



EMME-CARE

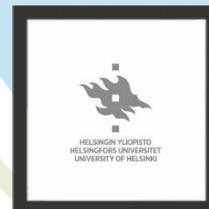
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1. Introduction

This document refers to Deliverable **D8.1 Report on the Structure of the Innovation Department** (linked to Task 8.1) and discusses the actions, measures and decisions that were taken by the Center of Excellence (CoE) during the period M1 – M36 to support the realization of the objectives set forth by WP8: Innovation Department and Boost Projects, and as per the activities outlined in the EMME-CARE Work Programme in **Task 8.1: Creation of a competitive Innovation Department** (Lead: CEA), which has foreseen that with the support of the Advanced Partners the CoE will proceed with:

- a) the creation of the “Innovation Transfer Acceleration” (ITA) unit: recruitment of technical experts, enhancement of their technological capacities (skills, production and compliance) through hands-on training, visits, secondments, networking.
- b) the creation of the Research & Innovation Support Operations (RISO): recruitment of highly specialised staff; twinning/pairing work-visits by RISO to innovation departments at the Advanced Partner institutions.
- c) CoE innovation activities: KPIs monitoring, IPR, patenting, data management/exploitation, business plans, marketization, technology transfer and technological watch (products, services, calls, and tenders).
- d) Contribute to the development of the National Eco-Innovation Cluster (legal framework, governance, promotion), international and regional networks (identification of potential users, clients and partners, communication, outreach).
- e) Enhance innovation culture and competitiveness of the CoE: identification and implementation of specialised training; ISO certification; support to the education and training programme; development of innovation support services for Cypriot/EMME partners.

In the sections that follow, this deliverable reports on the overall establishment and so-far operation of the CoE Innovation Department, including its structure, organogram, and current development strategy, as well as so-far progress against each of the subtasks of Task 8.1, as these have been outlined above. This Deliverable can also act as a means of verification for **MS31 Innovation Department established and fully operational** (led by CEA).

Finally, it should be noted, that updates in regards Tasks 8.2, 8.3, and 8.4. whilst relevant, are not included in this deliverable, as they have already been reported in the submitted RP2 Review Report, and again revisited and discussed during the EMME-CARE RP2 Review Meeting (12-13 May 2022).

1. Structure of the New Department and CoE Innovation Process

As outlined in the GA (1.3.1), the rationale for the Innovation Department is to be established and structured to “target Innovation Transfer Acceleration: enhance the scientific and socio-economic impact and profile of EMME-CARE; promote, detect, and transfer innovative ideas from lab bench to applications, attract resources, diversify sources of funding, increase success rates in project proposals and develop products and services that address emerging global needs. As such, it will draw support also from Research and Innovation Support Operations (RISO). It will also strengthen the position of EMME-CARE in the region as a strategic science and technology player and establish sustainable innovation mechanisms for the CoE, leveraging its national/regional clusters.”

In the framework of establishing the Innovation Department during the past 36 months, and through the process of crystalizing its vision, mission and scope to maximize its contribution to the overall CARE-C direction and

development, an exercise was done to more clearly define the responsibilities and collaboration for Innovation Transfer Acceleration between this Department and the RISO unit.

The outcome of this exercise, resulted in the following plotting to enable the CoE to more effectively manage the process of conveying results stemming from scientific and technological research to the market place and to wider society:

- **Innovation Department:** Vertical function (as per three other CoE Departments) focused on Research & Development (R&D) for new and innovative environmental technologies that contribute to advancing the Research & Innovation capacity and impact of the CoE and help maximize its exploitation potential, with a focus on commercialization for long-term sustainability.
- **RISO Innovation:** Horizontal function (as all other RISO functions) that contributes to the acceleration of Innovation Transfer of results deriving from *all* CoE Departments, through supporting the detection, promotion and transfer of innovative ideas, including contribution in idea screening and market assessment, supporting the submission of competitive project proposals for relevant calls, IPR protection and management, commercialization, market and enhancing the CoE's products & services portfolio to further diversity its funding sources, as well as networking and knowledge transfer for capacity building in areas of innovation and technology transfer across the CoE. As already foreseen, RISO will be able to draw support from its Advanced Partners, as well as the Cyl's Innovation & Entrepreneurship Office.

