



# BUSINESS PLAN 2023



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# 1 EXECUTIVE SUMMARY

Established as an ERIC in April 2023, the Aerosol, Clouds, and Trace Gases Research Infrastructure (ACTRIS) is the fundamental European research infrastructure for short-lived atmospheric constituents, increasing excellence in Earth system observation and research, and providing information and knowledge for developing sustainable solutions to societal needs.

State-of-the-art atmospheric environmental observations are the foundation upon which society builds effective environmental policies and strategies to reduce emission of pollutants, which mitigate climate change and improve air quality.

Observations are needed to better understand atmospheric processes and create services and products necessary for strengthening societal resilience to environmental change. As an example, climate mitigation, adaptation and disaster risk reduction require such services and products.

The enhancement of data production, data quality assurance and access to data by ACTRIS enables advances in a fundamental understanding of physical and chemical

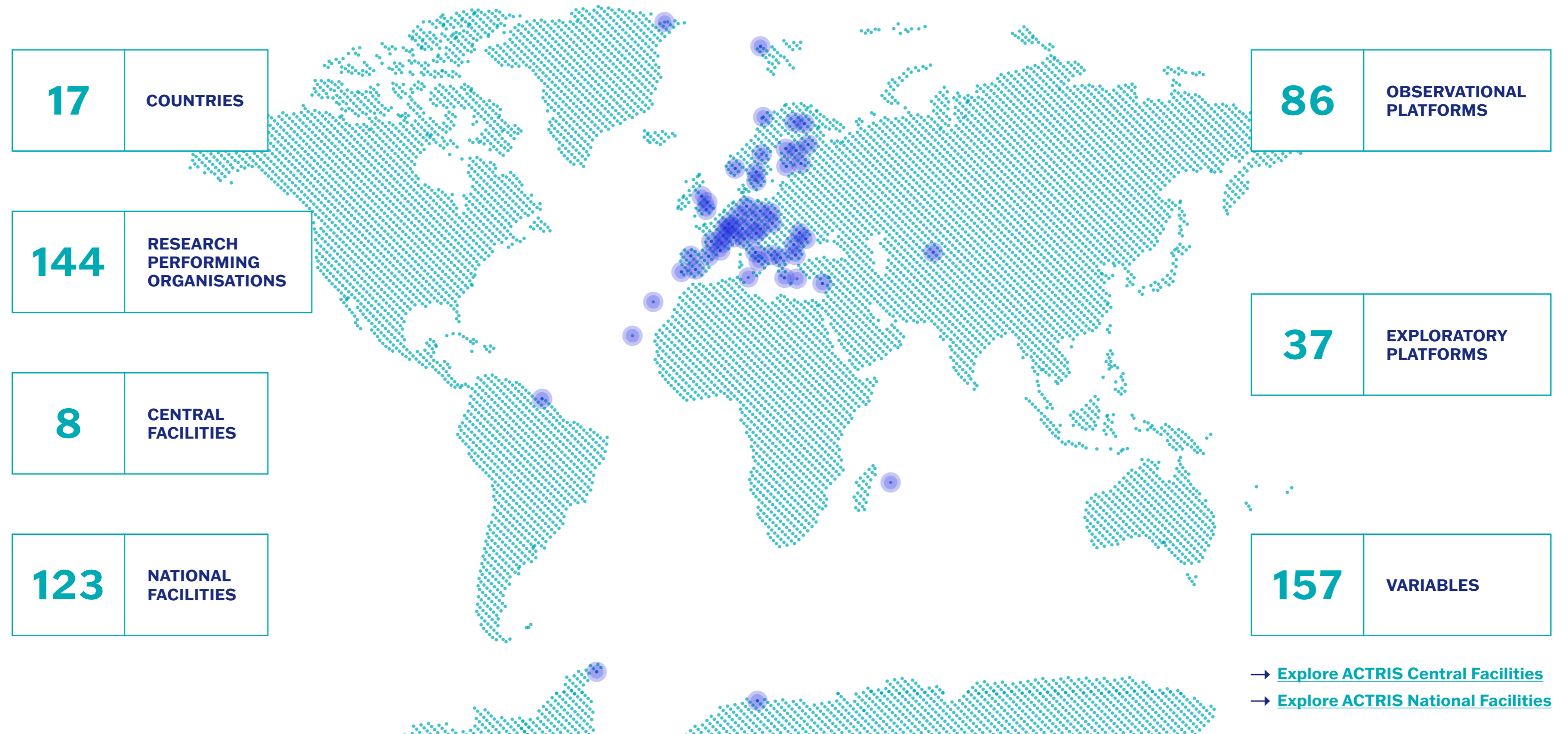
processes, leading to advances in theory, modelling, and observations, that are vital in narrowing gaps in the predictive capability of simulation models from the local to the global scale.

ACTRIS coordinates and operates a pan-European distributed research infrastructure for short-lived atmospheric constituents. ACTRIS provides effective access to a wide user community to its unique portfolio of resources and services, including open access to data as well as physical and remote access to its facilities.





## 2 TOWARDS BECOMING A GLOBAL RESEARCH INFRASTRUCTURE



### 3 FOREWORDS

In 2016 ACTRIS entered in the European Strategy Forum of Research Infrastructures (ESFRI) roadmap as a project, and on December 2021, ESFRI acknowledged ACTRIS with the ESFRI Landmark status recognizing the maturity of ACTRIS as an European research infrastructure and as a major element of the European Research Area. The landmark status was obtained as a result of a thorough evaluation and the successful submission of the ERIC Step2 application by 13 countries.

ACTRIS ERIC (European Research Infrastructure Consortium) was established as a legal entity by the decision of the European Commission in April 2023. These are huge steps towards the establishment of ACTRIS as an operational research infrastructure and manifest the fast progress of ACTRIS from project-based network to a mature and sustainable research infrastructure. This milestone was reached almost 10 years after the conception of ACTRIS, building on the successful EU projects such as EUSAAR, EARLINET and CLOUDNET, and later reinforced by the community of atmospheric simulation chamber operators (EUROCHAMP).

Shared efforts from a motivated community of researchers and engineers involved in the construction and continuous support from the contributing countries have led to a fast integration of all ACTRIS components into a strong distributed research infrastructure. ACTRIS has become a unified voice in the European Science and Education landscape of atmospheric research focused on aerosol, clouds, and trace gases.

The recent report of the Intergovernmental Panel on Climate Change (IPCC), released in August 2021, confirms that the impacts of climate change are already visible in natural systems all around the world. The ACTRIS community recognises its responsibility in defining the most suited adaptation and mitigation policies, calling for urgent actions to reduce greenhouse gas emissions and particle pollutants. ACTRIS will increase the understanding on the complex feedbacks in the atmospheric system and its links to other components of the Earth system. IPCC dedicates a full chapter to the role of short-lived climate forcers (SLCFs), on how they affect climate and are, in most cases, also air pollutants. The complex role of SLCFs as climate forcer agent, impacting, e.g., human and ecosystem health, will be central for ‘

developing atmospheric research in next years. In this context, ACTRIS will be a tool to support the establishment of the European Green Deal towards Carbon neutrality in Europe in 2030.

The COVID-19 pandemic had dramatic impacts on the entire World. The capacity to maintain operations running at ACTRIS observation sites, as well as the opportunity to open some atmospheric simulation chambers for conducting COVID-related studies, gave ACTRIS user communities a central role in evaluating the impact of stay-at-home policies. Distinguishing the impacts of several confounding factors, such as meteorology, long-term trends and natural variability, as well as feedback mechanisms linked to production of secondary pollutants, requires the long-term datasets and multi-variable approach that is central to ACTRIS. While ACTRIS related studies on impacts of COVID-19 are still ongoing, this pandemic demonstrated the need for a reliable research infrastructure capable to provide necessary high-level expertise to support the national stakeholders and the establishment of relevant public policies.

ACTRIS will face multiple challenges in the next decade. Its services must remain optimally configured to respond to emerging scientific challenges, and at the same time develop its operational capacity to respond to emergency situations such as the COVID-19 pandemic. Its services must remain of high-quality, reliable, and well-connected to user needs, including requirements from space agencies and the European Union’s Earth observation programme, Copernicus. ACTRIS operations must be able to respond to emerging needs such as provision of enhanced services, adoption of new technologies, and new opportunities provided by artificial intelligence and high-performance computing. Instruments that are now developed in research laboratories and commercial companies will become more affordable and ready for operational use within the research infrastructure. Performance of modelling tools will improve dramatically, suitable for many applications required by the disparate spatial and temporal scales of atmospheric impacts on climate, human health, and ecosystems but also by the business service needs.

It is understandably not easy to imagine how

exactly ACTRIS will evolve in the next 15-30 years, but now, at the onset of the ACTRIS ERIC adventure, it is clear that ACTRIS needs to rapidly evolve and adapt to fast-developing needs from the scientific community, users, and society. This means that all the elements of ACTRIS must be ready to explore new opportunities and emerging technologies, and to respond to requests arising for monitoring emerging pollutants or new species of atmospheric constituents.

The 2030 Agenda for Sustainable Development, adopted by the United Nations (UN) General Assembly in 2015, will serve as a central element for national and international policymaking over the next 15 years. The agenda identifies 17 Sustainable Development Goals (SDGs), of which several are linked, either directly or indirectly, to environmental wellbeing. The challenge of ACTRIS, as a global research infrastructure, is to ensure its services are used for implementing policies towards achieving the SDGs. The community's challenge is to help decision-makers via scientific facts and analyses to define emission-reduction actions at local, national and continental scale. ACTRIS' support to achieving the SDGs is linked to our role as key contributor and operator of the global observing system and to liaise with counterparts in different parts of the world, that are crucial in

building common agendas. It is our ambition to be clearly recognized as key player in the Earth Observation system, supporting the policies, e.g., defined by the World Meteorological Organization (WMO), European Space Agency (ESA), or Group on Earth Observation (GEO).

ACTRIS exists through its user communities. Excellent data, data products and the capacity to offer access to research facilities are the "raison d'être", the purpose, of ACTRIS. Our catalogue of services is easily accessible and responsive to the demands rising beyond the academic research communities. ACTRIS cooperates with other research infrastructures, reaching outside the environmental domain to create the proper FAIR digital ecosystem.

The ambition of ACTRIS is to develop unambiguous values, incentives, and guidelines of an ethically and culturally advanced science organization. Not only ACTRIS aims to be recognized for its scientific high quality of services needed to maintain the high level of trust and integrity, but for the design of its organization that creates an environment that embraces ethical principles in the heart of any decision making and in all components and activities of ACTRIS.



**“ACTRIS is consolidating its position in the national, European and international landscapes, expanding its role as a key player supporting environmental research. Quality of services, open innovation culture, agility to respond to demand from user communities will enhance the level of trust, integrity and confidence between ACTRIS and its partners.”**

**Paolo Laj**, ACTRIS Scientific Chair

[Find more](#)



**“ACTRIS has swiftly reached a high level of maturity considering the size of our research infrastructure. ACTRIS ERIC was established in April 2023 and already in December 2022 ESFRI recognized the level of advancement in our operations and services by acknowledging ACTRIS as a Landmark in the latest edition of the ESFRI Roadmap”**

**Eija Juurola**, Interim ACTRIS Director General

[Find more](#)

## 4 OUR CONTEXT

Atmospheric observations of known quality are the foundation upon which society builds effective environmental policies and strategies to reduce emission of pollutants, which mitigate climate change and improve air quality. Long-term observations are needed to better understand atmospheric processes, and to generate services and products necessary for strengthening societal resilience to environmental change. For instance, climate mitigation, adaptation and disaster risk reduction require such solutions.

ACTRIS is a pan-European research infrastructure that strengthens the production of high-quality atmospheric observations and related information on short-lived atmospheric constituents. By providing this information, ACTRIS supports the delivery of solutions that enable an effective response to monitoring air quality and changing environment and climate.

The ability to better predict the future behaviour of the atmosphere over different time scales (hours to decades) brings great benefits to society and economy. Examples span from short-term hazardous weather and air quality health warnings to long-term evaluation of climate change and policy effectiveness. Scientific predictions use complex models, that are

underpinned by observations, to improve the understanding of atmospheric processes. Without high quality observational data to validate predictive models, any forecast of the atmosphere is highly unreliable.

In addition to strengthening the value chain required by such services and products, the enhancement of data, data quality assurance and access to data by ACTRIS enables deeper understanding of physical and chemical processes. It progresses the reliability of modelling and observations which are vital in narrowing gaps in the predictive capability of simulation models from the local to the global scale. For instance, ACTRIS observations and access to observations contribute greatly to reducing uncertainties in emission source strengths, to a better understanding of atmospheric deposition processes that remove short-lived constituents from the atmosphere and impacts on ecosystems.

**ACTRIS fills a gap in integrating, quality assuring, harmonizing and distributing datasets, activities, and services** provided by the Central Facilities and National Facilities, located in 17 European countries. The National Facilities, which include observational and

exploratory platforms both within Europe and at selected global sites, are responsible for the acquisition of high quality, reliable and accurate data to document the 4-D distribution and variability of aerosol, clouds and trace gases and their complex interactions. The eight Central Facilities - comprised of six Topical Centres, the Data Centre and the Head Office - are essential to ensure compliance of the measurements with standard operation procedures and data analysis that result in observations of known quality.

**ACTRIS strengthens societal response to the grand-challenges faced by our society by enabling a deeper understanding of atmospheric processes, improving our resilience to changes in weather, climate and air quality as well as to reducing the effects of air pollution on public health and ecosystems.**

After many years of community building, design, and preparatory phase, ACTRIS is in the implementation phase dedicated to constructing and upgrading the National Facilities and Central Facilities and setting up the user access and service provision as well as the governance and management structures. Efforts are made to: (i) connect with

new users and attract new member countries, (ii) develop international collaboration and partnerships, and (iii) connect ACTRIS at different strategic levels (national, European, and internationally) to societally relevant value-added service delivery chains.

Following the Implementation Phase, ACTRIS will be operational and will strengthen the delivery of a unique portfolio of services including open access to data and physical and remote access to Central Facilities and National Facilities.



