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quality of life,
competitiveness and
sustainable development
for mountain populations



Ev-K²-CNR COMMITTEE

At the end of the 1980s, the idea that mountaineering was not the only way to value the mountains began to reemerge. Thanks to the meeting of minds between Agostino Da Polenza and Prof. Ardito Desio, the enlightened intuition of moving beyond the concept of conquest took on a new shape. In 1987, they founded the Ev-K²-CNR Project, paving the way for scientific research at high altitude with the remeasurement of Everest and K2, in collaboration with the Italian **National Research Council (Consiglio Nazionale delle Ricerche - CNR)**.

Just two years later, in 1989, the **Ev-K²-CNR Committee** was founded, an independent, private, non-profit association for the promotion and development of technological and scientific research in the Hindu Kush-Karakorum-Himalaya (HKH) region, placing particular emphasis on Nepal, Pakistan, China (Tibet Autonomous Region), India and Bhutan.

The Committee, still led today by Agostino Da Polenza, conforms to the strategies and commitments of **CNR**, regarding management of research; knowledge development; promotion of innovation and research networks; and support of public administrations and technological solutions that meet the needs of mountain populations through capacity building and international cooperation. Following these guidelines, about a dozen projects are carried out every year, within the framework of three-year strategically-planned programs.

Committee members include researchers from CNR institutes, Italian and foreign universities and other experts. Together, they form a strong network of collaboration operating through intergovernmental and inter-institutional agreements involving UN Agencies, national scientific institutions and NGOs, to ensure the high quality of research and optimization of results.

Thanks to ongoing support from **CNR**, the **Italian Ministry of Foreign Affairs** and the **Ministry of Education, Universities and Research**, and in collaboration with the **Ministry of Economy and Finance** and the **Ministry of Agricultural and Forestry Policy**, Ev-K²-CNR contributes to substantially improving the wellbeing, quality of life and economic opportunities of mountain populations, while protecting and valorizing mountain natural resources.

The Ev-K²-CNR Committee **mission**: Provide specialized scientific support aimed at the sustainable development of high altitude remote areas to ensure environmental conservation and quality of life for local populations by furthering scientific knowledge, transferring scientific results applied to sustainable management of mountain regions, pursuing capacity building activities, and promoting cooperation in the respect of local cultures and traditions.

In collaboration with and with the support of:



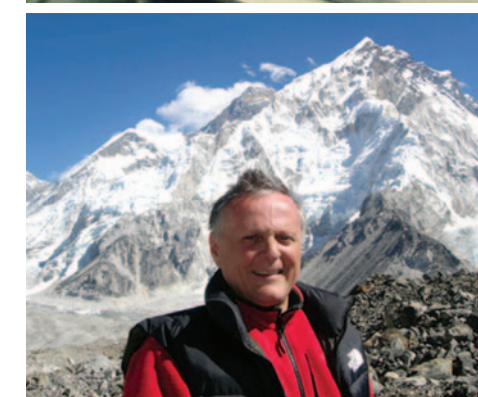
National Research Council



Royal Nepal Academy of Science and Technology



Ministry of Foreign Affairs
Ministry of Education, Universities and Research
Ministry of Political and Forestry Policies
Ministry of Economy and Finance
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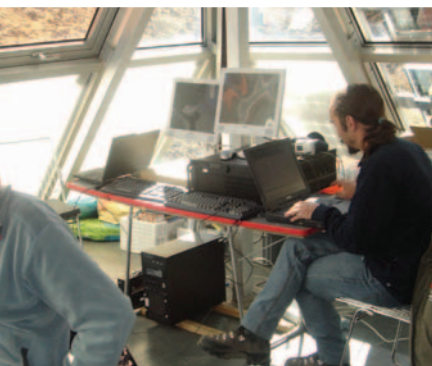


THE PYRAMID INTERNATIONAL LABORATORY-OBSERVATORY

The **Pyramid International Laboratory-Observatory** high altitude scientific research center, dedicated to Prof. Ardito Desio, was constructed in 1990 at 5,050 m a.s.l, in the Khumbu Valley, Sagarmatha National Park, at the base of the Nepali side of Everest. Since then, the Pyramid, managed by the **Ev-K²-CNR Committee** together with the **Royal Nepal Academy of Science and Technology (RONAST)**, has become a unique resource for the international scientific community. To date, 520 scientific missions have been carried out there by 220 researchers of 143 scientific institutions from several nations.