There are a number of benefits to this approach:

- It ensures that the same level of resources and support for innovation transfer is available to all CoE scientists, maximizing the pool of exploitable results;
- It sends the message of a shared sense of responsibility for innovation, and encourages research commercialization for socio-economic benefit and the long-term sustainability of the Center, across the CoE staff community;
- It better aligns to the existing structures of the CoE, as all RISO functions are horizontal, and all Department functions are vertical, and better complements the existing scope of the RISO unit, which helps promote operational clarity and efficiency across the CoE population.

To better reflect this change, it was decided and unanimously validated by CARE-C Senior Staff, that the fourth Department of the CoE will henceforth be known as the “**Environmental Technologies Department**”. The reasoning behind this update is that 1. it better captures the refined scope of the department as this has been outlined above, and 2. it more clearly signifies the complimentary, yet distinct, roles and responsibilities of the Department, and the RISO Innovation Office, in promoting the acceleration of innovation transfer within the CoE.

In the rest of this Deliverable then, and in all other to follow from this point onwards, the term Environmental Technologies Department (ETD) will be used to refer to the fourth department of CARE-C.

The most up-to-date Organogram of the CoE, which clearly reflects the above updates, has been included in the Annex.

Finally, for contextualization purposes and to ensure alignment with best practices, the CoE's abovementioned approach has been mapped within the framework of the European Commission definition of the Technology Transfer Process. Specifically, as per the below Figure, innovation Discovery is taking place within the CoE's

Departments, with the expectation that a vast majority of technological innovation will derive from the Environmental Technologies Department. RISO will support all other stages in close collaboration with the relevant personnel within the respective department, and with input of a dedicated scientific committee (to be determined based on the specific area of the innovation) for the assessment of the scientific/technological validity of the idea, alongside its market potential. The input of the Advanced Partners and the contribution of the Cyl Innovation & Entrepreneurship office will also be utilized as necessary, across the process.



Figure 1, Technology Transfer Process - source: European Commission, https://knowledge4policy.ec.europa.eu/technology-transfer/what-technology-transfer_en

2. More detailed updates in regards to Task 8.1

2.1. Task 8.1. a. & b. Support the creation of the “Innovation Transfer Acceleration” (ITA) and RISO

Key CoE Innovation Resources for Innovation Transfer Acceleration

The operation of the structure and innovation acceleration transfer process (through ETD, RISO and the wider CoE), as this was outlined in section 2 above, is enabled by CoE key personnel and partner resources:

- **ETD:** All activities that fall under the ETD are coordinated by the Department Head, Dr. George Biskos. Following the model followed by all CoE Departments, ETD is structured into research Groups, each managed by a Group Leader that reports to the ETD Head. At the moment of writing this deliverable, the ETD is made out of 15 staff members organized in three groups: 1. the low-cost/portable sensing technologies group, 2. the advanced instrumentation group, and 3. the aerosol-based nanotechnology group; with the ambition to further expand in size and scope in the coming years to continue to support the CoE’s development.
- **RISO:** The RISO Innovation & Business Development Function, is headed by the CoE Managing Coordinator, Ms Marina Papageorgiou, under the leadership of the CoE Director and Head of RISO Prof Jean Sciare, and the support of RISO Project Officers, as per their organogram deployment. Efforts for the securing of competitive funds in the innovation realm are also strongly supported by the CoE Grants & Tenders Writing function (see Annex).