# 05 OUR BUSINESS

5.1 The cornerstones of ACTRIS strategy

5.2 The framework of ACTRIS strategy

5.3 Business model

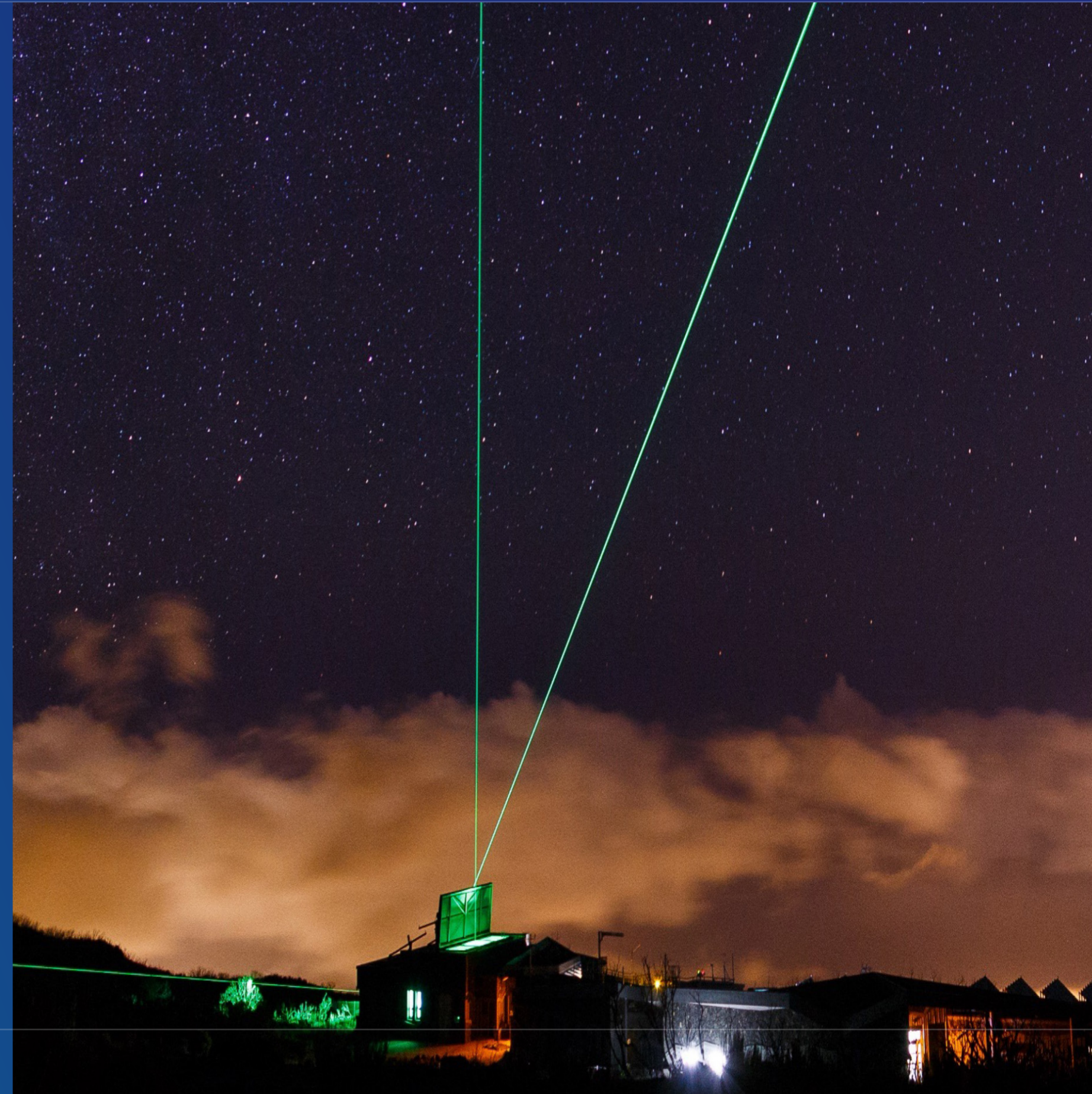
5.4 Our services

5.5 User strategy

5.6 Access to ACTRIS services

5.7 Atmosphere, climate and environment business area

5.8 Innovation business area





## 5.1 THE CORNERSTONES OF ACTRIS STRATEGY

The aim of ACTRIS is to provide open and easy access to resources and services to a broad user community world-wide to conduct excellent research, foster innovation and provide reliable information to decision makers for tackling societal challenges related to air quality, climate change and health.

ACTRIS is one of the rare distributed research infrastructures in the environmental domain that provides virtual, remote and physical access to its advanced research facilities.



### SEAMLESS OPEN ACCESS TO DATA AND SERVICES

ACTRIS provides information on the 4D-composition and variability, and the physical, optical and chemical properties of short-lived atmospheric constituents with the required level of precision, coherence and integration.

We offer our users effective and efficient means to uptake our high-quality, open access and FAIR data as well as our services.



### CREATING A SYNERGETIC COMMUNITY

We strive to ensure and raise the quality of data and use of up-to-date technology used in ACTRIS and the quality of services offered to our user. To achieve this goal, ACTRIS continuously engages with its partners, including the private sector, and promote the training of our operators and users.

We aim at strengthening the link between research, education and innovation in the field of atmospheric science.



### DRIVING SCIENCE WHILE SUPPORTING SOCIETY

We support policies-making through the flow of information on past and current state of the atmospheric environment, delivering unique information on short-lived climate forcers

We rely on our technical and scientific assets to support authorities providing a science-based analysis on air quality and the impact of atmospheric short-lived constituents on human and ecosystems.

Our user and stakeholder values are built on reliability, cutting-edge technology, long-term high-quality observations, attractive services, industry expertise, talented and skilled employees and fruitful partnerships. We drive excellence and advances in the field of atmospheric research by focusing on great leadership and continuous development. Furthermore, our strategic work enables a deeper understanding on atmospheric processes, improving our resiliency to climate change, and air quality, contributing to reducing the effects of air pollution on public health and ecosystems.

[Read more in Megatrends.](#)



# 5.1 THE CORNERSTONES OF ACTRIS STRATEGY

## OUR VISION

ACTRIS is the fundamental European research infrastructure for short-lived atmospheric constituents, increasing excellence in Earth system observation and research and providing information and knowledge for developing sustainable solutions to societal needs.

## OUR MISSION

ACTRIS shall develop, coordinate and operate a pan-European distributed research infrastructure for short-lived atmospheric constituents. ACTRIS shall provide effective access for a wide user community to its resources and services in order to facilitate high-quality Earth system research.

## OUR VALUES GUIDE US

### User focus

We strive for a deep understanding of our user’s needs and aim at meeting them in everything we do.

### Innovation and renewal

We foster benchmarking innovation and embrace change through continuous learning and development.

### Teamwork and passion

We are stronger together. Collaboration with each other and our stakeholders is at the heart of what we do.

### Integrity

Our commitment and reliability must be unquestionable. We promote sustainable and ethical behavior.

## OUR SUCCESS IS BUILT ON

Reliability

Expertise

Science-based technological leadership

Engaged & talented people

Partnerships & collaborations

Strong financial commitment of Members

Sustainability

## WE DRIVE EXCELLENCE & SCIENTIFIC ADVANCES IN THE FIELD OF ATMOSPHERIC RESEARCH



### DEEPER UNDERSTANDING

Scientific progresses based on high quality observations and user-focused services



### INNOVATION DEVELOPMENT

Technologic advancements through partnerships and tailored services.

## 5.2 FRAMEWORK OF ACTRIS STRATEGY

To achieve its vision ACTRIS is organized around three pillars, each associated with two high-level goals. The goals are turned into a number of strategic actions which are linked to outcomes.

	SCIENCE AND TECHNOLOGY	IMPACTS	ORGANISATION AND COMMUNITY
AIM	Develop and make operational use of cutting-edge science and technology	Provide exceptional socio-economic benefits to ACTRIS stakeholders	Be a flexible forward-thinking innovative organisation, inspiring and hiring the best experts
GOAL	<ul style="list-style-type: none"> <li>High-quality data and purposeful services</li> <li>Efficient and easy access to data, tools and services</li> </ul>	<ul style="list-style-type: none"> <li>Attract new members and new fundings</li> <li>Strengthen and improve the European Research Area</li> </ul>	<ul style="list-style-type: none"> <li>Efficient and modern-thinking organisation</li> <li>People-focused organizational culture</li> </ul>
ACTIONS	<ul style="list-style-type: none"> <li>Meet users' needs for products and services of world-leading quality</li> <li>Easy, transparent access and FAIR data management policies</li> </ul>	<ul style="list-style-type: none"> <li>Enhance partnerships and collaborations</li> <li>Implement a fully functioning and integrated distributed organisation</li> </ul>	<ul style="list-style-type: none"> <li>Develop a flexible working environment</li> <li>Promote a diverse collaborative workplace</li> </ul>
OUTCOMES	<ul style="list-style-type: none"> <li>Improved knowledge on short-term atmospheric constituent</li> <li>Development and exploitation of new technologies, computational science and operational processes</li> </ul>	<ul style="list-style-type: none"> <li>Effective policies and support processes to enable efficient and user-friendly exploitation of data and services allowing increased socio-economic benefits</li> </ul>	<ul style="list-style-type: none"> <li>Alignment with European diversity and inclusion strategies</li> <li>The working environment attracts, inspires, retains and motivate the 21st century workforce</li> </ul>

## 5.3 BUSINESS MODEL



## 5.4 OUR SERVICES



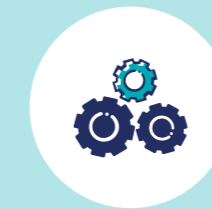
### RESEARCH SERVICES

- Physical access to instrumented observational and exploratory platforms for realisation of scientific experiments under ambient or controlled conditions
- Use of state-of-the-art instrument and equipment supporting scientific excellence



### DATA AND DIGITAL SERVICES

- Compilation and quality control of ACTRIS measurements from both observational and exploratory platforms
- Long-term archiving and preservation of ACTRIS data, comprising raw data, calibrated and quality-assured data up to fully quality controlled data and elaborated data products
- Access to high-quality & long-term data, data for operational response, near real-time data and early warning services
- Documentation of data and data flow
- Citation service, and data attribution, including version control, and data traceability
- Data curation for campaigns and dedicated research projects and initiatives, external or internal to ACTRIS.



### TECHNICAL SERVICES

- Provision of measurement quality assurance and quality control procedures and tools
- Instrument-specific calibration, testing, and intercomparison
- Improvement of measurement and retrieval methodologies for aerosol, clouds, and reactive trace gases

## 5.4 OUR SERVICES



### INNOVATION SERVICES

- Design and co-design of instrumentation, equipment or procedures
- Exploration of instrument synergies and novel innovative research capabilities
- Joint research activities
- Joint instruments testing
- Certification of prototypes
- Development of new observation techniques for aerosol, clouds, and reactive trace gases
- Improvement of measurement and retrieval methodologies for aerosol, clouds, and reactive trace gases



### TRAINING AND EXPERTISE

- Training on demand or targeting specific user groups from industry and academia to develop specific skills along with public and private innovation requests
- Training of instrument operators and data managers to ensure compliancy with ACTRIS standards
- Training of users of ACTRIS data, products and tools and training of young scientists and users from new regions world-wide
- Best practice, knowledge sharing and knowledge transfer internally and to ACTRIS users (publications, seminars...)



### OUTREACH SERVICES

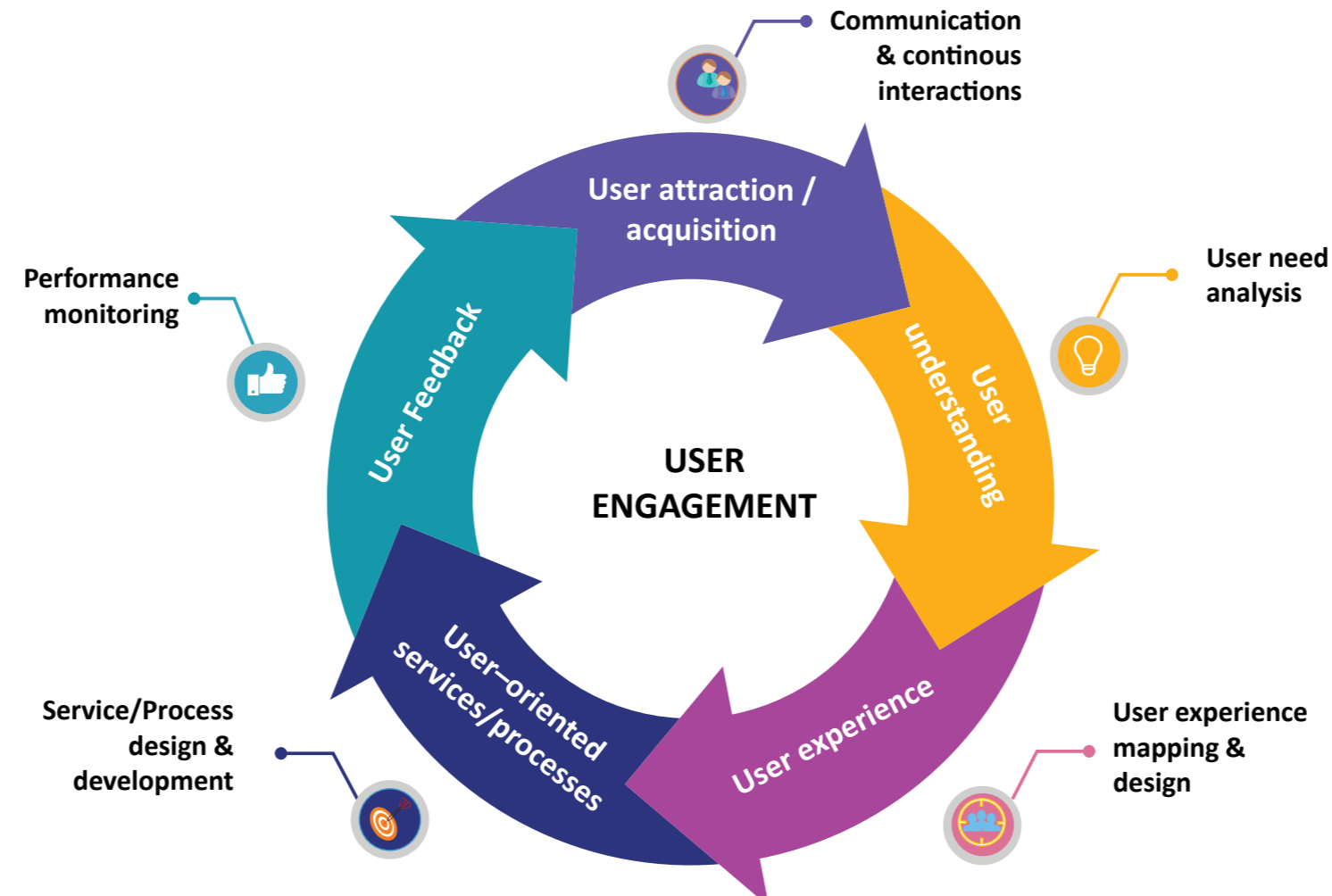
- Catalogue of services
- Scientific breakthrough, publications and seminars will contribute to the advancement of science through publication and scientific networking
- Outreach to the general public and especially youth to explain in simple terms the importance of the atmospheric constituents

## 5.5 USER STRATEGY

ACTRIS provides access to a large variety of high-quality resources and services offered by ACTRIS facilities to a wide range of users and needs, for scientific, technological and innovation-oriented applications.

ACTRIS places its users (public research organisations, universities and higher education organisations, international organisation; public services; private companies and businesses) at the centre of its operations and strategic development. A systematic approach is taken to involve users, ascertain their needs, provide clear and practical recommendations for services and process development, and base continuous improvements on user feedback.

ACTRIS user strategy cycle



The user strategy is the provision of value in terms of services, assistance, knowledge, know-how etc., which ACTRIS can offer to users in response to their needs, based on the technical capabilities of the Central and National Facilities and in line with the overall ACTRIS mission.

