses six countries and areas with different climatic conditions, from semi-arid to semi-humid.

Begun in 2019, the project aims to address these challenges by improving management capacity at different levels, including strengthening the warning system. It is precisely for this latter goal that WMO tasked CIMA Research Foundation with evaluating the warning systems of the six countries in the basin (Benin, Burkina Faso, Ivory Coast, Ghana, Mali and Togo) and with developing a regional risk profile for floods and droughts so as to provide useful information and recommendations for disaster management strategies.

CIMA Research Foundation is also responsible for implementing, at basin level, the VOLTALARM platform based on myDEWETRA. This is a cross-border warning system that enables basin countries to share data, forecasts and alerts on floods and droughts, while also providing timely information to reduce the impact of disasters at the national and cross-border levels.



IPAFF

EU Support to Flood Prevention and Forest Fires Risk Management in the Western Balkans and Turkey

Funded by DG ECHO, IPAFF is part of the Instrument of Pre-Accession (IPA) programmes by the European Union. Its goal is to mitigate flood and wildfire risks in the Western Balkans (Serbia, Bosnia-Herzegovina, Montenegro, North Macedonia, Albania and Kosovo) and in Turkey, while also bringing the legislative frameworks of the nations involved closer to EU civil protection provisions, with particular emphasis on regional cooperation.

These aims therefore require a two-pronged approach: on the one hand, analysis of the legal and institutional frameworks of the countries involved and, on the other, improvement of wildfire prevention and preparedness at national, regional and European levels. CIMA Research Foundation is involved for both aspects. In fact, over

the course of the project, it has supported the Italian Civil Protection Department in analysing and strengthening national legal frameworks for flood risk management (with particular reference to the European Floods Directive), also working on their implementation. Additionally, it is providing technical support for the development of wildfire risk assessments and risk management capabilities.

The ultimate goal is to improve the involved countries' capacities to develop flood risk management plans, also at the cross-border level, supporting inter-institutional cooperation and collaboration, while also ensuring the inclusion of flood warning systems in local emergency plans. Regarding forest fires, the project aims to strengthen the countries' capacities to develop a regional-level standardized methodology for risk assessment, and to develop and update risk assessments and management plans.



IT-alert

Experimental public warning system to directly inform the population the national drills on the island of Vulcano and the Strait of Messina

IT-alert is an experimental public warning system to directly inform the population. It sends useful messages to mobile phones present in a specific geographic area in the event of a major emergency or imminent or ongoing catastrophic event. CIMA Research Foundation is involved in developing the phone alert system and in organizing drills to test its functioning and related impacts.

Regarding these latter in particular, in April 2022 we took part in the drill to test the procedures for evacuation from the island of Vulcano, in the event of a warning phase connected to a possible volcano eruption being declared. Use of the IT-alert system as a tool for sending warning messages to the population was tested on that occasion. We also conducted interviews and surveys among the people present in

the area to identify any problems connected with applying the system and to check what the local population's reaction was.

In November, we were involved in the Exe Sisma dello Stretto 2022 drill to check the operational response by the Italian Civil Protection Department to a simulated earthquake event on or near the strait between Sicily and Calabria, and the consequent warning for any tsunami that could occur. In this case too, we tried out the phone alert system, and we began a participatory process with some local communities, aimed at involving the population in and improving civil protection plans.



PPRD EAST3

Prevention, Preparedness and Response to natural and man-made disasters in Eastern Partnership countries

Financed by DG ECHO, this programme pivots on strengthening risk resilience in the Eastern partnership countries (Ukraine, Moldova, Belarus, Armenia, Georgia and Azerbaijan) and on improving regional cooperation with the EU Civil Protection Mechanism. The main goals of the programme (now in its third phase) are to reinforce the disaster prevention and response capacities of the various countries involved, working on emergency planning, on strengthening early warning systems, and on connections between institutional stakeholders, civil society and the scientific community.

CIMA Research Foundation is involved in capacity development regarding the strengthening of alert systems, risk analysis, and data collection on post-disaster damage and loss. We are working to: boost national early warning systems; introduce Early Warning to Early Action strategies within emergency response plans to enhance the risk assessment capabilities of national civil protection entities; and support the development of national disaster risk assessments. It is worth noting that in response to the conflict in Ukraine, some of the activities previously planned for the area were restructured upon request by DG ECHO. In this context, we began producing the Impact Based Forecast (IBF), a daily bulletin that presents the weather forecasts for the Ukrainian territory, focusing on the variables that most affect humanitarian efforts, and with particular attention to logistics and the impacts of extreme weather events on vulnerable populations.