The three-story glass, aluminum and steel structure, with its stable square-based pyramid shape (13.22 m x 8.40 m high), is equipped with advanced technological instrumentation and facilities, including telecommunications and internet. It is totally self sufficient, using only clean energy sources and providing eco-sustainable systems for waste disposal and heating.

An independent living unit on the south side of the Pyramid, built in typical Nepali lodge style, provides living conditions which meet the standards of the best alpine huts. Up to 20 researchers, technicians and logistical staff can be accommodated there.



SCIENTIFIC RESEARCH

Fields and objectives

Environmental Sciences – Improve our understanding of mountain ecosystems, their processes and interactions with the human component and the effects of global changes on a local level, so as to contribute to sustainable development and environmental conservation, in accordance with UN directives for the millennium.

Earth Sciences – Contribute to knowledge on the geological and glaciological phenomena within the HKKH range, also aimed at development of Geographic Information Systems (GIS) and Decision Support Systems (DSS) which help prevent and/or deal with catastrophes and natural disasters.

Medicine and Physiology – Understand the effects of hypoxia on the human organism, and study environment-health and environment-indoor pollution relationships, so as to help reduce infant mortality and prevent chronic diseases, in line with the **World Health Organization (WHO)** indication to work towards the highest possible level of health in every country in the world.

Anthropological Sciences, Communication and Development – Contribute concretely, through thematic and interdisciplinary research, to knowledge in the fields of anthropology, ethnology and cultural history in the HKKH region, paying special attention to threats to cultural identity and outputs of research which benefit in particular the local communities.

Clean Technologies and Environmental Management Systems – Applied technological and system-related research aimed at improving management and safeguarding of natural resources, to help systematically reduce human impacts, while promoting the development of innovative low impact technologies in developing countries.

Resources, Projects and Methods

The advanced instrumentation of the Ev-K²-CNR Committee constitutes a substantial resource for the international scientific community. The **network of stations** which make up the **SHARE-Asia (Stations at High Altitude for Research on the Environment) Project** for atmospheric and geophysical monitoring across the Himalaya-Karakorum range is the only one of its kind. Customized for use in the most severe conditions, 4 SHARE-Asia stations will soon be gathering data along a traverse from Georgia to Pakistan, Nepal and Bhutan, to increase our understanding of environmental and earth sciences in mountain regions.

Core of the SHARE-Asia system is **ABC-Pyramid**: the highest atmospheric pollution monitoring station in the world, officially included as a Complementary Site in the **United Nations Environment Programme (UNEP) Project Atmospheric Brown Clouds (ABC)**. The station, another feather in the cap of Italian research in the Himalayas, is operational as of 2006. ABC-Pyramid will make analyses of atmospheric composition at high altitude possible and allow researchers to investigate the circulation of pollutants and aerosols, their influence on oscillations in the monsoon cycle, and their pressure on the atmospheric water and energy balance.

The sophisticated technological assets of the SHARE-Asia network also include the network of 5 automatic weather stations spread out vertically up the Khumbu Valley. Expert investigations using the data collected on several meteo-climatic parameters have produced unparalleled contributions to international programs like the **World Meteorological Organization's Coordinated Enhanced Observing Period (CEOP)**.



SHARE-Asia furthermore comprises unique geophysical data from the Pyramid provided by both the GPS master station and a reference beacon of the **French National Center of Space Studies (CNES) Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS)** program for the production of exact orbital data.

Important scientific contributions are also derived from the exclusive geo-referenced databases Ev-K²-CNR maintains on glaciological monitoring in the Sagarmatha National Park in Nepal and in the K2 region of Pakistan, as well as from the data on lake hydrochemistry and biology from the Pyramid-area lakes, part of the **Long Term Ecological Research (LTER)** network, supported by the European Union.

Technology transfer and capacity building processes, foreseeing direct involvement of local organizations and experts (research organizations, park management, national meteorological departments), are a key aspect of SHARE-Asia.

Scientific research on biology and biodiversity has given rise to large-scale conservation projects, like the **Snow Leopard** project. Ev-K²-CNR, in collaboration with **Nepal's Department of National Parks and Wildlife Conservation (DNPWC) and WWF-Nepal**, will help study and preserve the world's most endangered feline species, while improving our understanding of animals like the Himalayan tahr, musk deer and red panda.