As a living strategy, it is the result of a continuous effort to find a proper combination and composition of the evolving user needs and the evolving ACTRIS capabilities. The ACTRIS user strategy ensures that service development / improvement efforts meet user expectations and fulfil their needs and will continue to do so over the research infrastructures' lifespan.

## 5.6 ACCESS TO ACTRIS SERVICES

ACTRIS provides virtual, physical and remote **access to ACTRIS** resources and services:

- (1) access to Data Services – high quality, harmonized, and documented ACTRIS data from observational and exploratory National Facilities,
- (2) access to Technical / Research / Innovation / Training Services provided by the ACTRIS Central and National facilities.

Access to ACTRIS data, data products and digital tools provided through communication networks is virtual access, which is wide and free, and does not require a selection process because the resources can be simultaneously used by an unlimited number of users. Virtual access is addressed in the [ACTRIS Data Policy](#) and the [ACTRIS Data Management Plan](#), which respectively establish the principles and process for data provision.

Physical (1) or Remote (2) access to the ACTRIS Facilities is competitive access to available services or resources, which are not unlimited, depend on the facilities' availability and require a competitive process to select users following defined procedures and criteria. Guidelines and general principles for physical and remote access are defined in the **ACTRIS access and service policy** with details of rules, procedures and workflows described in the **ACTRIS Access Management Plan**.

### ACCESS TO CENTRAL FACILITY SERVICES CONCERNS ACCESS TO BOTH TOPICAL CENTRES AND TO THE DATA CENTRE AND COVERS:

- Virtual access to ACTRIS data and digital tools generated with high-quality assurance and quality control standards;
- Physical and remote access to technical services, innovation services, training, and user-specific tailored services.

### ACCESS TO NATIONAL FACILITY SERVICES CONCERNS ACCESS TO BOTH OBSERVATIONAL AND EXPLORATORY PLATFORMS AND COVERS:

- Physical and remote access to instrumented platforms;
- Physical and remote access to training services and capacity building;
- Physical and remote access to user-specific tailored services.

- (1) “hands-on” access when users physically visit an infrastructure/facility/equipment.  
 (2) Access to resources and services without users physically visiting the infrastructure/facility

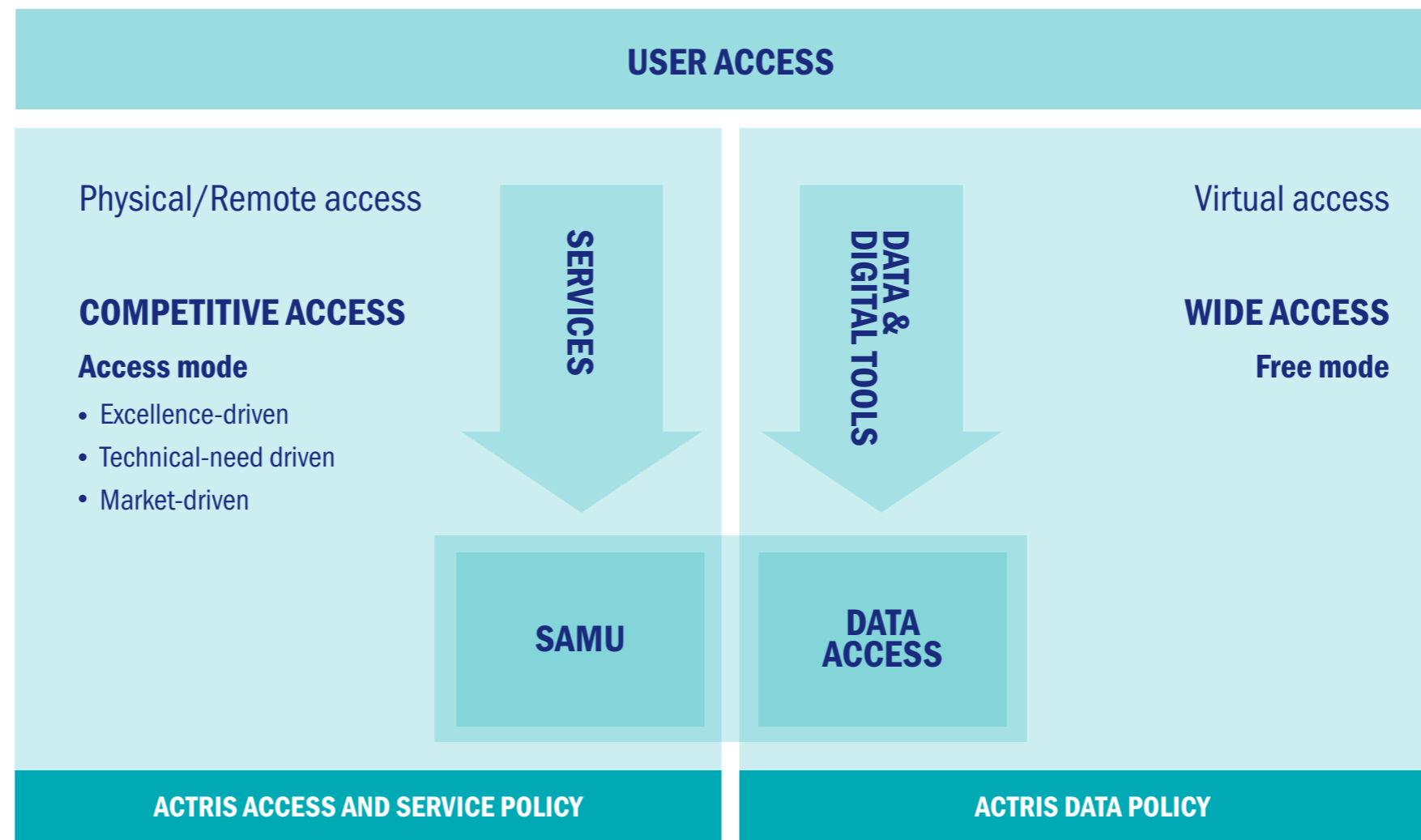


## 5.6 ACCESS TO ACTRIS SERVICES

ACTRIS standards, as defined in the ACTRIS technical documentation and internal rules, shall apply to all services open to access.

In case of competitive access, the selection of users is managed by the Service and Access Management Unit (SAMU) of the Head Office and regulated by the following access modes:

- **Excellence-driven access:** the access depends on scientific excellence, originality, quality and technical and ethical feasibility of a user request.
- **Technical need-driven access:** access depends on technical needs to ensure instrument quality, high performance measurements, and dissemination of good practices.
- **Market-driven access:** access is defined through an agreement between ACTRIS ERIC and the user; the access may be tailored to the user needs and may lead to an access fee that may remain confidential.



Access for Users to ACTRIS services as a function of access type (Virtual, Physical, Remote) and access mode (Excellence-driven, Technical need-driven, Market-driven), and of the ACTRIS policy concerned. Free access means that ACTRIS services are provided free-of-charge. Wide access aims at maximizing the access and uptake to ACTRIS data and digital tools and is open and free access, not involving any selection process. Competitive access requires a selection process via SAMU.

## 5.6 ACCESS TO ACTRIS SERVICES

Competitive access might involve user fees. The costs of services provided by Central Facilities and National Facilities are calculated according to the ACTRIS financial rules and may be adjusted on a regular basis. The potential user fee may vary according to principles established by ACTRIS ERIC, for example as a function of a specific service, user (e.g., academic vs commercial user), user origin (ACTRIS member country or not), or availability of funding (ERIC contribution, national funding, EU funding, etc.).

All access to ACTRIS services and resources is channeled through a single interface that connects users to the whole ACTRIS. This unique, general ACTRIS web interface is managed by the ACTRIS Head Office and enables users to access multiple applications, among which the Catalogue of Services, the Data Portal, the Access Helpdesk and the Access Forum, the PASS Platform for managing user access to ACTRIS ServicesS etc.

An on-line, interactive and regularly updated ACTRIS [Catalogue of Services](#) allows users to easily find all relevant information about the available services and access details (type, location availability, modalities, costs, etc.).

The **PASS - Platform for managing user Access to ACTRIS ServicesS** is being implemented to organize and optimize the central management of physical and remote access by the Single Access Management Unit (SAMU). The platform will guide and control each step of the access provision process (application, management, review and selection, approval, support to access and monitoring/reporting), connecting all actors involved and facilitating collaboration with teams, experts and users.

A mechanism for user feedback, which is an essential part of the user-oriented approach of ACTRIS, will allow for regular collection of information from the users on the range and quality of the ACTRIS services.



## 5.7 ATMOSPHERE, ENVIRONMENT AND CLIMATE BUSINESS AREA

### ACTRIS AS A PLATFORM FOR HIGH-QUALITY RESEARCH

The ACTRIS profile is unique in its scope and service portfolio, filling a scientific and service gap in the landscape of European research infrastructures. ACTRIS guides the development and harmonisation of QA/QC and data quality requirements in global programs and legislation-based monitoring networks. We continuously develop high-quality operations which are described to users and stakeholders in our Catalogue of Services. Our extensive Catalogue of Services enables a broader scientific community to uptake high-quality, reliable data and answers to the needs of users in different regions of the world.

Our ambition is to strengthen ACTRIS position and leadership in the European Research Area within the discipline of atmospheric research by providing unique information, services, tools and reference methodologies available to communities within and outside of Europe, including the satellite and modelling communities (ESA, EUMETSAT, ECMWF and AeroCom).



## 5.8 INNOVATION BUSINESS AREA

### ACTRIS AS A PLATFORM FOR INNOVATION

By supporting innovation and knowledge transfer ACTRIS aims to create both technological and societal breakthroughs and economic impacts. Our services include trainings on demand or targeting specific user' groups, the design and co-design of instrumentation, equipment or procedures, joint research activities and joint instruments testing.

ACTRIS strives at embracing the framework conditions that are the main drivers of EU innovation performance: human resources, attractive research system, specifically in atmospheric and environmental science, and innovation-friendly environment.

ACTRIS continuously contributes to innovation by working on technology development, and, more generally, on knowledge transfer, including promoting cooperation with the private sector, policy makers and the public.

#### We focus on the:

- development areas and services for private sector collaboration
- co-development opportunities for technology development and new services
- promotion of ACTRIS as an innovation platform
- uptake of ACTRIS data products and digital tools for market-oriented applications and decision-making processes
- access to ACTRIS exploratory and observational platforms for market-oriented and private sector applications

ACTRIS works towards the development of an innovation platform to stimulate a more open technology transfer approach within ACTRIS, for disseminating relevant research outputs on atmospheric science to the private sector and for enhancing the collaboration between National and Central Facilities operators and the private sector.





# 06 CREATING VALUE

**6.1 UN Sustainable Development Goals**

**6.2 Values for stakeholders**

**6.3 Megatrends**

**6.4 Stakeholder engagement**

**6.4.1 Values for users**

**6.4.2 Values for personnel**

**6.4.3 Values for society and the environment**



**6.4.4 Values and benefits for members & partners**

**6.4.5 Active community network and scientific collaboration**







## 6.1 UN SUSTAINABLE DEVELOPMENT GOALS



We develop our business and practices in line with the UN Sustainable Development Goals that are the most relevant for ACTRIS. Services that benefit society and environment are at the core of our mission. Integrating the UN SDGs in our strategy improves the assessments of our impacts on sustainability and inspires us to develop and support new services and sustainable practices.

UN SUSTAINABLE DEVELOPMENT GOAL (SDG)	THE MOST RELEVANT UN SDG FOR ACTRIS	ACTRIS SOLUTIONS
 <p><b>13</b> CLIMATE ACTION</p>	<p><b>13.1</b> Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries</p> <p><b>13.2</b> Integrate climate change measures into national policies, strategies and planning</p> <p><b>13.3</b> Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p>	<p>Providing reliable long-term, high-quality data to study climate change</p> <p>Developing cutting-edge infrastructure and projects fostering cross-domain collaborations</p> <p>Scientific knowledge to guide valuable emission reduction actions at different scales, from local to continental</p>
 <p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p>	<p><b>11.b</b> By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels</p>	<p>Air quality reports and guidelines helps cities to be more resilient</p> <p>Supports policy makers in their responses to heatwaves and associated impacts on air quality</p>

## 6.1 UN SUSTAINABLE DEVELOPMENT GOALS

UN SUSTAINABLE DEVELOPMENT GOAL (SDG)	THE MOST RELEVANT UN SDG FOR ACTRIS	ACTRIS SOLUTIONS
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p>	<p><b>3.9</b> By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</p>	<p>Providing reliable in situ observations to evaluate climate forecasting models</p> <p>Improving climate forecasting reliability in anticipating key risks that climate poses to public health</p>
 <p><b>6</b> CLEAN WATER AND SANITATION</p>	<p><b>6.6</b> By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes</p>	<p>Deeper understanding and knowledge on cloud formation and precipitation process</p>
 <p><b>7</b> AFFORDABLE AND CLEAN ENERGY</p>	<p><b>7.3</b> By 2030, double the global rate of improvement in energy efficiency</p>	<p>Network for monitoring atmospheric events (e.g. dust storms) that impact solar energy productions</p>
 <p><b>2</b> ZERO HUNGER</p>	<p><b>2.4</b> By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality</p>	<p>Improving capability to forecast weather and weather extremes to assist farmers with operational decisions</p> <p>Air quality measurement networks observing deposition of specific compounds having serious impacts on ecosystems' health, the quality of soils and waters</p>