- **Advanced Partners:** CEA is supporting the activities of the CoE by leading Task 8.1 and associated activities as per the GA, though knowledge exchange with all Advanced Partners is to the benefit of the CoE. As COVID travel restrictions are relaxed, staff exchange / visits will help further strengthen this.
- **Cyl Innovation & Entrepreneurship Office:** The Office for Innovation and Entrepreneurship was established in October 2019 at Cyl with the aim to develop, expand and manage its portfolio of innovation activities in this area. It is made up of 4 staff members, and provides advice and support in all areas relating to Innovation and Technology Transfer.
- **CoE wider Innovation Networks:** The CoE is also taking full advantage of wider innovation network and resources available, including through involvement in the EIT Climate-KIC network, leveraging resources offered by the European IP Helpdesk, and more recently also through the Cyprus Research Innovation Foundation newly established Knowledge Transfer Office.

Exploitable Scientific and Technological Research Results at the CoE

As outlined above, through the horizontal function of RISO in supporting innovation acceleration, the CoE is able to more easily monitor and help realize the exploitation potential from across all its Departments, Infrastructures and Labs.

Specifically, this includes possible novel research results deriving from the Environmental Observations Department (EOD) and the Environmental Predictions Department (EPD) which have the potential to reach the market as new products or services, including for example, in relation to the provision of environmental analysis services that require observations and/or predictions in the atmospheric environment.

Further, with the establishment of the Environmental Technologies Department (ETD), CARE-C is actively pursuing the development of new technologies; on the one hand, to better support environmental observations and further enhance the work of the EOD and EPD departments through innovation, and on the other, with a focus on market applications that can enable novel mitigation strategies for climate change and for the benefit of human health. Appropriately, the ETD is primarily made up of researchers and engineers, managed in smaller groups, with a clear focus on R&D (see organogram in [Annex](#)).

In addition to that, activities carried out at the CoE Research Infrastructure, particularly the Unmanned Systems Research Laboratory (USRL) and the Instrumentation and Nano-Lab Facility (INL) which are actively working on technological innovation, are highly likely to result in the creation of novel platforms/systems, instruments and sensors for air quality monitoring.

Results stemming from scientific or technological research as above, are being utilized by the CoE team to provide services or be transferred to the market as novel products, either through licencing and partnership with private companies, or in cases where this is feasible, the establishment of a spin-out / start-up company, to undertake further development and market the technology while attracting additional funds.

ETD technological development ambitions and connection to CoE Innovation process

The mission of ETD is to develop novel technologies to 1. support research carried out at EOD and EPD and 2. transfer to market to establish CARE-C as a strategic science and technology player with effective mechanisms that can transform research ideas to tangible solutions and market products or services to contribute to a green economy transition and a healthier people and planet. Leveraging the unique knowhow in the three ETD groups described above, the strategy for the development, growth and sustainability of the entire department has been based upon building a strong interdisciplinary team of scientists and engineers. ETD activities range from the design and building of technology prototypes, to their testing and further development into end products, given

also their validation through the Technology Transfer Process steps outlined in section 2. For this purpose, the ETD team is supported by the RISO Innovation function, including for IP protection and management, market assessment, and commercialisation.

The short-term development strategy for ETD is to attract innovation funds that will allow bringing its first batch of technological solutions to a higher (proof of concept) Technology Readiness Level. To this end, researchers at ETD have already managed to secure pre-seed innovation funds to develop three distinct ideas (linked to the different groups of the department) into Minimum Value Products (MVPs), and explore their further development and commercialisation through start-up companies connected with CARE-C. The current intention is to work on incubating such start-up companies whilst still remaining strongly supported and connected to CARE-C for a few years, and until these become viable to develop sustainably beyond it. The specific mechanisms to lead the start-ups into an effective exit plan for the mutual benefit of the company and the CoE, are also currently being formulated.

Additionally, in the short- to mid-term (by 2026 / EMME-CARE Project end), ETD with the support of RISO is envisioned to have successfully led the commercialization of its own first suite of novel technology products, acting as an integral contributor to the strengthening of CoE diversified revenue streams to ensure the Centre's long-term sustainability. As an ongoing action, it will also continue to engage in activities for securing competitive funds for innovation from National and European funding bodies (such as the RIF and the European Innovation Council).