MED Star / MED COOPFIRE

The strategic MED Star project seeks to improve the management and prevention abilities of public institutions in the cooperation area (the Liguria, Sardinia and Tuscany regional administrations for Italy, and the Corsica and Provence-Alpes-Côte d'Azur regional administrations for France) in relation to the growing wildfire risks caused by climate change. The cross-border approach inherent in the project enables the integration of public risk management systems and coordination between administrations, while also leveraging the latest output from the applied research activities by the scientific partners.

At the same time, the MED Star project also coordinates the activities of four other projects (INTERMED, MED COOPFIRE, MED FORESTE and MED PSS) whose pilot actions and the infrastructure they have established are closely linked and complementary to the MED Star results.

CIMA Research Foundation has created a cross-border data-sharing platform that enables the competent institutions to be provided with a standardized package comprising information, monitoring data and maps for use during the operational phases of wildfire forecasting, prevention and active firefighting in the project area. CIMA Research Foundation has also enhanced and updated the PROPAGATOR software for simulating flame front behaviour – one of the tools available to the head of firefighting operations to support the defining of the tactical intervention scenario.



Climate Change Adaptation Strategy for Liguria Regional Administration

Together with mitigation, adaptation is the main tool we have at our disposal to tackle the effects of climate change. Within the context of implementation of the Italian National Strategy for Sustainable Development, the formulation of a Regional Climate Change Adaptation Strategy (SRACC) for the Liguria Regional Administration has been funded. In this, CIMA Research Foundation provided scientific support in conjunction with the Department of Architecture and Design at the University of Genoa and with CENVIS (Services Centre for Western Liguria).

We analysed the most up-to-date scientific information on climate change, along with the adaptation policies already planned and/or implemented by the Liguria Regional Administration. We then reviewed existing regional climate scenarios and determined the climate change scenarios for 2038-68.

Following this, we engaged regional administration officials and stakeholders to identify the main risks generated by climate change for different sectors (such as economic and production ones, but also environmental ones), pinpointing the main vulnerability factors and specific adaptation capacities for the Liguria context. Working with the regional administration, we defined specific matrices for each sector, relating the risks generated or aggravated by climate change to their respective adaptation goals and measures. In addition, targeted training programmes were devised with CENVIS to improve public awareness of climate change and the related adaptation policies.



GIRI

Development of a Global Infrastructure Risk Model and Resilience Index

As part of the action undertaken by the Coalition for Disaster Resilient Infrastructure (CDRI) – a partnership between governments, UN agencies and programmes, development banks and funding mechanisms, the private sector, and institutions – this project focuses on development of a fully probabilistic global multi-risk model for infrastructure worldwide, associated with geophysical and hydro-meteorological risks. Named the Global Infrastructure Risk Model and Resilience Index (GIRI), this model serves as the main input for developing a global resilience index that takes into account the risk implications for social and economic development, as well as measurement of infrastructure quality.

The GIRI assesses risk and resilience in critical infrastructure sectors (including energy, telecommunications and transport), acting as a tool to assist policymakers in making critical infrastructure more resilient to disaster.

This activity was coordinated by CIMA Research Foundation, which was also involved in development of the modelling part for flood and drought risks. It also developed an interactive and interoperable data platform that allows the visualization, consultation and sharing of risk and resilience metrics.



PITEM Risk

PITEM Risk is one of the Thematic Integrated Plans (PITEM) carried out under the Interreg ALCOTRA France-Italy cross-border cooperation programme. It is a plan that includes four different projects (RISK-COM, RISK-GEST, RISK-FOR and RISK-ACT); its overall aim is to strengthen risk prevention and resilience in the cross-border area through the definition, development and implementation of actions in the fields of communication, training and emergency management.

The main goal is to interconnect the risk management network with the one for emergencies, so as to activate joint solutions that foster resilience strengthening in the areas involved, also through implementation of innovative communication and education interventions able to directly reach the population.

As leader of RISK-GEST, CIMA Research Foundation has devised joint strategies for increasing risk awareness, and for improving knowledge of occurrences and the capacity to plan for emergencies and intervention abilities in the area. This is by establishing multi-level governance policies and with attention for bringing all the stakeholders into the discussion. The foundation has also taken part in all the other projects included in PITEM Risk, contributing its expertise and experience in participatory civil protection planning, legal responsibility, hydrological and meteorological modelling, training and communication to each project.