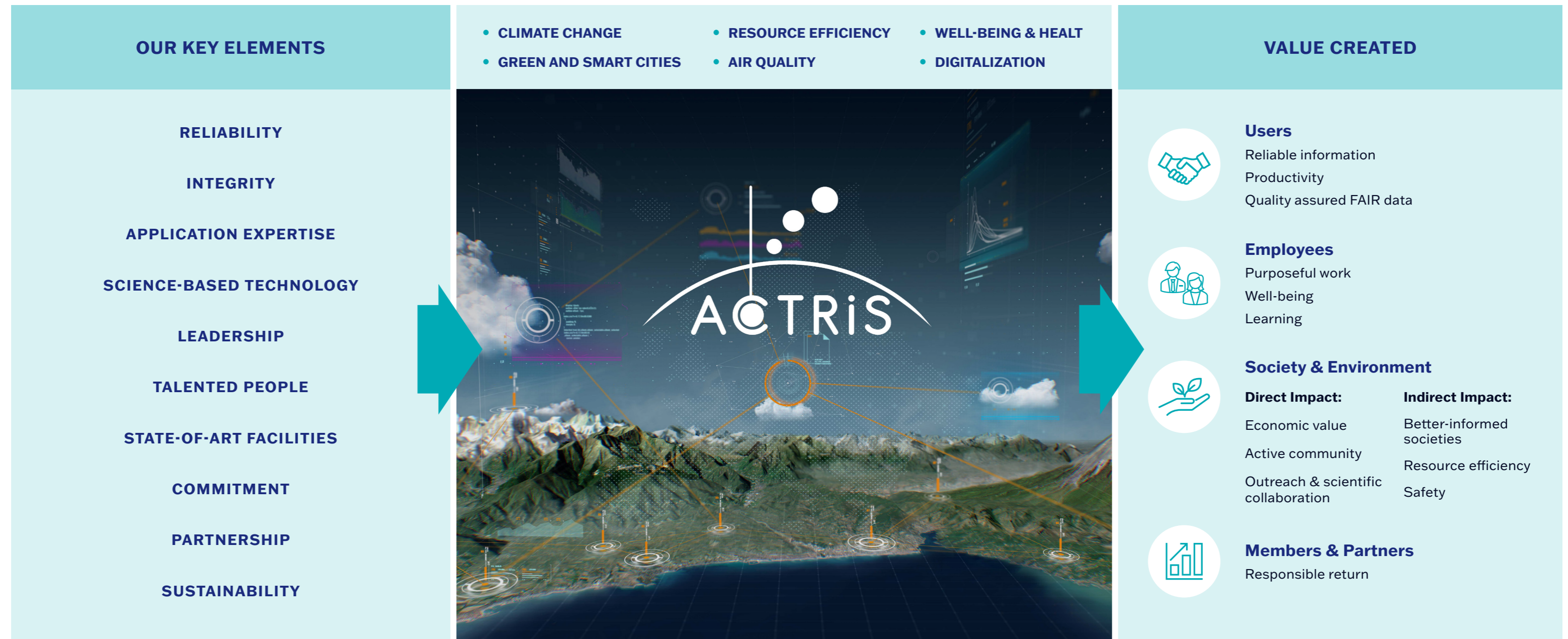
## 6.1 UN SUSTAINABLE DEVELOPMENT GOALS

UN SUSTAINABLE DEVELOPMENT GOAL (SDG)	THE MOST RELEVANT UN SDG FOR ACTRIS	ACTRIS SOLUTIONS
	<b>1.</b> End poverty in all its forms everywhere	Providing reliable observations to evaluate and improve climate forecasting reliability to anticipating disasters, information and services for decision making and education to societies
	<b>5.</b> Achieve gender equality and empower all women and girls	Awareness on indoor air quality. The health burden of (household) air pollution affects women significantly more than men in the world



## 6.2 VALUES FOR STAKEHOLDERS

We create value through continuous interaction with our stakeholders. Our business leaves a positive handprint on society, especially through our stakeholders. With our services they can make reliable decisions and improve their assessments beyond the area of environment and climate. This way we are also able to have an impact on current challenges, related to different megatrends, and contribute to the United Nations' Sustainable Development Goals by increasing awareness, resource efficiency, and safety in societies.



## 6.3 MEGATRENDS

Global megatrends are grand challenges affecting our society that provide both a source of innovation and opportunities for growth in ACTRIS. We constantly assess markets and technologies to find new ways to engage with these megatrends. Together with our stakeholders and users, we create information to respond to the pressing societal, environmental, and private sector needs and challenges posed by these megatrends.



### CLIMATE CHANGE

Climate change increases extreme weather and creates a chain of societal, environmental, and economic effects.

In this context, ACTRIS is a tool to anticipate disruptions of the atmospheric system by supporting and assist citizens and authorities to better managing climate risks.

ACTRIS provides support to policies through its flow of information on past and current state of the atmospheric environment, delivering unique information on short-lived climate forcers with the required level of precision, coherence and integration essential for their use in forecast models, satellite validation and for the development of innovative services related to human health and atmospheric hazards.

We support the scientific community in increasing knowledge of climate change.



### AIR QUALITY

Air pollution is still a major problem for public health in Europe and other countries in the world. We support the development of the required level of understanding of sources of air pollutants that negatively affect human health.

We respond to urgent needs to develop research and most suited policies to substantially reduce air pollution across EU by providing enhanced observations but also to support technological research for reducing emissions, from fixed and mobile sources and support development of new generations of air quality models that will more specifically address citizen's exposure to air pollution.

ACTRIS observations are an important component complementing Earth Observations from space, providing unique ground-truthing of remote sensing information collected by current and future satellite missions.



### WELL-BEING & HEALTH

Ensure healthy lives and promote wellbeing for all at all ages: better climate forecasting will be key to anticipate the key risks that climate poses to public health in particular countries and regions.

Better prediction of cloud formation and precipitation in a changing climate is essential to predict evolution of water resources.

Critical concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such plants and crops, is occurring in many areas not only in Europe but also elsewhere is the world.

ACTRIS is key to mapping spatial and temporal variability of key compounds that are affecting ecosystem productivity, thus in relation to food security and improved nutrition challenges.

## 6.3 MEGATRENDS



### GREEN & SMART CITIES

As population, traffic, and finance concentrate increasingly in the same areas, it affects the conditions and weather dependency in cities.

ACTRIS provides reliable instruments, systems, and digital services to observe aerosol, clouds and trace gases components thus supporting the forecasting of air quality, road weather, as well as urban weather and microclimates.

ACTRIS helps making cities and human settlements inclusive, safe, resilient and sustainable: supporting policies for air quality improvements is key to ACTRIS that will be helping planners to make cities more resilient to respond to heatwaves and the associated impact on air quality.

This helps smart cities to overcome their challenges with urbanization and make informed decisions regarding sustainability, economic growth, safety, and well-being.



### DIGITALIZATION

ACTRIS is engaged in digital transformation to promote uptake of its services (data, products, opportunities, training) to the widest audience as possible, extending from communities of researchers to the private markets.

It is clear to us that a proper digital structure is an efficient driver of innovation also with the private sector. The ACTRIS support to digital leadership in Europe is therefore linked to reinforcing clear identification of services required from user perspectives and the conditions of access to services and to secure engagement of private sector communities. Sustainability of the digital platforms in ACTRIS and is one of the centrepieces of its contribution to digital strategy for Earth Observation.

The contribution of ACTRIS to digital transformation of Europe is organized to consolidate the open access policy to its digital products that will allow facilitated uptake to all users.



### RESOURCE EFFICIENCY



Pooling our forces together following integrated workflows allows us to avoid fragmentation and duplication of work, thus maximizing our efficiency to respond to the needs of our stakeholders, including the private.

Working together increases user access and use to platforms, likely reducing unit of access costs, thus guaranteeing the optimization of investments.

By joining resources and capabilities we increment our chances to succeed in cross-domain knowledge transfer and have larger socio-economic impacts.

## 6.4 STAKEHOLDER ENGAGEMENT

**Our stakeholders influence the future of our business, and we work in an open and continuous interaction with them.** We identify and evaluate our stakeholders as part of our sustainability management and preparatory work for strategy updates. The stakeholder analysis and portfolio are periodically updated. The process can be internally conducted, or it can include surveying or interviewing key stakeholders. We determine the impact of various stakeholders on our research infrastructure and analyse how our actions in turn impact on them. We maintain a constant dialogue with our stakeholders and actively seek partnerships and joint opportunities with users, suppliers, academia, research institutes, and other parties.

	DESCRIPTION	MAIN ACTIVITIES
 <p><b>USERS</b></p>	<p>They originates from academia, public and private sector, from ACTRIS member countries as well as from countries which are not ACTRIS members, inside and outside Europe. These groups comprise researchers in atmospheric, environmental sciences and other fields (hydro-marine, bio-ecosystem, geosciences, space physics, energy, health, and food domain); operational and climate services, national weather services, space agencies, national and regional air quality monitoring networks, environmental protection agencies, instrument manufacturers and sensor industries.</p>	<ul style="list-style-type: none"> <li>• Continuous user relationship development and management (online channels, meetings, events, and exhibitions)</li> <li>• Survey assessments on user trainings, technical support, access and quality of services</li> </ul>
 <p><b>PERSONNEL</b></p>	<p>More than 800 employees at National level, including over 150 scientists and technicians involved in the activities of ACTRIS Central Facilities.</p>	<ul style="list-style-type: none"> <li>• Learning and career development opportunities</li> <li>• Monitoring employee satisfaction and well-being</li> <li>• Active internal communications</li> </ul>

## 6.4 STAKEHOLDER ENGAGEMENT

	DESCRIPTION	MAIN ACTIVITIES
 <p><b>SOCIETY AND THE ENVIRONMENT</b></p>	<p>Universities and research collaborators, meteorological institutes, manufacturing partners and suppliers, governments and regulators, policymakers, local, regional, and national authorities and communities, international networks, the media, and the public</p>	<ul style="list-style-type: none"> <li>• Partnerships and collaborations with academic and scientific institutions</li> <li>• Close cooperation and sharing expertise with external organizations and decision-makers</li> <li>• Raising awareness of environmental issues among experts and the public</li> <li>• Continuous improvement of media relations, press releases, and activity in social media</li> </ul>
 <p><b>MEMBERS AND PARTNERS</b></p>	<p>ACTRIS members and observers, potential member countries, funding organizations</p>	<ul style="list-style-type: none"> <li>• Continuous relationship development and management of new member and partners</li> <li>• Periodical result and progress presentation (online channels, meetings, and events)</li> <li>• Development and update of communication action to highlight the added value in joining ACTRIS</li> </ul>

## 6.4.1 VALUES FOR USERS

ACTRIS instrumented facilities and services are key to support scientific advances in the field of atmospheric research. Our observations deliver unique information on short-lived climate forcers with the required level of precision, coherence and integration essential for their use in forecast models, satellite validation. By using ACTRIS data, our users can deepen their understanding of atmospheric physical and chemical processes.

### RELIABILITY

We enable our users to conduct reliable research by accessing ACTRIS world-class facilities and by taking advantage of our extensive catalogue of services.

With ACTRIS services, users from the private sector can explore their possibilities for instrument synergies and novel innovative research capabilities, optimizing their processes to achieve the best results.

### INTEGRITY

Our commitment to excellent research and scientific solutions is the backbone of our research infrastructure. We practice the principle of FAIR data and we communicate, disseminate and exploit results and information backed up by scientific evidence.

### PRODUCTIVITY

We strive at leveraging our resources to the best results. For example, ACTRIS Data Centre provides our users with free and open access to all ACTRIS data, complemented with comprehensive, clear, and mature metadata to maximize the uptake of ACTRIS observations and their successful application. For SMEs and industrial companies, innovation through technology transfer and knowledge-sharing activities relies on dedicated facilities for testing, quality assurance, and calibration. ACTRIS has a history of joint collaborations with the private sector for calibrating commercial instruments, testing new instrumentation, and developing novel methods and equipment, as it provides a platform for exchange between those marketing the products and software related to ACTRIS and its leading experts.

### QUALITY

High-quality data, digital tools and services have always been at the core of ACTRIS, but it is equally important to us that our users can ensure the quality of their own end-products and operations with the help of our technologies and expertise. For example, ACTRIS observational platforms provide reliable and comparable observations that likewise support reliable weather forecasts and climate projects.

Accurate guidance and monitoring of user's instrument calibration and set-up help to guarantee high-quality products.

## 6.4.1 VALUES FOR USERS

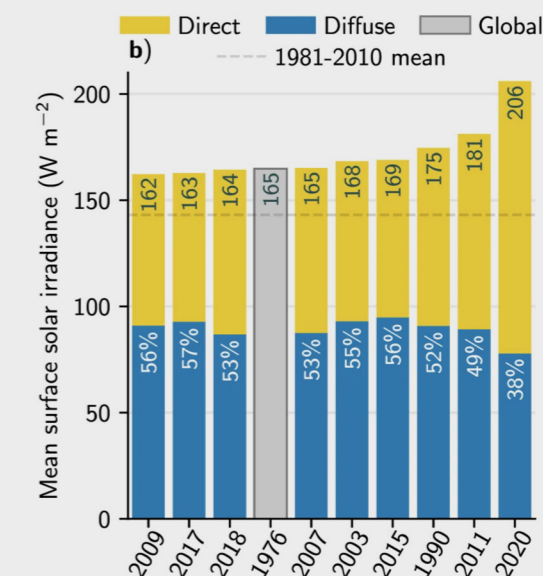
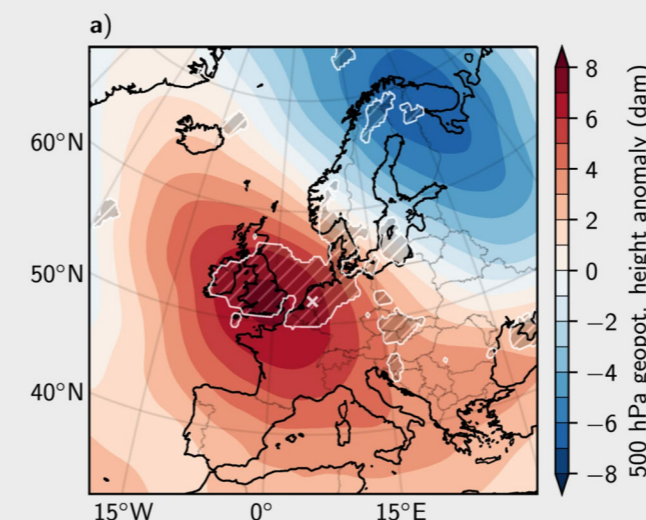


### CASE TESTING OF FILTER MATERIALS FOR EMERGENCY MEDICAL MASK

The experiment was conducted in collaboration with the local hospitals and the Health Ministry in Western Greece. The work also involves two major Greek companies that produce polypropylene in different forms.

Results showed that the plastic material already produced by these companies, thus yet not optimized for filtration, offers 90% effectiveness for 300 nm particles while the commercial N95 masks reached 95% efficiency.

The work showcased an inventive use of the simulation chambers repurposed as an emergency response: they proved to be valuable for efficiency testing compared to continuous production from an aerosol generator.



### CASE RECORD HIGH SOLAR IRRADIANCE IN WESTERN EUROPE DURING FIRST COVID-19 LOCKDOWN LARGELY DUE TO UNUSUAL WEATHER.

Spring 2020 broke sunshine duration records across Western Europe. The Netherlands recorded the highest surface irradiance since 1928, exceeding the previous extreme of 2011 by 13%, and the diffuse fraction of the irradiance measured a record low percentage (38%). The coinciding irradiance extreme and a reduction in anthropogenic pollution due to COVID-19 measures triggered the hypothesis that cleaner-than-usual air contributed to the record. The study, published on Nature Communications Earth & Environment, analyses show that the reduced aerosols and contrails due to the COVID-19 measures are far less important in the irradiance record than the dry and particularly cloud-free weather.

You can read the full article [here](#).

## 6.4.1 VALUES FOR USERS

### ACTRIS BENEFITS FOR ACADEMIA & PUBLIC SECTOR

- enhancement of research performances due to centralized access to ACTRIS data and specific services;
- quality-assured and open-access ACTRIS data;
- standardized operating procedures;
- instrument and procedure intercomparisons;
- access to research platforms for conducting excellent research and creating new scientific knowledge;
- increased possibilities for international collaboration, large-scale research projects and training opportunities;
- training and technical support from Central Facilities and on-site support from National Facilities.

### ACTRIS BENEFITS FOR THE PRIVATE SECTOR

- expert services;
- physical and remote access to the infrastructure for innovative research and for the development of novel technologies and products and as a testbed for new technologies and instruments;
- development of quality assurance standards to support the technological development;
- novel public-private collaborations leading to the establishment of spin-off and start-up companies.