The long-term ambition is that through these actions, and the accumulation of experience, knowledge and capacity, at ETD, RISO and the CoE at large, a coherent pipeline will be built to smoothly facilitate the process of bringing novel ideas and scientific and technological research results.

The above, will of course be further defined, refined and outlined within the framework of **Task 8.4: Long-term innovation strategy and performance** (Lead: Cyl) (M36-M84).

Finally, we should also note here that the implementation of the strategic ambitions outlined above, is strongly supported by the CoE's Research Infrastructures (RIs); including the INL, the USRL, and the Cyprus Atmospheric Observatory (CAO), as they act as excellent testbeds for the newly developed technologies. For example, a number of low-cost/portable sensors already developed at ETD are integrated on drones and Unmanned Aerial Systems of the USLR, whereas high-end aerosol instruments designed and built at ETD are first employed at CAO for testing their performance in the field. The high number of solutions and existing instruments available both at USRL and CAO offer great opportunities for proving the novelty and real-market potential of the ETD technologies and expanding atmospheric observational approaches in ways that have not been possible before.

Updates regarding the development of RISO

The establishment of RISO has already been achieved and reported in RP1 Periodic Report, whilst more recent updates in regards to Ms Marina Papageorgiou assuming the lead of the RISO Innovation & Business Development function has already been reported in RP2 Periodic Report. The RISO team has also been actively seeking and attending specialist training and informational sessions in regards to innovation and technology transfer upskilling (such as for examples those offered by RIF), and as COVID restrictions are relaxes is also aiming to organize twinning/pairing work-visits with innovation relevant departments at the advanced partner institutions.

2.2. Task 8.1.c. Support CoE innovation activities: KPIs monitoring, IPR, patenting, data management/exploitation, business plans, marketization, technology transfer and technological watch (products, services, calls, and tenders).

The combination of the complimentary, yet distinct, scope of ETD and the RISO Innovation function, is expected to contribute to the achievement of Innovation-related KPIs for the CoE, as these were outlined in the RP2 Periodic Report (section 1.2.8): including: i. the number of novel services and products resulting from the research carried out at CARE-C, ii. the number of patent applications iii. the number of startup companies that are created to carry the novel products to higher TRLs and eventually exploit them, iv. the number of publications resulting from these activities, v. the number of projects submitted/won with clear innovation objectives, and vi. the total revenue brought at CARE-C from products and services.

As already reported in RP2 Periodic Report, to better support the activities related to the creation of start-up companies and the commercial exploitation of the research results, CARE-C is adopting the Cyl overarching IPR policy, exploring modifications wherever needed to account for the unique nature of the products and services resulting from our activities. The CoE is also working closely with the Cyl Innovation and Entrepreneurship Office for IP protection, including IP landscaping and patent applications, e.g. related to one of the start-up companies that was established in 2021, with the aim to create a novel nanomaterial synthesis platform for developing gas sensors. In addition, specific tools including for business plan development and market assessment are already being developed to better support all the innovation outcomes of the CoE. Regarding data management and exploitation, the CoE follows the principles of Open Access (Open Data Pilot) and adapts its processes alongside Open Science principles. When it comes to data management for exploitation, this translates to an “as open as possible as closed as necessary” principle.

2.3. Task 8.1.d. Contribute to the development of the National Eco-Innovation Cluster (legal framework, governance, promotion), international and regional networks (identification of potential users, clients and partners, communication, outreach).