Developing a universal beaked whale genotyping panel for assessing population level impacts of anthropogenic activities

Part of the research conducted by CIMA Research Foundation centres on the marine animals populating the Pelagos Sanctuary, a protected area in the waters between France, the Principality of Monaco and Italy. It is within this context that the project *Developing a universal beaked whale genotyping panel for assessing population level impacts of anthropogenic activities* has been carried out, helmed by the University of Auckland. Started in 2022 and lasting for three years, the project particularly focuses on the study of beaked whales, a family that includes 24 species, many of which are still little known, thus making it difficult to establish their conservation status.

With the intent of improving knowledge of these cetaceans, the project has developed a set of genetic markers that allow the collection of more information from environmental DNA, this being the genetic material dispersed in the environment and derived, for instance, from faeces or tissue cells. The set of markers will enable rapid collection of information on the sex, species and population of the animals, even setting out from samples that are in a non-optimal state of conservation or are of poor quality or quantity.

As the leading partner for the Mediterranean area, CIMA Research Foundation leverages its expertise for one particular species: the Cuvier's beaked whale (*Ziphius cavirostris*), the only species in the family present in our seas, and somewhat elusive due to its lengthy apnoea at great depths. Samples (biopsies, breath samples, and environmental DNA) collected by our researchers during fieldwork at sea enable the development and validation of the set of genetic markers.

03.

PUBLICATIONS





Engaging with the scientific community has always been an essential part of advancing research

SHARING OUR KNOWLEDGE

Engaging with the scientific community has always been an essential part of advancing research. The various activities and studies conducted by CIMA Research Foundation have not only been the subject of national and international reports but also of numerous publications in sector-specific journals. The number of publications has steadily increased over the years: 2022 saw 32 scientific papers appear in almost 30 different journals (including some of the most prestigious in their respective fields). Many of these publications are open access, to encourage the broadest possible dissemination and sharing of results. All this bearing in mind that our teams of researchers are constantly engaged in projects that have highly operational and field-related components, which unfortunately cuts the time and restricts the conditions necessary for disseminating our results – so this is a figure we can be proud of.

However, the issue of gender proportions regarding the leading author still requires improvement. Here we have to acknowledge that there is an imbalance between the number of female researchers involved in projects and those who stand as coordinator for the publications. In this sense, our Gender Equality Plan has placed concrete actions on the agenda so as to compensate for and reduce this 'gap'. Nonetheless, we are well aware that publishing less is not a direct consequence of fewer skills or poorer quality of work, but rather a reflection of gender inequality present in academic research and scientific subjects, what are known as the STEM subjects. Yes, we recognize a small portion of the blame, but we are determined to improve.

The reports compiled for the projects we are involved in, and requested by the institutions we work with so as to provide the results, are too numerous to list

and are of various types. Still, some of these can be downloaded from our website because, although they might not appear in indexed journals, they are no less valid from a scientific standpoint. And, most importantly, they are just as useful for expanding knowledge regarding risk-related issues, their impacts, and conservation of terrestrial and marine biodiversity.

The CIMA Research Foundation publications in fact cover all the various areas of activity that our work focuses on, including studies in hydrology and meteorology as well as activities related to wildfire forecasting and monitoring, the use of satellite data, and studies on marine mammals.

The papers also highlight the vital role that working in partnerships plays for our researchers, since the vast majority of the papers are the fruit of work carried out with colleagues from other national and international entities. As we have already repeated several times in this document, sharing and teamwork are our mantra, and the variety of our research and the results we publish represent – unfortunately – only a small portion of what we do, but stand as tangible evidence of it.

FOR MORE INFORMATION ON THE REPORTS:
<https://www.cimafoundation.org/report/>

FOR MORE INFORMATION ON THE RISK PROFILES:
<https://www.cimafoundation.org/profili-di-rischio/>

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04.

www.cimafondazione.org

TRAINING





Getting ready to correctly manage natural risks, which, in the current context of climate change, are growing ever more frequent and devastating

TRANSMITTING OUR KNOWLEDGE

In a complex, fast-paced and tightly connected world like the one we live in, developing knowledge and skills in reducing risk and increasing resilience and adaptability to natural disasters is essential in order to achieve effective results.

This is why we channel time and energy into training, from academic training to capacity development for the specific project activities in the different parts of the world where we operate; in 2020, we developed our e-learning platform for these purposes.