## 6.4.2 VALUES FOR PERSONNEL

ACTRIS offers versatile opportunities for skilled and engaged professionals who value work with a purpose and learning opportunities. We support the well-being of our employees and want to make sure they have the chance to develop at work.

### PURPOSEFUL WORK

ACTRIS data and services have true positive influence on the environment, society, businesses, and individuals, and our employees are motivated by the opportunity to solve the grand challenges of our time. Sustainable and ethical behaviors is at the core of ACTRIS and our personnel. We invest significantly in research and development, which guarantees that we can continue to respond to societal issues also in the future as well as develop our research infrastructure and community in a sustainable way. This increases the meaningfulness of working in ACTRIS.

During the exceptional years of the pandemic, many of our and partners' employee worked remotely, and teams developed new ways of working to keep up the meaningfulness of their work and serve users. We focus on good and motivating leadership, and we support managers and experts systematically in developing their leadership skills by organizing and taking part in different training programs and courses.

### WELL-BEING

At ACTRIS, well-being at work is regarded as a whole, including the work community, leadership, the research infrastructure, and the individuals themselves. Thus, well-being consists of good leadership, motivating work community, balanced workload, meaningful work, as well as a safe working environment.

### LEARNING AND DEVELOPMENT

Our strength stems from our talented, motivated, and engaged personnel. Changes in the business environment, technologies, working methods, and tools require our employees to learn and take in new things continuously. We support and encourage the whole personnel to actively develop and keep up their knowledge and expertise. Developing expertise and knowledge is always in line with ACTRIS business needs and objectives.

### BENEFITS FOR PERSONNEL

- engaging and international working environment
- career development possibilities
- a work that matters.



### CASE CNRS AWARDED SABINE PHILIPPIN WITH THE CNRS CRISTAL MEDAL.

In 2019 the French Research Institute CNRS awarded Sabine Philippin with the Cristal Medal in recognition of her key role in the implementation of atmospheric research infrastructure policy at national and EU level.

Sabine Phillipin has drawn the scheme for ACTRIS Trans-National Access offer which has been proven to be very successful.

## 6.4.3 VALUES FOR SOCIETY AND THE ENVIRONMENT

We bring value to societies through accurate and reliable atmospheric observations as well as decision-making support for national and local authorities. This way we help societies become better informed, more resource efficient, and safer. In addition, we create value through investments in R&D and collaboration with the scientific community and private sector.

### BETTER INFORMED SOCIETIES

ACTRIS works together with hundreds of research performing organizations globally, supporting them in gathering accurate atmospheric observations for weather and climate forecasts that are critical for societies. We also collaborate with international funding agencies and Earth Observation experts to build capacity for observing networks and competence in developing economies. This way we help these societies to be better prepared for atmospheric hazards and extreme weather and their impacts.

Health services are also one of the foundation pillars of an informed society, and for example large cities and urban areas need accurate and reliable air quality monitoring.

### SAFETY

Reducing societal vulnerability to hazards affecting the atmospheric environment, such as volcanic eruptions, extreme pollution episodes, outbreaks of desert dust or forest fires, requires adaptive actions, from hazard identification to emergency management. Because some of these hazards are likely to be more frequent in future climate, it is also important that conditions are met to improve predictions and emergency responses. The essential capacity of ACTRIS to support national and international authorities in case of atmospheric hazards fundamentally relies on the research infrastructure's scientific and technical assets. For example, ACTRIS has been instrumental in delivering key information to civil aviation authorities and is regularly used to identify causes for high-level of particulate matter in European cities, and early-warning of atmospheric hazards such as dust or forest fire episodes.

### RELIABLE DECISIONS

We do our best to provide decision-makers with the scientific facts and analyses they need to adapt to climate change impacts and build climate resilience. Science will help guiding valuable emission-reduction actions at different scales, from local to national and continental.

ACTRIS data products have already led to improved predictions for weather, climate and air quality as well as enhancing awareness of the environmental challenges. The information provided by ACTRIS contributes to defining mitigation and adaptation strategies and supporting international conventions and protocols.

### RESOURCE EFFICIENCY

Pooling our forces together following integrated workflows allows us to avoid fragmentation and duplication of work, thus maximizing our efficiency to respond to the needs of our stakeholders, including the private. Joint efforts increase the user access and use to platforms, likely reducing unit of access costs, thus guaranteeing the optimization of investments. By joining resources and capabilities we increment our chances to succeed in cross-domain knowledge transfer and have larger socio-economic impacts. The establishment of ACTRIS as a unique research infrastructure for atmospheric sciences within Europe improves the efficiency of operation and coordination among the European research institutions.

## 6.4.3 VALUES FOR SOCIETY AND THE ENVIRONMENT

### ECONOMIC VALUE

The development, construction, operation and maintenance of ACTRIS offers important opportunities for strengthening human capital creation, through supporting educational activities, facilitating scientific cooperation, and creating employment opportunities in specialised and high-level positions.

ACTRIS has a positive impact on local communities through employment and taxes. Responsible business practices and engagement of local, regional and national partners create indirect benefits to local communities.



### CASE CLIMATE CHANGE IS NOT FICTION.

Cathrine Lund Myhre, the leader of ACTRIS Data Centre, starred in the inspirational movie ICE ON FIRE produced and narrated by Leonardo DiCaprio.

The movie focuses on raising awareness of the dramatic changing condition in the Arctic, climate change and helps the public to understand that "what happens in the Arctic doesn't stay in the Arctic".

[Watch trailer](#)



### CASE FOSTERING OPEN DIALOGUE WITH THE INDUSTRY.

The event, first organized in 2021 and now an annual appointment, gathers together a large audience from academia and industry to discuss the latest innovations in atmospheric science technologies and exploit the potential for new opportunities, R&D collaborations and networking.

## 6.4.3 VALUES FOR SOCIETY AND THE ENVIRONMENT

### ACTRIS BENEFITS TO SOCIETY (E.G., GENERAL PUBLIC, NATIONAL AND INTERNATIONAL MEDIA)

- improved weather, climate and air quality predictions and services due to novel scientific findings resulting from ACTRIS;
- enhanced awareness on the environmental challenges that society is facing, e.g., climate change and air quality issues; and promotion of dialogue between researchers and society to translate scientific knowledge into practical applications

### ACTRIS BENEFITS TO EDUCATORS

- trainings and best practices;
- exchange programmes
- knowledge transfer, e.g. basic and advanced international courses on atmospheric composition and processes for Master and PhD students;
- providing educational material (e.g. on-line courses, webinars, e-training platforms, documentation);
- offering expertise (e.g. expert visitors to schools of all levels).

### ACTRIS BENEFITS TO MINISTRIES AND FUNDING ORGANIZATIONS

- optimization of national investments in research infrastructures;
- providing better value for money via the pan-European dimension and coordinated access to data and services;
- internationalization of local areas in which National Facilities are located increasing their attractiveness being part of pan-European research infrastructure;
- added value for research, innovation, and society through efficient use of the research infrastructure's resources.

### ACTRIS BENEFITS TO EUROPEAN RESEARCH AREA

- support in cutting edge research and excellence in European Research Area;
- cross-border collaboration;
- contribution to further development of the European Research Area;
- enhancing European leadership in global level.

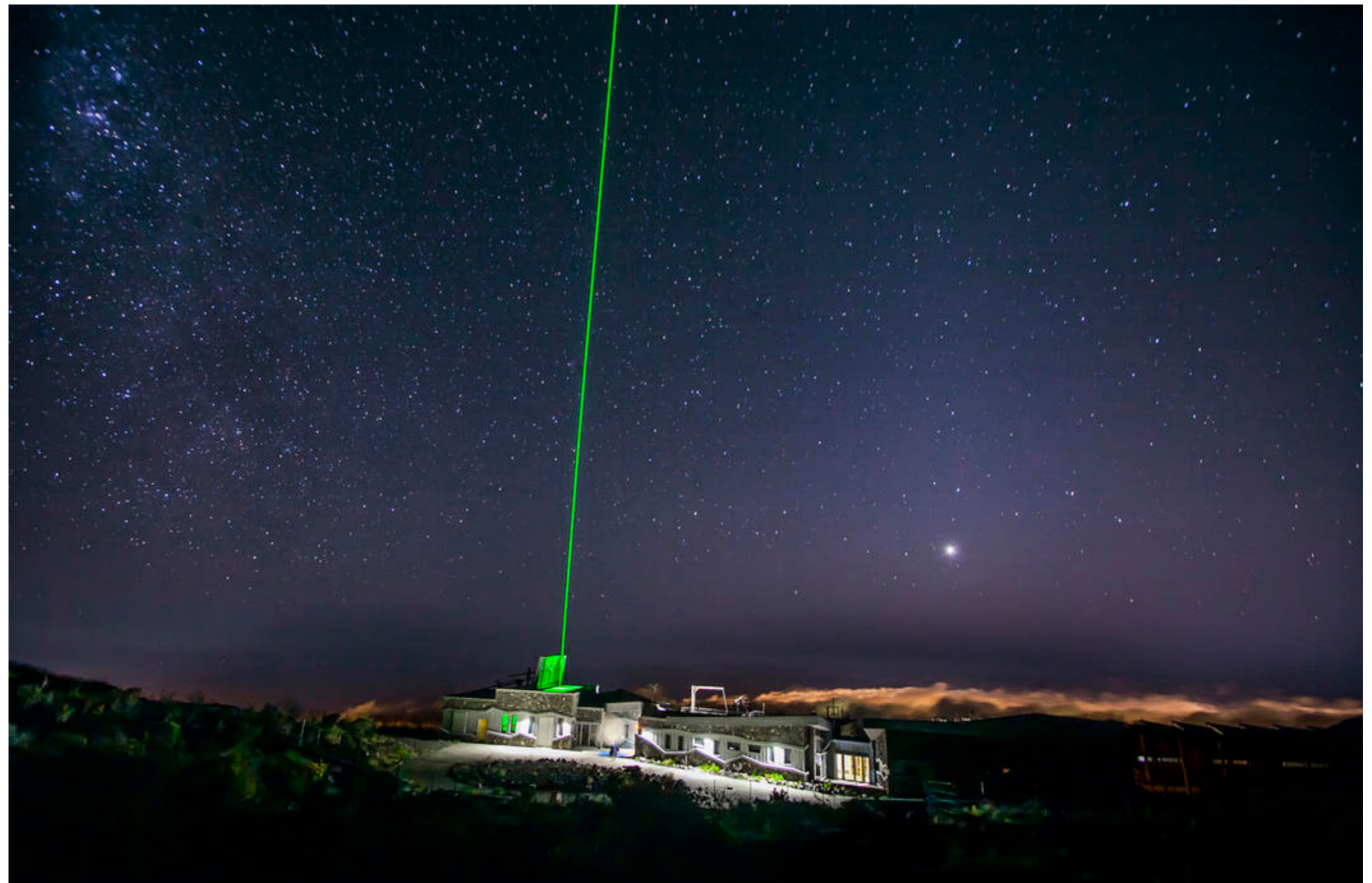
### ACTRIS BENEFITS TO POLICY MAKERS

- support for policy-driven networks established under EU-directives (local and European air-quality networks);
- development of new policies by provision of novel tools for validating the impact of regulation strategies and emission abatement policies through direct evaluation of atmospheric trends at regional / European scale;
- decision-making regarding environmental issues by provision of high-quality and long-term data for predicting climate scenarios from local and regional up to national and international level;
- atmospheric hazard (e.g. volcanic eruptions) management and risk mitigation via the knowledge base of ACTRIS expert teams and monitoring of extreme atmospheric events;
- enhancing job creation indirectly (expert jobs, new business opportunities).

## 6.4.4 VALUES AND BENEFITS FOR MEMBERS & PARTNERS

ACTRIS counts more than 100 European partners and its Head Offices are located in Italy and Finland. As the technological and service provider leader in its field, ACTRIS utilizes megatrends and invests in research and development to ensure continuous growth. This ensures our services to remain optimally configured by responding to current and emerging scientific challenges related to air quality, climate and linked areas. For example, ACTRIS will account for the current and future landscape of the integrated Earth observing systems to ensure that services provided remain unique, well-connected to user requirements, and embedded in national, European and international initiatives.

Our strategic framework defines the conditions for the effective evolution of ACTRIS, including its integration as a service provider for space agencies (in particular, ESA and EUMETSAT), Copernicus, observing networks and modelling initiatives, but also a tool for the private sector to test new instruments or develop innovative usage of data. Our strategy must be capable of responding to emerging challenges including the provision of enhanced services, the adoption of new technologies, and new opportunities provided by ICT, High Performance Computing and European initiatives (EGI, PRACE, European Open Science Cloud, EuroHPC).



## 6.4.4 VALUES AND BENEFITS FOR MEMBERS & PARTNERS

### 1 TOP LEADER POSITION

- Leading technologies in atmospheric observations using in situ and remote sensing techniques with most accurate and reliable instruments, algorithms, and software
- Clear leadership position in atmospheric field, estimated total worth 90MEUR
- High continuous investments in technologies and equipment

### 2 GROWTH POTENTIAL IN MULTIPLE DIMENSIONS

- New technologies
- New products, applications, and digital tools that leverage latest technologies, platforms, and facilities
- Expansion into new customer segments and geographical regions, incl. developing countries

### 3 KEEN ATTITUDE TOWARDS THE PRIVATE SECTOR

- Established strategy and procedure for interaction with the private sector (incl. downstream, upstream and partnerships)
- Model agreements to allow and support actions for effective technology and knowledge transfer
- ATMO-ACCESS project (2021-2025) will target new and customized trans-national access modalities that are specifically adapted to innovators in industry

### 4 STRONG OPTIMIZATION OF FUNDING AND INVESTMENT

- Optimization of national investments in research infrastructures
- Better value for money via the pan-European dimension and coordinated access to data and services