As already reported in RP1 and RP2, the CoE continues to expand its innovation activities through networking at the national level and contribution to the development of a national eco-innovation cluster. To this end, we should note that the CoE has already established active collaboration with four national industrial partners, which is considered a high number compared to the total number of local technology companies operating in Cyprus. These partners are: 1. ADITESS, 2. EMBIO Diagnostics, 3. PHOEBE, and 4. AMADEMA. It should also be noted, that the CoE also contributes to the strengthening of national eco-innovation cluster by establishing three start-up companies stemming from its activities and funded through national innovation grants of competitive calls announced through the RIF (Pre-Seed). These companies are 1. NanoMicron Ltd., 2. Recover Ltd., and Aerosol Technologies Ltd. This is expected to contribute to the strong positioning of CARE-C as an key emerging player in the development and growth of the national innovation ecosystem.

Further, as already reported in the RP2 Periodic Report, the CoE has also been engaging in various other activities contributing to the expansion of Eco-Innovation Clusters:

- **Boost Projects:** engagement with Boost Project private partners, has allowed the CoE expand its international network, through Vaisala (HQ in Finland), Origins Earth (HQ in France), and ARIA (HQ in France).
- **1st & 2nd Annual Online Workshop on Innovation in Atmospheric Measurement Techniques:** on 18 May 2021, and on 2 June 2022, EMME-CARE co-hosted this event in the framework of EU Green Week 2021 and 2022 respectively. The 2022 workshop was organized in collaboration with three European RIs –

ACTRIS, ICOS and IAGOS, and attracted over 300 participants from 30 countries, The Workshops created a unique platform for networking and knowledge-exchange between key contacts from academia, private companies, the public sector and NGO, including: Research Organizations operating EU Research Infrastructure (RI) or interested in RI data and services, Private Companies offering scientific instrumentation or services to EU RIs, Industrial End-Users looking for new technologies/services, and Air Quality Networks.

- **Virtual Workshop “Climate and Atmosphere Research & Innovation in the Eastern Mediterranean & Middle East”**: Organized by EMME-CARE on 11 & 12 October 2021 within the framework of the 2nd International Conference “Climate Change in the Eastern Mediterranean & Middle East”. Over 250 participants from 36 countries, including 12 countries of the EMME region. More details about this and other events organized by EMME-CARE in RP2 were reported in D9.5. EMME-CARE is now organizing the 2nd Annual Workshop, which is due to take place on 1 November 2022.
- **International networks and communities**: the CoE has been actively engaged in a number of international innovation networks and communities relating to atmospheric sciences, including the Environmental Research Infrastructures (ENVRI) community network, the Innovation Network for Advanced Materials (INAM) and the European Institute for Innovation & Technology Climate knowledge and Innovation Community (EIT Climate-KIC).
- **Horizon Europe “Edu4ClimAte”**: This recently funded project (to start in Oct. 2022) will actively engage CARE-C in the development of its local innovation ecosystem with several SMEs specialized in Atmospheric monitoring (RAYMETRICS, ALTUS, ADDITESS).

2.4. Task 8.1 e. Enhance innovation culture and competitiveness of the CoE: identification and implementation of specialized training; ISO certification; support to the education and training programme; development of innovation support services for Cypriot/EMME partners.

Innovation visibility & culture: As already reported in the RP2 Periodic report initiative has been taken to increase visibility of Innovation activities within the CoE and the close network of collaborators to enhance engagement, support and connections from the wider community. This has included frequent updates of innovation activities in the CoE all-staff meetings, alongside opportunities for staff to get more involved with innovation. Additionally, key staff of the CoE have joined the Cyprus Institute Innovation & Entrepreneurship Working Group, whose scope revolves around identifying opportunities for collaboration in the innovation space and strengthening innovation culture.

ISO certification: As reported in RP1, to enhance the capability of the Environmental Chemical Laboratory (ECL) the CoE has planned to implement accreditation within EN ISO/IEC 17025:2017 for chemical analysis of main ions (sulfate, nitrate, chloride, ammonium, sodium, potassium, magnesium etc.), trace metals (Pb, Cd, As, Ni) and polyaromatic hydrocarbons (PAHs; with emphasis on benzo(a)pyrene). This will allow ECL to contribute to national and international calls for chemical analysis of environmental samples. Whilst the ISO accreditation had to remain on-hold due to the COVID-19 pandemic, the analytical ability of ECL has expanded to include more components (more specifically a series of emerging and legacy organic compounds of environmental concern), and has successfully expanded its services to new local and international partners, as a step to become a regional hub related to chemical analysis of PM.