UNIVERSITY

For CIMA Research Foundation, innovating means starting out from the education of the new generations and getting them ready to correctly manage natural hazards, which, in the current context of climate change, are growing ever more frequent and devastating. For this reason, and as part of the exchange activities organized with the University of Genoa, CIMA Research Foundation actively collaborates on both a Master's and a PhD course.

The NatRisk Master's Degree course lasts two years and is entirely in English. It aims to shape professional figures capable of managing the various aspects of natural hazards. Participants graduate as engineers who can deal with the technical and operational aspects of the problems, thanks to cross-discipline risk management training, enabling them to engage with all the types of specialists working in the various sectors: from prediction to prevention, from monitoring to emergency management. The last semester is structured with an internship at the operational centres of the Italian Civil Protection Department, also for writing the final thesis.

The Doctorate in Security, Risk and Vulnerability is an advanced education course (again at the University of Genoa) aimed at building new generations of researchers capable of facing the safety challenges of the future. More specifically, through the *Risk, Climate Change and Sustainable Development* programme, we offer a valuable opportunity for studies related to risk prevention and mitigation, placing these in a broader context of sustainable development, biodiversity conservation, and the protection of human life and other species. CIMA Research Foundation ensures teaching by experienced researchers and provides operational and scientific frameworks for PhD students. The programme stimulates networking with foreign universities, also for the issuing of a joint or multiple PhD qualification. One of the programme aims is, in fact, creation of new partnerships and synergies with a view to international cooperation for global environmental and social sustainability.

FOR MORE INFORMATION ON THE DEGREE COURSE:
www.natrisk.unige.it

FOR MORE INFORMATION ON THE DOCTORATE:
<https://sicurezza.unige.net/>

E-LEARNING

Driven by the global emergency linked to COVID-19 and the impossibility to conduct in-person training, our Moodle e-learning platform became operational in 2020. Since then, we have created 43 courses in 6 languages, involving 1156 participants from 49 countries worldwide. This has enabled us to:

- quickly and easily replicate the themes and topics covered, adapting them to the various needs and contexts
- test out the most engaging synchronous and asynchronous methods, while improving learning and the learning experience
- expand the number of beneficiaries through the Training of Trainers mechanism, and through availability of the online course material that is regularly updated and always consultable
- reduce the environmental impact in Italy and abroad associated with training-related travel and movement.

FOR MORE INFORMATION ON E-LEARNING:
<https://edu.cimafoundation.org/>



43 COURSES · **6 LANGUAGES**
1156 PARTICIPANTS · **49 COUNTRIES**

CAPACITY DEVELOPMENT

Being able to transmit and adapt the skills and intervention capabilities built by CIMA Research Foundation to other contexts has, over time, become one of our research foundation's vital assets. Our knowledge of the warning, prediction and prevention systems for flood, drought and wildfire risks, resilience and adaptation to climate change is a heritage to be shared with the communities and institutions that we work with.

Partnership and cooperation are essential aspects of this programme, which enables the consolidation and development of new strategic alliances with international organizations and entities, as well as with the national civil protection departments of various nations. These aspects also foster new relationships with universities and academies, especially in the intervention countries.



THE CETASMUS PROGRAMME

As part of our research on marine ecosystems, in 2011 we launched a free residential internship experience on methods in monitoring cetaceans in the Ligurian Sea. The programme combines theory modules, including specific seminars and workshops, with technical and practical work at sea aboard the Headwind catamaran, owned by CIMA Research Foundation and used in the collection of data on the distribution, number and behaviour of marine mammals.

Students and researchers from all over the world can apply at any time of the year. Priority is given to candidates from emerging and developing countries, while a commitment of at least 5 months (from May to September) is required for the summer period. In 2022, we welcomed 17 Cetasmus students from Italy, France, Germany, Canada, Portugal and Poland, and they were able to benefit from our know-how in marine biodiversity management.

FOR MORE INFORMATION ON CETASMUS:
<https://www.cimafoundation.org/cetasmus-programme/>



17 STUDENTS · 6 COUNTRIES

HIGH QUALITY WHALE WATCHING®

Whale watching is a commercial tourism activity that involves a nature excursion where sea mammals are observed from a boat, in their natural environment. The rising number of people interested has led to sizeable growth in this economic sector within marine tourism. Worldwide, scientists, governments and whale-watching firms themselves are evaluating the potential impact of this activity, to identify and share best practices for offering whale-watching in a responsible and sustainable manner.