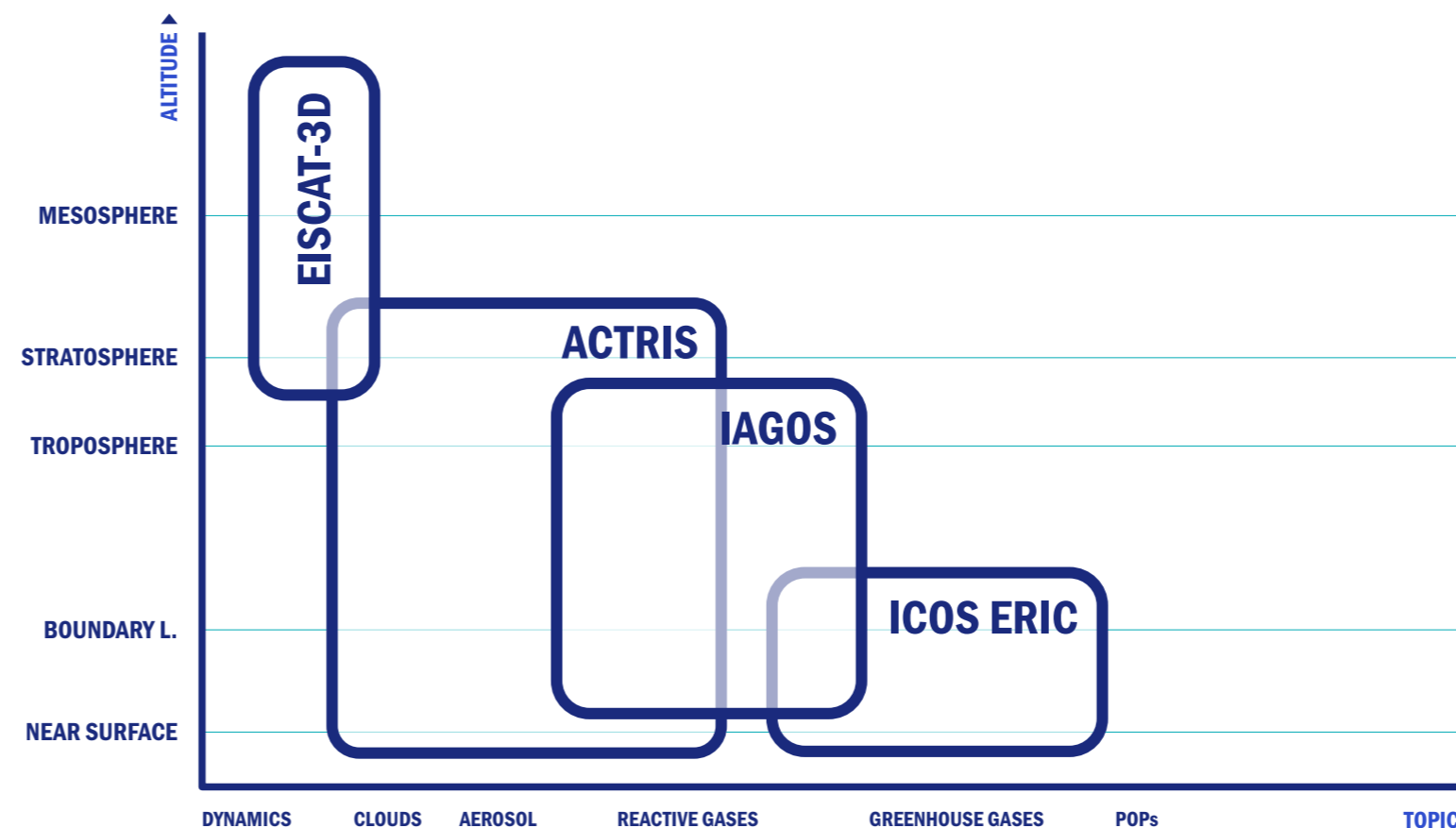
### 5 POWERFUL PROFILE ON THE GLOBAL SCALE

- Internationalization of local areas in which NFs are located increasing their attractiveness by being part of international research infrastructure
- Cross-border collaborations and partnerships
- Enhanced visibility through coordinated activities and broader socio-economic impacts

## 6.4.5 ACTIVE COMMUNITY NETWORK AND SCIENTIFIC COLLABORATION

ACTRIS is fully integrated into the European Landscape of Atmospheric Research Infrastructures together with IAGOS, EISCAT-3D and the atmospheric component of ICOS ERIC. Cooperation with other RIs is part of the ACTRIS overall strategy:

- ACTRIS collaborates towards common scientific goals by including atmospheric simulation chambers which have been operated for many years within the EUROCHAMP project.
- ACTRIS complements the area of the atmospheric component of ICOS ERIC (long-lived climate forcers) with the provision of information on short-lived climate forcers.
- ACTRIS completes information provided by IAGOS (passenger aircraft measurements) both temporally, by adding the required continuity of the time series, and spatially, by offering 4-D information across Europe on parameters measured by both RIs.
- ACTRIS investigates the atmosphere from the surface to the stratosphere and therefore complements the EISCAT-3D, mostly focusing on upper atmosphere dynamics, a region and a domain not covered in ACTRIS.



ACTRIS seeks synergies and collaboration opportunities with other RIs, wherever it is feasible and reasonable. The motivation for collaboration derives from the fact that by increasing data interoperability, co-locating RI facilities and widening the access beyond RI specific user communities, unprecedented scientific breakthroughs can be achieved. Therefore, collaboration and synergies are a central activity of ACTRIS operations. To this end, ACTRIS joins and actively participates in common operations within the ENVRI community and EOSC and develops cohesive methodologies and frameworks via coordinated approaches and actions through the RI-URBANS and ATMO-access projects.

## 6.4.5 ACTIVE COMMUNITY NETWORK AND SCIENTIFIC COLLABORATION

The cluster of European environmental research infrastructures (ENVRI) gathers 26 research infrastructures, which are either working in a single domain (atmosphere, marine, solid Earth or Terrestrial ecosystem/ biodiversity) or in a multi-domain approach.

**ENVRI Community**

**Life** (Leaf icon)

**Air** (Cloud icon)

**Water** (Waves icon)

**Land** (Rock icon)

ACTRIS AnaEE ARISE AQUACOSM	DANUBIUS DiSSCO EISCAT_3D ELIXIR eLTER	EMBRC EMPHASIS EMSO EPOS EUFAR	EURO-ARGO EUROCHAMP 2020 EUROFLEETS EuroGOOS	HEMERA IAGOS ICOS INTERACT IS-ENES	JERICO-RI LifeWatch SEADATANET SIOS
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→ [Find more about ENVRI](#)



## 6.4.5 ACTIVE COMMUNITY NETWORK AND SCIENTIFIC COLLABORATION

ACTRIS ecosystem extends beyond the environmental domain, encompassing standard reference initiatives, international EO initiative, global observational networks and partnerships with private sectors.



## 6.4.5 ACTIVE COMMUNITY NETWORK AND SCIENTIFIC COLLABORATION

DOMAIN	EXAMPLE RI	ACTRIS CONTRIBUTION
Physical science and engineering	<a href="#">Cherenkov Telescope Array (CTA)</a>	Provision of atmospheric transmissivity data
Health and food	<a href="#">Anaee</a> <a href="#">EIRENE</a>	ACTRIS data and technology are relevant for both health and agriculture
Social and cultural innovation	<a href="#">E-RIHS</a> <a href="#">ESS ERIC</a> <a href="#">SHARE-ERIC</a>	Impact on cultural heritage Impact on life
Energy	<a href="#">ECCSEL ERIC</a> <a href="#">EU-SOLARIS</a> <a href="#">WindScanner</a>	ACTRIS data and technology are relevant for both energy supply and consumption



# 07 SUSTAINABILITY

- 7.1 Environment
- 7.2 Sustainable business practices
- 7.3 Implementation
- 7.4 Personnel
- 7.5 Ethics and compliance



## 7.1 ENVIRONMENT

We are conscious that our claim to support society in tackling the grand societal challenge of climate change should be reflected in a well-monitored carbon footprint of our activities, while, in reality, ACTRIS is potentially carbon-intensive due to the inherent mobility related to access. Although achieving carbon-neutrality in ACTRIS may be too ambitious, we are committed to implement several actions to reduce the carbon footprint at two different levels: 1) by implementing measures to avoid, reduce or compensate CO2 emissions of our activities and 2) by integrating modalities for considering the CO2-footprint of access (e.g., included in the access costs) and strategies for limitation/compensation. In a practical sense, we will conduct online meetings and conferences whenever feasible, and hold meetings and events at locations that lead to the lowest carbon footprint (incl. climate-friendly catering), and strongly invest in developing remote and virtual access provision, thereby supporting 'climate-friendly research' in the coming years.

## 7.2 SUSTAINABLE BUSINESS PRACTICES

Our Head Office premises as well as the managerial processes are being set up during 2023 and the developed business practices as well as financial management and control systems will be included in the next edition of ACTRIS Business Plan.

### FINANCIAL MANAGEMENT AND CONTROL SYSTEMS

The main activities of these tasks include ACTRIS annual financial planning and budgeting, executing and monitoring money transactions, long term financial planning, financial reporting and auditing, financial management of the external projects, monitoring the working hours of the personnel and the management of travel costs, management of the tax exemption process and support the seeking of new financial possibilities.

### INSURANCE AND LIABILITY

As per standard business practices, ACTRIS will be covered by all mandatory insurances. ACTRIS ERIC shall be liable for its debts and shall take appropriate measures to cover the risks specific to the construction and operation of ACTRIS ERIC..

## 7.3 IMPLEMENTATION

The ACTRIS implementation phase will be until 2026 and is dedicated to the construction and upgrading of the National Facilities and Central Facilities, setting-up the user access and service provision, work on the governance and management tasks, increase the connection with new users and member countries, further develop strategies within ACTRIS and for international collaboration and partnerships, and integrate ACTRIS at different strategic levels (national, European and internationally).

The target of the ACTRIS implementation phase is to ensure the long-term operations and sustainability of ACTRIS, as well as the ability to respond to emerging needs.

The ACTRIS implementation phase has been supported by the 5-year European Commission funded project ACTRIS IMP which started on January 2020 and ends in December 2023. The ACTRIS IMP project has been focused on establishing ACTRIS as a long-term research infrastructure with demonstrated well-functioning operations and services.

## 7.4 PERSONNEL

**ACTRIS Employment Policy** gives guidelines for the RI on good practices, and ACTRIS Human Resource (HR) strategy describes the aims and goals of **ACTRIS HR management**. ACTRIS developed its staff policy according to ACTRIS values and principles. It sets the guidelines for the persons contributing to ACTRIS activities to be ethically aware and socially responsible, and to comply with the expectations of stakeholders and the RI management. ACTRIS ERIC as a legal entity will have its own Staff rules and regulations, aligned with the ACTRIS Staff Policy and ACTRIS HR strategy.

### TALENT ATTRACTION

ACTRIS' goals is to build a long-term sustainable research infrastructure with motivated and committed personnel. ACTRIS aims to attract the best research infrastructure professionals to provide the best services for its users. ACTRIS needs to provide training possibilities and competitive career opportunities for those who want to specialise in managing and operating a world class research infrastructure. During the transition phase towards the operational research infrastructure, ACTRIS should aim specially to identify

the urgent training needs.

### DEVELOPING STAFF EXCHANGE PROGRAMMES

ACTRIS shall provide opportunities to learn new skills and support the professional growth of people by periodically organising and managing staff exchange programmes. Through an exchange program personnel can gain wide knowledge of ACTRIS activities, plan their future career paths and train themselves as professional research infrastructure experts.

### SUPPORTING CAREER DEVELOPMENT

ACTRIS shall investigate ways to foster career developments and should identify the specific needs for support. To support the career development of the personnel, ACTRIS should work towards the recognition of the research infrastructure work at institute level. It should also advocate the importance of the research infrastructure roles toward the research performing organizations and support the recognition of research infrastructure related positions at national level.

### EQUAL TREATMENT AND GENDER BALANCE

ACTRIS promotes gender balance and equality throughout the research infrastructure to stand out as an excellent example of a well-balanced working community. Therefore, equal treatment is one of the key principles of the Staff Policy and any discrimination based on gender identity, ethnicity, disability, race, religion, political or other, should be prohibited according to the policy.

ACTRIS is in several countries so it is by nature international, consisting of people from several nationalities. ACTRIS will actively work for building up physical access schemes to its Observational and Exploratory Platforms that allow equal participation of different people in all life situations. ACTRIS will also actively support gender-balanced technical training of ACTRIS National Facilities operators, managers,

and users.

Specific attention will be given to the gender-dimension aspect when defining the user requirements, identifying, and working with user groups and coordinating internal and external collaborative actions. ACTRIS aims to act as a role model in atmospheric research and in the research infrastructure area and to facilitate mentoring and networking opportunities for all genders.

## 7.5 ETHICS AND COMPLIANCE

Everyone in ACTRIS should work in a socially ethical way with integrity and fairness and maintaining a high level of trust and respect among the people working in ACTRIS and with the users and stakeholders. One should always consider that the mission of ACTRIS is to provide effective access for a wide user community to its resources and services, in order to facilitate high-quality Earth system research, to increase excellence in Earth system research, and to provide information and knowledge on developing sustainable solutions to societal challenges. ACTRIS ERIC together with the Ethical Advisory Board will establish a process for developing the ethical principles and guidelines of ACTRIS, to be agreed within the ACTRIS community. The document will include the ethical principles on data productions and management, physical and virtual access, acknowledgement policies. The development of ACTRIS code of conduct is also part of this process.

### MANAGING ETHICAL ISSUES

Following the principle of subsidiarity, ACTRIS activity-related misconducts are handled locally according to the local regulations. However, the information of the misconducts and

the local process on the matters involving staff within ACTRIS activities should also be transferred to the Ethical Advisory Board. The ACTRIS Ethical Advisory Board shall advise both the ACTRIS ERIC, its advisory bodies, and its contractual ACTRIS partners in all ethical issues. Anyone from these organisations can contact the Director General or the members or observers of the General Assembly and raise an ethical issue to be discussed and handled.

### CONFLICT OF INTEREST

Since ACTRIS involves several organisations and countries, conflicts of interest may arise if the same organisations or their staff are present in several places in the ACTRIS governance or operations. A conflict of interest may arise when a person or a legal entity is involved in multiple activities related to, for example financial, scientific, management, or other aspects, or a person has a secondary occupation, which may affect his/her motivation and personal or organisational interest. All persons involved in the ACTRIS activities should conduct their affairs avoiding or minimizing conflicts of interest. However, if a conflict of interest cannot be avoided, this

person should declare it openly and disqualify him/herself if needed. Disqualifying oneself ensures that decisions are not influenced by competing interests and will solely be made for the benefit of ACTRIS. When a person is disqualified, he/she shall not participate in the consideration of a matter or be present during such consideration. Conflict of interest shall be resolved on personal, financial and institutional levels.



# 08 GOVERNANCE

- 8.1 ACTRIS ERIC legal entity
- 8.2 ACTRIS ERIC governance
- 8.3 Data Centre, Topical Centres and National Facilities are closely linked to the ACTRIS ERIC
- 8.4 ACTRIS members and observers
- 8.5 Operation management and monitoring
- 8.6 Key roles in ACTRIS management system
- 7.7 Risk management



## 8.1 ACTRIS ERIC LEGAL ENTITY

The legal entity ACTRIS ERIC is established to coordinate and operate a ACTRIS as a distributed research infrastructure.

ACTRIS ERIC provides the coordination, integration, development, monitoring, and governance of ACTRIS, and will steer the strategic and financial development as well as the long-term sustainability of ACTRIS. Further, ACTRIS ERIC manages the long-term agreements with the Data Centre and Topical Centres, and the service provision for wide user communities. The tasks and activities of ACTRIS ERIC and ACTRIS are defined in the [ACTRIS statutes](#), and in the [Technical and Scientific Description of ACTRIS](#).