Microcredentials on Innovation: In collaboration with the Cyl Graduate School and the Innovation & Entrepreneurship Office, the CoE is also contributing to the development of short/targeted courses on Innovation Management and Support, aiming to provide training for both existing researchers, as well as to

professional outside CARE-C/CyI that will be interested to expand their skills. Specific courses on how to successfully convert ideas into products and/or services that can have an impact to the society and the economy are expected to be designed in the next academic year.

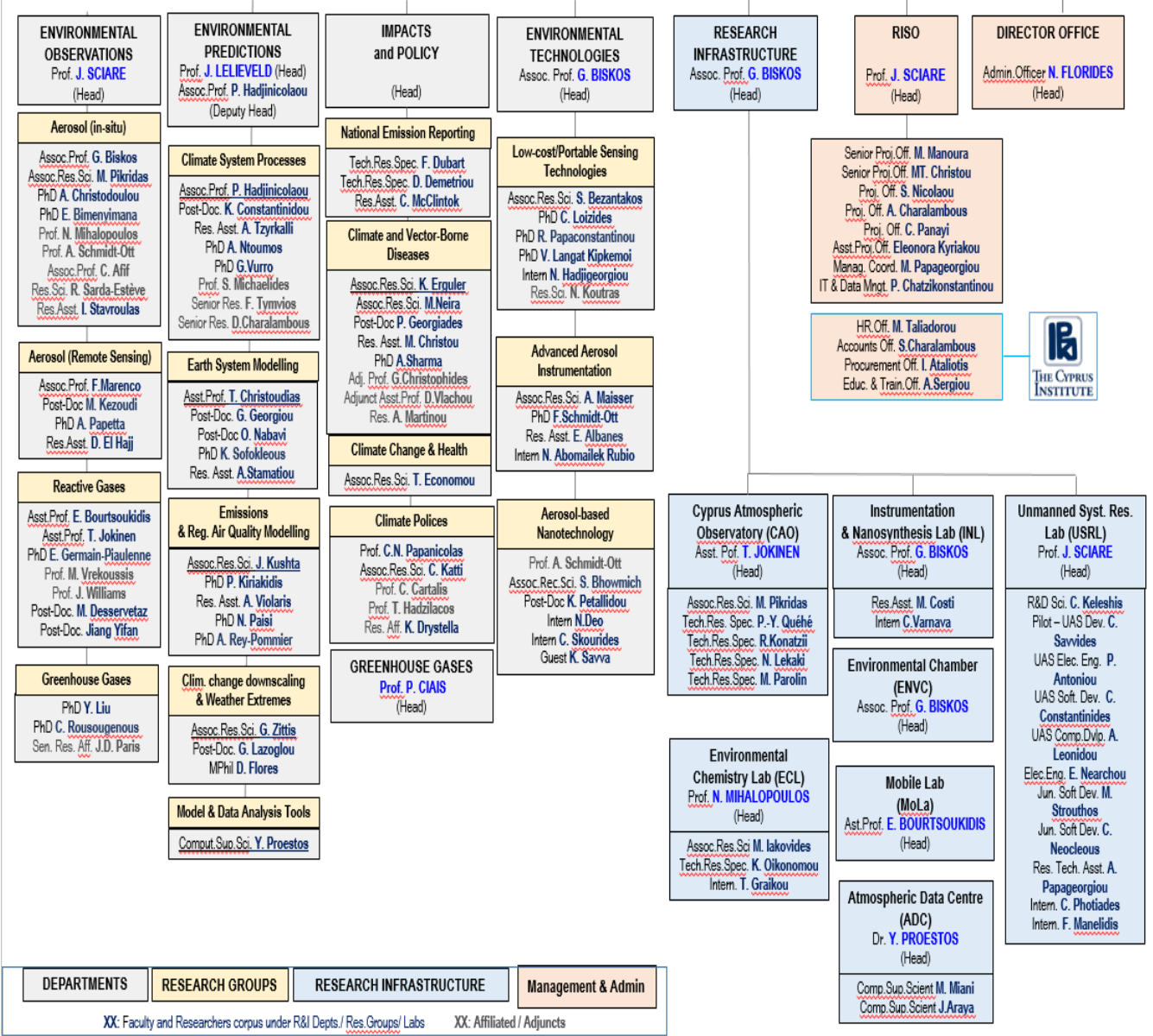
Annex



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ORGANOGRAM

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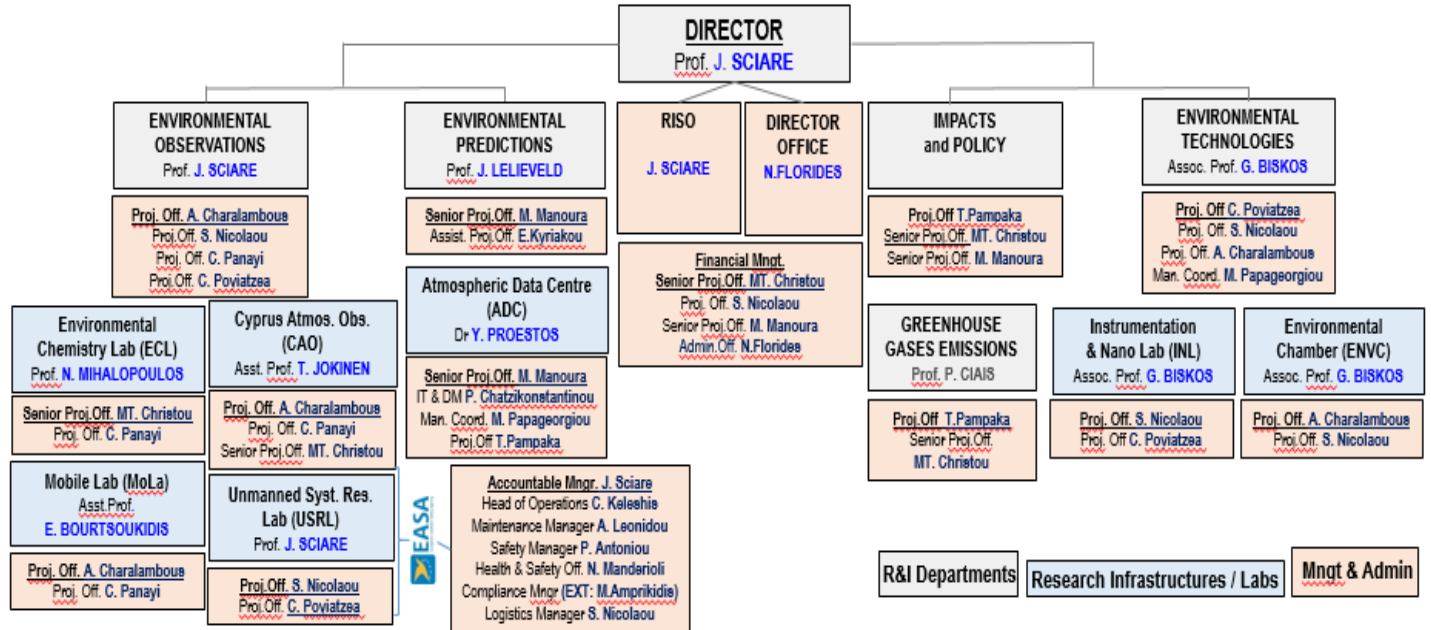




Deployment by CARE-C Departments/Labs

RISO-Deployment-Taskogram

Version 26 May 2022



Deployment by RMA – Functions / Offices / Responsibilities