To monitor this activity and ensure a quality service, the High Quality Whale Watching® trademark has been created: registered by ACCOBAMS and developed in keeping with the Pelagos Agreement, CIMA is its sole certifying body for Italy. The trademark identifies operators who have committed to respecting the environment, animals and the code of good conduct for observing cetaceans during their business practices. The procedure for assigning the trademark is only after voluntary request by the operators.

FOR MORE INFORMATION ON HQWW®:
<https://www.cimafoundation.org/high-quality-whale-watching/>



05.



CLIMA E
PROTEZIONE CIVILE:
PREVEDERE
PER PREVENIRE,
PROGRAMMARE
PER AGIRE.

Seminari tra politica, scienza e arte:
Installazioni artistiche e seminari
anniversario di Fondazione CIMA

EVENTS 2022

cima

cima



We are driven to be present at 'important' events, not only as speakers and attendees, but also with more active involvement

ENGAGING THROUGH OUR EXPERTISE

Participation, and likewise sharing and dissemination, are among the key words to describe our work and our commitment.

That is the same commitment that we put into projects, scientific research and development of operational tools, and that drives us to be actively present at 'important' events, not only as speakers and attendees, but also by contributing through talks or written articles.

Here we have pointed out several of these events, certainly omitting some that are no less prominent. Nevertheless, we wanted to highlight those that left their mark in 2022, not only for us but also because of their relevance for the context we operate in and the topics we deal with.

We were invited by AICS (Italian Agency for Development Cooperation) both to Senegal, where we contributed to the Italian Cooperation stand at the World Water Forum, and to COOPERA in Rome, at the States General for International Cooperation (which had not been held for three years). Both were very interesting experiences since they are not typical contexts for a risk research centre.

Here we cannot fail to mention COP27, in Sharm-El-Sheik, in the presence of the Italian Prime Minister, and the event centring precisely on Italy's role in building the Early Warning for All system that has us on the front lines in Africa. We are aware that there is still much to be done, yet we are equally determined to make our contribution.

The UNDRR global meeting in Indonesia instead brought important recognition for the work we do with the various United Nations agencies, and in an area of the world heavily affected by the impacts of

climate change. It was also a unique opportunity for enriching and multilingual discussion with colleagues from all over the globe.

Then October is the month when we are more visible than ever because the public agenda focuses primarily on Disaster Risk Reduction Day (13 October). It is also Civil Protection Week – a time when we are involved on all fronts as a Competence Centre. The week's high point is the I DON'T TAKE RISKS campaign, which we see as extremely important, and we are in fact its co-organizers. And then there was Genoa Science Festival, 'our' festival, since it takes place in Liguria, and hinges entirely on science. This year, with the I-Change events – our project on citizen science to be tested as a tool for raising awareness among citizens – we challenged ourselves with numerous workshops that provided us with the chance to measure our ability to reinvest our 'discoveries' in society and also to communicate – an essential feature for contemporary science.

We'd like to take the opportunity here to thank our team members who are often behind the scenes, carrying out tasks in the form of secretarial work, assistance, organization, management or administration duties (and this list is by no means complete), all of which make it possible to achieve the highest technical and scientific results. These people also take good care of their colleagues, particularly during events and missions.

Thank you!

28
FEB
2022

CONTINENTAL SITUATION
ROOM INAUGURATION
AFRICAN UNION COMMISSION
(ADDIS ABABA)

22-27
MAR
2022

PRESENCE AT WORLD
WATER FORUM, AICS
PAVILION
(DAKAR)

7-9
APR
2022

VOLCANO RISK DRILL
&
IT-ALERT TRIAL RUN
(VULCANO)

10-16
OCT
2022

NATIONAL CIVIL
PROTECTION WEEK
(ROME)

5
SEP
2022

15 YEARS OF CIMA
RESEARCH FOUNDATION
(SAVONA)

EU
PROT
(

15-16
OCT
2022

I DON'T TAKE RISKS
(ITALY)

20
OCT
2022

GENOA SCIENCE
FESTIVAL
(GENOA)

1
NOV
2022

6-18
NOV
2022

COP 27
(SHARM EL-SHEIKH)

EVENTS 2022

23-28
MAY
2022

UNDRR GLOBAL
PLATFORM
(BALI)



COOPERA 2022 - ROME



EUROPEAN CIVIL PROTECTION FORUM (BRUSSELS)



15 YEARS OF CIMA RESEARCH FOUNDATION (SAVONA)



UNDRR GLOBAL PLATFORM - BALI

28-29
JUN
2022

EUROPEAN CIVIL
PROTECTION FORUM
(BRUSSELS)

23-24
JUN
2022

COOPERA
STATES GENERAL FOR
INTERNATIONAL
COOPERATION
(ROME)

1
DEC
2022

MEDITERRANEAN
DIALOGUES
(ROME)

2022 FOCUS

06.