The ACTRIS Head Office operates directly under the legal entity providing coordination and leadership. The statutory seat is located in Finland but one unit is in Italy. The ACTRIS ERIC also coordinates and facilitates the interaction with stakeholders and oversees the strategic development of the whole infrastructure. In addition, the Data Centre is part of ACTRIS ERIC through its Management Board and dedicated working time of the Data Centre Leader and the Heads of the Data Centre's units as in-kind contributions.

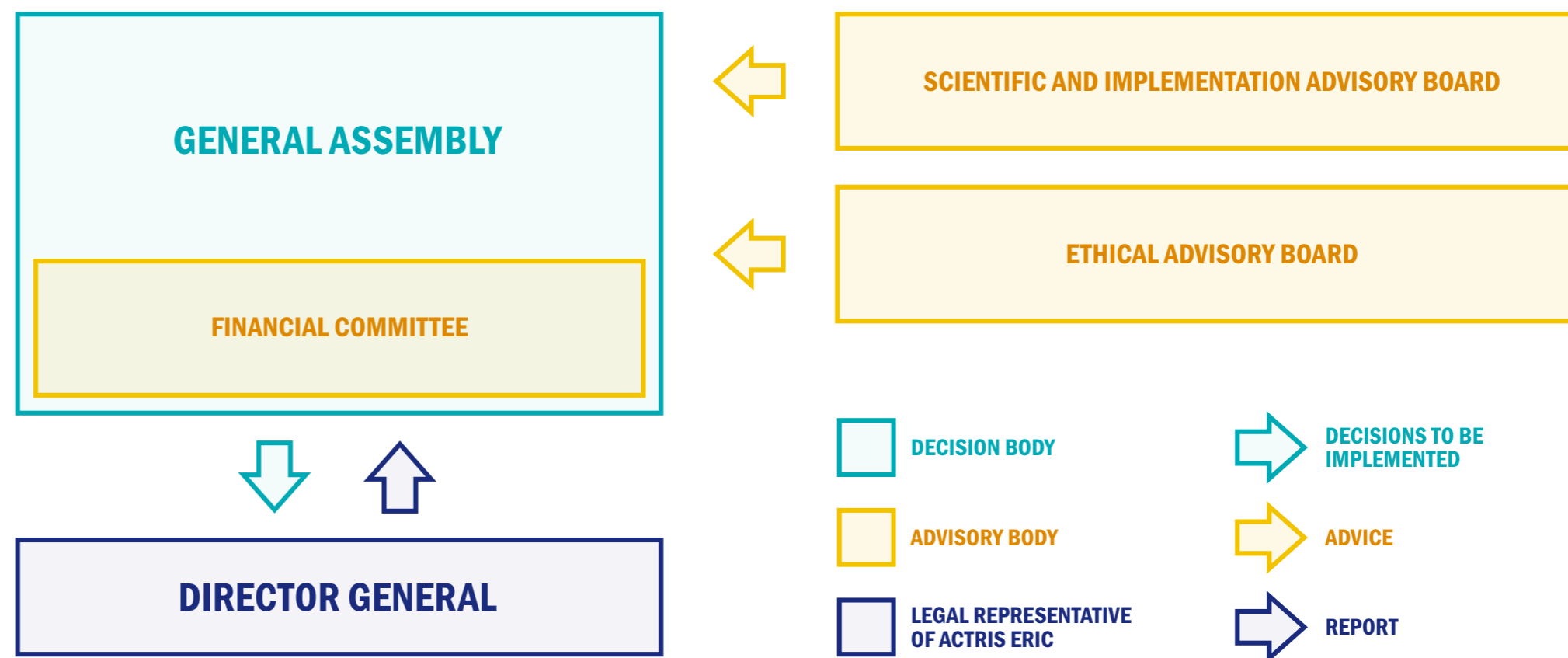
## 8.2 ACTRIS ERIC GOVERNANCE

**ACTRIS ERIC General Assembly** is the highest decision-making body, which is advised by an external the **Scientific and Implementation Advisory Board** (Scientific and Innovation Advisory Board in operational phase) and by an **Ethical Advisory Board**. The General Assembly is also supported by internal Financial Committee on financial planning, reporting and strategic development.

**The Director General** is the legal representative of the ACTRIS ERIC, overseeing and coordinating ACTRIS activities,

and responsible for the implementation of the decisions by the General Assembly. The Director General ensures the scientific and strategic development of ACTRIS, to meet the expectations on socio-economic impacts, technology development and innovation, actively fostering community building, external relations, and strategic partnerships.

Detailed descriptions of the tasks of the governance bodies are described in the [ACTRIS statutes](#), and in the **Technical and Scientific Description of ACTRIS ERIC**.





## 8.3 DATA CENTRE, TOPICAL CENTRES AND NATIONAL FACILITIES ARE CLOSELY LINKED TO THE ACTRIS ERIC

The Topical Centres and the part of the Data Centre not under the ERIC are operated at the national level, outside the perimeter of ACTRIS ERIC. These facilities are linked to the ACTRIS ERIC by agreements, that define the contributions of the Central Facilities towards ACTRIS ERIC, as well as the rights and obligations of the organisations hosting the Central Facilities and the ERIC.

**ACTRIS ERIC shall facilitate the efficient operation of the research infrastructure by, e.g., the following activities:**

- Delivery of an annual report on progress in the implementation of ACTRIS ERIC;
- Collection of annual work plans and reports and financial plans and reports from each Central Facilities;
- Allocation of the membership contributions to the Central Facilities according to the General Assembly decision;
- Monitoring the contribution of National Facilities to the Central Facilities related to the planning of work and resources;
- Monitoring and reporting of KPIs on operations of the Central Facilities ;
- Addressing any ethical issues;
- Managing the access process to the National Facilities and Central Facilities and facilitating the interaction on the National and Central Facilities services (e.g. labelling, feasibility checks, organisation of access calls, evaluation, selection, implementing the user access, reporting).

In addition, the organisations hosting Central Facilities will establish internal consortium agreements for defining the operations of the Central Facilities , task sharing and the rights and obligations of each participating host organisation in charge of the Central Facilities Units.

The National Facilities will be connected to the ACTRIS ERIC by agreements to be made with the responsible research performing organizations. The contract will define the expected operations, data delivery and possible access services of the National Facilities as part of the research infrastructure, and any other rights and obligations of the research performing organizations and ACTRIS ERIC.

## 8.4 ACTRIS MEMBERS AND OBSERVERS

The following entities may become members of ACTRIS ERIC with voting rights, or observers or permanent observers, without voting rights of ACTRIS ERIC:

- Member states of the European Union;
- Associated countries to the European Union;
- Third countries other than associated countries
- Intergovernmental organizations.

An observer that foresees a long-lasting participation in the consortium but is not in a position to become a member may be granted the status of a permanent observer based on the General Assembly's approval.

Both members and observers (incl. permanent observers) pay membership contributions, but they face different rights and obligations. The rules for ACTRIS membership and observer-ship and their obligations and rights are defined in the [ACTRIS statutes](#).

### **ACTRIS ERIC members are (status: 2023):**

Republic of Austria, Kingdom of Belgium, Republic of Bulgaria, Republic of Cyprus, Czech Republic, Kingdom of Denmark, Republic of Finland, French Republic, Federal Republic of Germany, Italian Republic, Kingdom of Norway, Kingdom of the Netherlands, Republic of Poland, Romania, Kingdom of Spain, and Kingdom of Sweden.

### **ACTRIS ERIC permanent observers (status: 2023):** Swiss Confederation.

## 8.5 OPERATION MANAGEMENT AND MONITORING

Efficient research infrastructure workflows support ACTRIS governance such as the General Assembly, Scientific and Innovation Advisory Board, Ethical Advisory Board, RI Committee and any other committee or task force. Importantly, managerial tools facilitating the coordination and development of the whole research infrastructure, are provided to all Central Facilities and the National consortia.

ACTRIS is a multi-layered distributed research infrastructure with 8 Central Facilities operated in more than 40 units in different countries and operated by a staff consisting of technicians, engineers, scientists, and managers. The national ACTRIS activities include more than 100 National Facilities. Furthermore, ACTRIS brings together several scientific fields and thus, the scientific, technical, and operational integrative activities need to be well coordinated and facilitated. Thus, good coordination and integration of the large community, by ACTRIS ERIC, is essential for the long-term success of ACTRIS.

Efficient management of the research infrastructure operations also includes the coordination and integration of the annual work

plans and reports of the Central Facilities, and production of progress reports or other periodic reports, such as stakeholder handbook. The Head Office ensures that clear and agreed work plans for executing this strategy are put in place to guide optimum decision-making in ACTRIS. The performance of the research infrastructure will be monitored through the agreed set of KPIs.

## 8.6 KEY ROLES IN ACTRIS MANAGEMENT SYSTEM

### DIRECTOR GENERAL

- The Director General is the legal representative of the ACTRIS ERIC, overseeing and coordinating ACTRIS activities, and responsible for the implementation of the decisions by the General Assembly.
- The Director General ensures the scientific and strategic development of ACTRIS, to meet the expectations on socio-economic impact, technology development and innovation, actively fostering community building, external relations, and strategic partnerships.

### CENTRAL FACILITY LEADER

- The Central Facility Leaders have a key role in the leadership and management of the distributed research infrastructure.
- They coordinate and manage the activities in the Central Facilities, but they should also act as an interface between the Central Facility Units, the staff and the Director General.
- Together with the Director General they represent ACTRIS and support the Director General in their field of expertise.

### CENTRAL FACILITY HEAD OF UNIT

- The Heads of Units will lead and manage the different units of the Central Facilities.
- They act as an interface with the community and users taking care that ACTRIS activities are run according to ACTRIS rules.
- In addition to the operative tasks, they support the Central Facility leader, e.g. in annual planning and reporting.

### NATIONAL FACILITY PI

- National Facility PIs have an official role in ACTRIS, taking care of ACTRIS observational and experimental platforms. Thus, concerning the responsibilities towards ACTRIS they are not acting only as the PI of their host institution.
- Similarly to the Heads of Units, they act as interface towards the ACTRIS community and to the users.
- They acts as a link between the platform and the Central Facilities and represents the facility in the National Facility Assembly.
- The PIs need to secure that the data is produced according to ACTRIS rules.

### NATIONAL CONTACT PERSON

- The National Contact Person acts as a key interface between the national ACTRIS consortia and the European level ACTRIS.
- The National Contact Person of a member or observer country must be recognized and supported by its ACTRIS scientific community.
- The National Contact Person is expected to be responsible for organizing the coordination of the ACTRIS community at the national level
- The National Contact Person should be responsible for ensuring proper dissemination and information flow from European level ACTRIS activities to the national science communities and to the relevant national shareholders.

## 8.7 RISK MANAGEMENT

The risk management in ACTRIS is important as risks are the main source of uncertainty and potential threats to ACTRIS operation, outcome and success.

As a part of ACTRIS Risk management, ACTRIS has a set of Risk Management Principles as general guiding principles for operation and management. The Risk Management Principles introduced more detail in the ACTRIS Risk management plan are following:

**Risk management principle 1:** The risks are considered in the regular management and decision-making procedure, and they are assessed and monitored regularly.

**Risk management principle 2:** ACTRIS shall aim to mitigate the impact of the potential risks and prepare for contingencies.

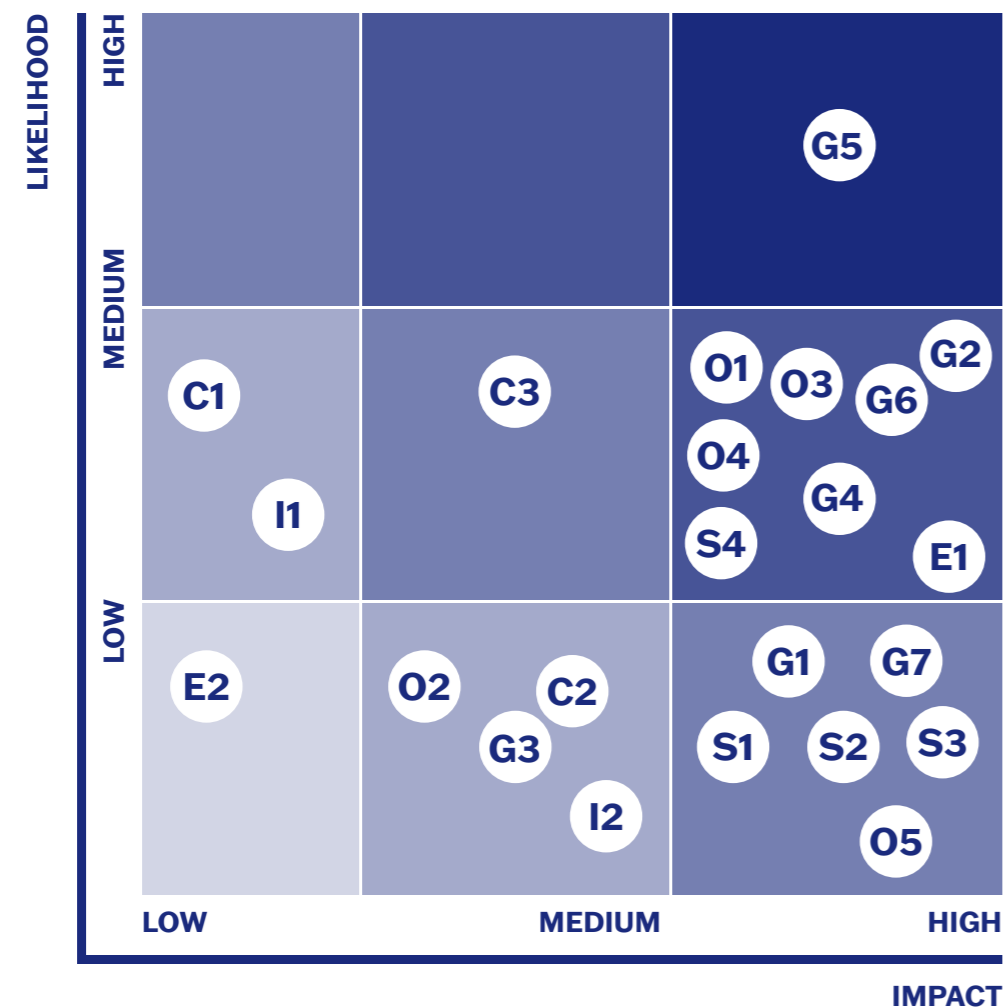
**Risk management principle 3:** The priority is set for high likelihood risks with serious impacts.

The entire ACTRIS community, especially National ACTRIS Consortia, Central Facilities and National Facilities together with Head Office, participates in identifying risks and defining the impacts of each risk. Everybody in ACTRIS is responsible for preventing the risks and reporting those to the Central Facility Leader, National Contact Person, Head Office or Director General.

In addition to the general ACTRIS Risk Management Plan, each Central Facility is responsible for compiling a detail risks assessment related to the implementation of the specific Central Facility, based on the Central Facilities internal activities and the requirement from the hosting organisations.

For the risk treatment ACTRIS maintains a Risk Register, which is the basis for the ACTRIS Risk Management. The Risk Register identifies the potential risks for ACTRIS, and is updated regularly. The Risk Register keeps track of identified risks, current assessment of their likelihood and impact and the defined responsibilities.