Ev-K²-CNR's landmark efforts in development of clean technologies for eco-compatible management of tourism in developing countries led to the patenting of **EARTH (Ecological Activity for Refuse Treatment at High-altitude)**. This compact waste treatment unit, designed for use at high altitude, will significantly contribute to reduction of human impacts in fragile, remote areas.

Innovative research in the field of Medicine and Physiology on adaptations to hypoxia, comparing Caucasian subjects and natives of high altitude regions, has produced results of interest to the **WHO** and has led to strategic collaborations in the **pharmaceutical sector**.

Anthropological and ethnographic research on some of the most meaningful social and cultural realms of the HKKH region have produced collaborations with the world's main scientific authorities: **University of Cambridge, Oxford University, Tibetan Academy of Social Sciences, Wien Universität für Bodenkultur**, etc., as well as several international publications for both the scientific community and the general public.

The HKKH area has a rich cultural, historical and natural patrimony, yet is rife with environmental and political vulnerabilities. Ev-K²-CNR plays a key role in processes for applying science to such development-related issues, such as through the **DSS-HKKH Partnership** project. Conceived of by Ev-K²-CNR, this project aims at contributing to institutional consolidation in the HKKH area, over a four-year period, through development of a Decision Support System (DSS) for the local administrations.

Ev-K²-CNR has extended its range of action to Bhutan following a request from the local government. The **Bhutan Health Walk GPS Survey Project** will use an integrated GPS system to map an ancient 560 km-long trail crossing the country's 4 main valleys. Local technicians will be trained in how to update and reproduce the resulting cartographic materials, while proceeds from the ensuing tourism will go back to the populations along the route - especially children - in the form of a vaccination campaign.

DEVELOPMENT COOPERATION

Ev-K²-CNR is committed to building the capacity of local populations and encouraging a more active role of local institutions in the management of their mountain regions. Together with local, national and international institutions and through dedicated cooperation agreements, Ev-K²-CNR promotes exchange of knowledge, reinforces cultural and scientific collaboration and implements educational, social, environmental and health-related initiatives.

Karakorum Trust exemplifies Ev-K²-CNR's efforts in this sense. This coordinated and systemic set of sustainable development initiatives in Pakistan's Northern Areas is aimed at improving the quality of life of local populations and valorizing the environment, as well as the cultural and architectural heritage of the region. The Central Karakorum National Park (CKNP), symbolized by K2, the "Italians' mountain", is the geographic area around which project activities are concentrated.

Local experts are always involved in Ev-K²-CNR research in the HKKH region. Significant investments are made towards building the scientific capacities of partner institutions such as RONAST, while professional development actions in technical/logistic management of scientific facilities and data-collecting stations are carried out to the benefit of organizations like Sagarmatha National Park and the Pakistan Meteorological Department. Other training courses that Ev-K²-CNR has led include: **Training Course for Nepali Technicians in Pyramid Laboratory-Observatory Management; Training Course in Rescue Techniques for Sherpa Guides; Advanced Course in Mountain Medicine; Capacity Building and Professional Development for the Tibet Mountaineering Department**.

Ev-K²-CNR also has a consolidated history of supporting humanitarian projects in Tibet, Nepal and Pakistan in collaboration with NGOs and non-profit associations (Eco-Himal, Benoit Chamoux Foundation, Lorenzo Mazzoleni Association).

OTHER ACTIVITIES

The Ev-K²-CNR Committee has often been entrusted with the organization of national events like **2002 - International Year of Mountains** and the **"K2 2004 - 50 Years Later"** project celebrating the 50th Anniversary of the first Italian ascent of K2 with back-to-back scientific/mountaineering expeditions on Everest and K2. Other opportunities for linking the excellence of the mountaineering world with scientific endeavors have also been successfully created by Ev-K²-CNR (EAST – Extreme Altitude Survival Test; TOWER – Top of the World Elevation Remeasurement).

All such occasions represent priceless opportunities for pursuing Ev-K²-CNR's fundamental objectives linked to science, cooperation and sustainable development in the high altitude remote areas.

For complete information and more details, please visit www.evk2cnr.org