ART AS SCIENCE, SCIENCE AS ART.

"The greatest scientists are also artists"

Albert Einstein

Risk mitigation and civil protection, which have always been central in the CIMA Research Foundation work, are based on highly technical models, algorithms and analysis. Yet their implications directly affect our well-being and safety, and sit close to all. This is why the crossover between art and science becomes one of the most important paths for us to explore in taking these issues outside of the long-standing 'ivory tower' of science.

For this reason, we decided in 2022 to embody our exploration of art – which began with the birth of the

foundation itself – in a website to tell the story of this project. The works brought together, and belonging to our collection, narrate some of the greatest challenges that humanity is called on to tackle today: drought, flooding, wildfires, pollution, climate change and biodiversity loss. They speak, through images, of events that we have had to face in the past and that we will also be faced with in future. These pictures show our planet's wealth, urging us to reflect on our role in the complex dynamics governing it.



GENDER EQUALITY PLAN

OUR JOURNEY TOWARDS INCLUSION, DIVERSITY AND GENDER EQUALITY

"Disasters don't discriminate, but people do... disasters reinforce, perpetuate and increase gender inequality, making bad situations worse for women"

UNISDR

The Gender Equality Plan is a document required by the EU for participation in European Horizon 2020 research calls for proposals. Officially defined as "a set of commitments and actions that aim to promote gender equality in an organization through a process of structural change", for us it has provided a distinctive boost not only towards equality, but more broadly towards greater inclusion and diversity within CIMA Research



Foundation, and above all is an opportunity for growth and improvement in our work. During 2022 we embarked on

a journey that started from within but had the vision to go beyond the boundaries of our organization, making our contribution towards a more egalitarian society that fights all forms of discrimination, particularly within our field of work, that of risk and scientific research.



CIMA PARTICIPATION AT THE 'WE RUN FOR WOMEN' RACE

RESPONSIBILITY TOWARDS OUR LAND

"Science is but a perversion of itself unless it has as its ultimate goal the betterment of humanity"

Nikola Tesla

We would not be who we are if we were not aware that our individual identity also derives from the land where we were born and raised: Liguria – as beautiful as it is fragile, and unfortunately always exposed to natural risks. We also believe, along with Nikola Tesla, that "science is but a perversion of itself unless it has as its ultimate goal the betterment of humanity". For this reason we are committed to reinvesting our knowledge in communities and society in general, by taking part in public events, from press conferences

to conventions, from local improvement projects to education in schools (for about **500 pupils**, from elementary to high school) and in associations (such as Marca Aleramica, the various Rotary clubs, the ANCI association of Italian local authorities, the CEA environmental education centres), through to festivals, such as the Genoa Science Festival where the 2022 edition saw us stage workshops attended by about **1000 students**.



THE I DON'T TAKE RISKS CAMPAIGN

"Behaviour models can save lives. Above all, drill procedures are not primarily for rescuers, but instead for residents, who find they might have to face such an event and need to know how to behave"

Giuseppe Zamberletti

"Italy is a country exposed to many natural risks, but individual exposure to each of these can be significantly reduced through knowledge of the problem, awareness of the possible consequences, and adoption of some simple precautions." These are the opening words on the website for I DON'T TAKE RISKS, a nationwide communication campaign on good civil protection practices, promoted by the Italian Civil Protection Department in conjunction with CIMA Research Foundation, INGV (Italian National Institute of Geophysics and Volcanology), ANPAS (Italian National Association of Public Assistance) and ReLUIS (Network of the University Laboratories of Seismic Engineering), in conjunction with the Conference of

Italian Regions and Autonomous Provinces and ANCI (Association of Italian Local Authorities). Created in 2011, we strongly believe in this initiative that grows richer in new elements and partners every year. It starts from Italy's squares and volunteers, to then reach social networks and television, thanks to the live coverage in partnership with the Italian public broadcasting company RAI.

Its 12th edition was held on 15 and 16 October, in 600 local administration areas and with over 700 volunteer organizations taking part. We were involved in arranging various activities, from training the volunteers to initiatives in the squares, through to communication, also during the live broadcasting.





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