## 8.7 RISK MANAGEMENT



### KEY RISKS

### IMPACT/LIKELIHOOD

#### Operations

- O1** CFs consortia have difficulties in setting up CF activities for internal support and service provision
- O2** TCs do not have enough capacity to provide the required operational support to NFs
- O3** Less than half of the foreseen NFs are submitted for labelling process
- O4** Delay in labelling process due to capacity issues at TC or others
- O5** Inefficient data workflow due to the difficulties or delays in implementation of CFs and NFs

- high/medium
- medium/low
- high/medium
- high/medium
- high/low

#### Service development & provision

- S1** SAMU is not able to provide services to users due to the low level of TC and NF commitments or capacity on the provision of access to external users
- S2** User interface is not efficient enough to process all the data and service requests from the users
- S3** Users are not aware of the ACTRIS services or the access procedure to facilities via SAMU
- S4** Cost per service is too high resulting too few requests

- high/low
- high/low
- high/low
- high/medium

#### Governance and Management

- G1** Not enough CF agreements concluded
- G2** Not enough agreements sign with the NFs
- G3** National ACTRIS consortia and national stakeholders are not interactive with ACTRIS ERIC
- G4** Underestimation of expertise and HR to build ACTRIS or not enough staff provided by the RPOs to work on ACTRIS implementation
- G5** Over-dependence on key individuals
- G6** Underestimation of real implementation costs
- G7** Delay in implementing the RI within ten years from starting on the Roadmap

- high/low
- high/medium
- medium/low
- high/medium
- high/high
- high/medium
- high/low

#### Community & country engagement

- E1** Difficulties to engage countries.
- E2** Countries do not have strong and well-organized ACTRIS science communities.

- high/medium
- low/low

#### Collaboration Communication

- C1** Not enough collaboration agreements concluded with key partnerships (liaisons)
- C2** Not enough visibility among targeted user groups. ACTRIS does not reach new user communities
- C3** The relevance and impact of ACTRIS not sufficiently communicated and promoted

- low/medium
- medium/low
- medium/medium

#### Impact (innovation & socio-economic)

- I1** Not enough interest from the private sector to co-develop new services with ACTRIS
- I2** ACTRIS does not have enough socio-economic impacts

- low/medium
- medium/low

## 8.7 RISK MANAGEMENT

### OPERATIONS

#### **01 - CFs consortia have difficulties in setting up CF activities for internal support and service provision**

##### **Managing risk:**

- Ensure support from the RPOs and countries hosting CF units to have enough resources for the CF implementation.

#### **02 - The TCs do not have enough capacity to provide the required operational support to NFs**

##### **Managing risk:**

- Establish a well-planned ramp-up process with clear RI support schedule.
- Plan for gathering the capacity.

#### **03 - Less than half of the foreseen NFs are submitted for labelling process**

##### **Managing risk:**

- Ensure support from the RPOs operating NFs to have enough resources for upgrading and maintaining NF operations.
- Ensure that the cost of memberships for ERIC is not hindering the NF.

#### **04 - Delay in labelling process due to capacity issues at TC or others**

##### **Managing risk:**

- HO must follow up TC implementation plans.
- HO works in a coordinated manner with the TC leaders in timelines and procedure to label NFs in different topics.

### SERVICE DEVELOPMENT AND PROVISION

#### **S1 - SAMU is not able to provide services to users due to the low level of TC and NF commitments or capacity on the provision of access to external users**

##### **Managing risk:**

- Work together with TC units, NF operators, hosting RPOs and countries to ensure the commitments for service provision.
- Communicate the benefits for NFs and TCs.

#### **S2 - User interface is not efficient enough to process all the data and service requests from the users**

##### **Managing risk:**

- Establish a long-term plan for the SAMU and DC to be able to increase the capacity and resources if needed.

#### **S3 - Users are not aware of the ACTRIS services or the access procedure to ACTRIS Facilities via SAMU**

##### **Managing risk:**

- Formulate a clear user strategy during the implementation phase in consultation with the experts and user communities.
- Efficient dissemination and promotion activities.

#### **S4 - Cost per service is too high resulting too few requests**

##### **Managing risk:**

- HO shall make market analysis to evaluate the cost of the different services that ACTRIS offers.
- Costs update after two years of operation.

### GOVERNANCE AND MANAGEMENT

#### **G1 - Not enough Central Facility agreements concluded**

##### **Managing risk:**

- Define a clear plan for negotiation and signing the agreements with the RPOs hosting CFs units and NFs.

#### **G2 - Not enough agreements signed with the NFs**

##### **Managing risk:**

- Communicate the benefits of ACTRIS.
- Secure enough Members for ACTRIS ERIC.
- Integrate the process with the CFs contract agreement when the RPO has both facilities.

## 8.7 RISK MANAGEMENT

- Define a clear plan of negotiation for the rest of the RPOs.

### **G3 - National ACTRIS consortia and national stakeholders are not interactive with ACTRIS ERIC**

#### **Managing risk:**

- Program NF assembly and national consortia events with ACTRIS ERIC to keep the communication flow.

### **G4 - Underestimation of the expertise and human resources to build ACTRIS or not enough staff provided by the RPOs to work on ACTRIS implementation**

#### **Managing risk:**

- Guarantee the allocation of necessary human resources and available skills, efficient HR management and realistic progress assessment toward operation, training of staff.
- Communicate the importance of good HR and management to funders. Have a clear, updated strategy for human resources.

### **G5 – Over-dependence on key individuals**

#### **Managing risk:**

- Ensure the engagement on ACTRIS goals and strategic

issues.

- Communicate with RPOs on their crucial role for providing good work conditions and environment to ACTRIS staff.
- Create and maintain a supportive and attractive working environment. Monitor the well-being of staff.
- Adopt a management plan feasible for the complexity of the enterprise.
- Train new HR capacity and decrease dependence on single persons. Adopt good documentation and archiving system.
- Have a clear, updated strategy for human resources.

### **G6 – Underestimation of real implementation costs**

#### **Managing risk:**

- Update and revise the implementation and business plan regularly.
- Revise the cost assessment.
- Analyze expenditures, actively seek for cost efficiency in, e.g. procurements and operations RI-wide and with other environmental RIs.

### **G7 – Delay in implementing the RI within ten years from starting on the Roadmap**

#### **Managing risk:**

- Efficiently set up of the governance and get formal commitments from countries for ACTRIS ERIC.

- Solid and concrete implementation plan written for CF and NFs; monitoring.

## 8.7 RISK MANAGEMENT

### COMMUNITY AND COUNTRY ENGAGEMENT

#### E1 – Difficulties to engage countries

##### Managing risk:

- Engage key countries and funders early in the negotiations.
- Keep everyone informed. Prepare (the decisive) meetings well with realistic financial plans.
- Build up trust and transparency in the working culture. National ACTRIS Consortia play an important role at the national level.

#### E2 – Countries do not have strong and well-organized ACTRIS science communities

##### Managing risk:

- Establish open and well-communicated events for science communities.
- Support the establishment of National Consortia.

### COLLABORATION AND COMMUNICATION

#### C1 – Not enough collaboration agreements concluded with key partnerships (liaisons)

##### Managing risk:

- Participate actively in the international arena.
- Seek partnerships.
- Create concreted means for collaborations and identifying service provision.

#### C2 – Not enough visibility among targeted user groups. ACTRIS does not reach new user communities

##### Managing risk:

- Establish communication tasks working on targeting outreach activities and create different tools and materials to the user groups and stakeholders and facilitate internal and external communications.

#### C3 – The relevance and impact of ACTRIS not sufficiently communicated and promoted

##### Managing risk:

- Update the ACTRIS science case in dialogue with the users.
- Ensure that users have a proper way to acknowledge ACTRIS by request the users to cite ACTRIS datasets within the text of the publication and include a reference to them in the reference list.
- References to the dataset shall be detail enough that the reader of the paper or document shall be able to obtain the datasets from ACTRIS.

### IMPACTS (INNOVATION & SOCIO-ECONOMIC)

#### I1 – Not enough interest from the private sector to co-develop new services with ACTRIS

##### Managing risk:

- Promote ACTRIS platforms for private sector users.
- Participate actively in technology and innovation events.
- Develop partnerships with private companies in the ACTRIS framework.

#### I2 - ACTRIS does not have enough socio-economic impacts

##### Managing risk:

- Verify and strengthen communication and dissemination strategy and activities.
- Guarantee the full exploitation of ACTRIS results.
- Formulate a clear scientific strategy and align it to the needs of the user communities.
- Ensure the needed resources and competence for promoting, analyzing and communicating impacts





# 09 FINANCIAL

## 9.1 ACTRIS financial plan



## 9 FINANCIAL

The ACTRIS financial sustainability is ensured by the long-term members' and permanent observers' commitment, as well as the commitment of more than 100 research performing organizations distributed over 15 Countries in Europe operating the National Facilities.

Different sources will also be searched and used to support the development of the RI: contributions by regions, national and European projects, service and industry fees and grants and other sources.

The resources to construct and operate the National Facilities are organized nationally. **The countries hosting the Central Facility Units are responsible for financing their construction and implementation**, according to their national arrangements. During the implementation phase, started in 2020, the focus is on constructing and upgrading the ACTRIS Central and National Facilities to meet the ACTRIS requirements and set up all the necessary workflows, activities for internal support and service provision.

ACTRIS operations are funded by its member and observer countries. ACTRIS is a large

research infrastructure with substantial financial volume. The total investment by the participating countries during the design, preparatory, and implementation phase is approximately 700 M€, of which a large part is an investment for upgrading the existing National Facilities or building new ones. The estimated total implementation costs of the eight Central Facilities over 5 years is approximately 100 M€, and from 2025 onwards the estimated annual operation costs of the Central Facilities are approximately 16 M€.

In addition, ACTRIS has received funding to support the implementation of the research infrastructure through several projects. The EC-funded ACTRIS implementation project, ACTRIS IMP, ensures resources to support ACTRIS in the implementation phase towards the operations.

Although ACTRIS will enter the operation phase fully in 2026, operation activities and related costs will ramp up from 2021 following the implementation plans given by the Central Facilities.

The financial commitment to the operation costs of ACTRIS are established in the

financial plan, which summarizes, for each budgetary cycle, the expenditures and revenues for the considered years and provides ACTRIS with medium-term funding continuity to support the operations planned for the financial period. The financial plan has been drafted considering the following:

- The operations of the Central Facilities that are part of ACTRIS ERIC are partially funded through the Host premium contributions by the host countries and partially through the membership contributions of the ACTRIS ERIC members, permanent observers and observers, as described below.
- The operations of the Central Facilities that are not part of ACTRIS ERIC are partially funded through the Host contributions by the Central Facility host countries and partially by ACTRIS ERIC through reallocation of the membership contributions, as described below.

The contributions of members and observers and their allocation to the Central Facilities' operations are calculated in accordance with the rules and principles laid down in the [ACTRIS statutes](#), and further detailed in the ACTRIS ERIC internal financial rules.

## 9.1 ACTRIS FINANCIAL PLAN

ACTRIS financial plan includes finances of both the ACTRIS ERIC and ACTRIS Central Facilities operated outside ERIC. The financial plan establishes the general framework for the first three years and will be used as the basis for the annual budget planning in ACTRIS.

An estimation of revenues and expenditure for a year of the full operational phase is also reported as indicative future plan.

### REVENUES IN THE 5-YEAR FINANCIAL PLAN

The revenues of the financial plan comprise of the host premium contributions towards ACTRIS ERIC, host contributions towards Central Facilities that are operated outside ERIC, membership contributions and any possible other contributions.

- Host premium contributions is the support provided by ACTRIS ERIC members and permanent observers for the functioning of the Central Facilities that are part of ACTRIS ERIC, hosted in their own country. Host premium contributions can be provided as in kind or in cash. Host contribution is the support provided by members or permanent observers for the functioning of the Central Facilities that are not part of ACTRIS ERIC, hosted in their own country, and can be provided as in kind or in cash.
- Membership contributions is the amount of money the countries and intergovernmental organizations pay annually as ACTRIS ERIC members, permanent observers or observers. These contributions are used by ACTRIS ERIC to contribute to fund the Central Facilities' annual operation costs.
- Other revenues: can include any foreseen revenue that is not included in the above-mentioned categories. These can include contributions from the new countries joining ACTRIS ERIC and bringing new National Facilities to the research infrastructure, new National Facilities by an existing member, permanent observer and observer countries, not included in the membership calculation at the time of fixing the financial plan process, or income from any other service or support provided to countries not yet part of ACTRIS.

### EXPENDITURE IN THE 5-YEAR FINANCIAL PLAN

The expenditures of the financial plan refer to the operation of ACTRIS ERIC and ACTRIS Central Facilities that are not part of ACTRIS ERIC. They result from the estimation of different operating costs that can be grouped under the following categories:

- Personnel cost
- Cost for equipment and instruments
- Travel cost
- Other indirect cost

The initial financial plan reports the indicative plan of the expenditures and revenues related to ACTRIS ERIC and ACTRIS Central Facilities for the years 2023–2025 (implementation phase). An estimation of revenues and expenditure for a year of the full operational phase is also reported as indicative future plan.

## 9.1 ACTRIS FINANCIAL PLAN

**Table 1. The plan for ACTRIS revenue and expenditures (€) for the operations in the first 3 years and foreseen plan for the full operational phase (rounded to the nearest thousand).**

ACTRIS REVENUE	2023	2024	2025	Expected full operational year
Host premium contribution	951.000	993.000	1.067.000	993.000
Host contribution	6.308.000	7.351.000	8.399.000	7.351.000
Membership contribution (*)	2.855.000	3.202.000	3.605.000	3.202.000
Other revenue	257.000	374.000	452.000	374.000
<b>TOTAL</b>	<b>10.371.0000</b>	<b>11.921.000</b>	<b>13.524.000</b>	<b>11.921.000</b>

(\*) Membership contributions are collected from the establishment of ACTRIS ERIC in 2023/04

ACTRIS EXPENDITURES	2023	2024	2025	Expected full operational year
Head Office (HO)	1.241.000	1.209.000	1.402.000	1.302.000
Data Centre (DC)	2.769.000	2.322.000	3.346.000	2.897.000
Centre for Aerosol In Situ Measurements (CAIS- ECAC)	1.382.000	961.000	1.712.000	1.621.000
Centre for Aerosol Remote Sensing (CARS)	1.705.000	1.599.000	2.328.000	2.088.000
Centre for Cloud In Situ Measurements (CIS)	-	375.000	450.000	375.000
Centre for Cloud Remote Sensing (CCRES)	835.000	932.000	1.082.000	932.000
Centre for Reactive Trace Gases In situ Measurements (CiGas)	1.383.000	1.577.000	1.772.000	1.577.000
Centre for Reactive Trace Gases Remote Sensing (CREGARS)	1.056.000	1.129.000	1.432.000	1.129.000
<b>TOTAL</b>	<b>10.371.000</b>	<b>11.921.000</b>	<b>13.525.000</b>	<b>11.921.000</b>



#### **CONTACTS**

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