Annual Report 2022

Approved by the third Assembly of Members on 05th May 2023 in Prague

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1. Foreword by the Director General

Dear reader,

Welcome to the first AnaEE-ERIC Annual Report.

2022 has been a very special year, with the recognition of the efforts of all our members with the AnaEE ESFRI project being officially granted landmark status. The year began with the founding of AnaEE-ERIC in February, followed by the start of the large AgroServ project in September. Despite the COVID pandemics, we were able to finalise the ESFRI landmark evaluation and ERIC application, and set-up and coordinated a major INFRA SERV proposal with 10 partner Research Infrastructures, with high stakes in ensuring that services would be provided for the adaptation of agriculture and agroecological transitions. A second success came with the Horizon Europe proposal PHENET, coordinated by INRAE, in partnership with EMPHASIS and eLTER. PHENET focuses on technological development in phenotyping, and spans the gamut from analysing seeds to using remote sensing, and artificial intelligence.

2022 marks also the start of AnaEE-ERIC operations, with its first Assembly of Members (AoM) held in June. This was an opportunity to organise an event at the prestigious site of the Château de Gif-sur-Yvette, where we welcomed representatives from the European Commission's DG RTD, the French Ministry of Higher Education and Research, and the CNRS, to join the representatives at the AoM.

AnaEE-ERIC is a community of dedicated platform managers and researchers, and, together, and with the support of the French national node and the CNRS, the first AnaEE-ERIC Foresight Technology Workshop was organised at Montpellier, where we availed of the opportunity to visit of the European Ecotron.

Keeping in mind the development of AnaEE-ERIC and of its infrastructure resources and impact, discussions were held in several potential future member states. To illustrate the commitment from both AnaEE-ERIC and an interested party, our second AoM, in December, was organised at Porto, Portugal, with the kind support of the University of Trás-os-Monte e Alto Douro (UTAD).

Finally, it is in 2022 that our first official staff member, Dr. Lavanya Premvardhan, joined us as Senior Programme Manager, and I am looking forward to a very fruitful collaboration with her.

As with any start-up organisation, it has been a busy first year on the administrative front: the administrative declaration to the French authorities, ensuring that EU funding and tender system recognised our new entity with a legal status, setting up a bank account, establishing accounting services and audit providers, moving in to, and setting up, the headquarters at our permanent premises, etc.

We maintain the channels of dialogue set up during the pre-ERIC period, and continue our interactions with the distributed research infrastructure. The extended management board, which includes representatives from the national nodes/members and of platform types (experimental, analytical, and modelling) are convened once a month; it is a very useful forum where we exchange information and ideas and where all aspects of the infrastructure life are discussed, including new activities and future proposals. You will read more about the national nodes in this report.

AnaEE-ERIC is now well established in the landscape of ERICs and is growing at a fast pace, opening doors for new opportunities.

Sincerely,

Michel Boër,

AnaEE-ERIC Director General

2. Highlights from 2022

January: With AnaEE being officially granted Landmark status on the Roadmap of European Research Infrastructures (ESFRI) on 7 December 2021, the year began with a clear mandate.

February: AnaEE-ERIC officially founded with the EU Implementing Decision 2022/289 (22/02/2022).

March: AnaEE-ERIC participates in the ESFRI 20th Anniversary Conference in Paris. On this occasion, interim AnaEE-ERIC DG, Michel Boër, received the official AnaEE-ERIC plate from Jean-Eric Paquet, Director General for Research and Innovation at the European Commission.

May: AnaEE-ERIC Technology Centre and the CNRS organise the 1st Technology Foresight Workshop, in Montpellier, with approximately 40 participants broadly representing the ERIC. This was an important occasion when members, including platform managers, had the opportunity to meet and discuss future activities and initiatives.

June: The first Assembly of Members (AoM), following the official founding of AnaEE-ERIC, took place in June at the Château de Gif-sur-Yvette in the Paris region, the headquarters of AnaEE-ERIC. On this occasion, the budget and Work Programme (WP) for 2022 was adopted, and Michel Boër was officially appointed as the Director General (DG).

August: We were informed of the acceptance and financing of the Horizon Europe INFRA-TECH proposal, PHENET. In PHENET, four European Research Infrastructures (RI), on plant phenotyping (EMPHASIS), ecosystems experimentation (AnaEE), long-term observation (eLTER) and data management and bioinformatics (ELIXIR) will join forces, and together with a range of companies, co-develop new tools and methods – meant to contribute to new RI services – for the identification of future-proofed combinations of species, genotypes and management practices to confront the most likely climatic scenarios across Europe.

October: The Kick-off meeting (KoM) of AGROSERV took place on 18 and 19 October 2022 at the Czech University of Life Sciences (CZU) in Prague. The Integrated SERVices supporting the AGROecological transitions (AGROSERV) is a project funded by the EU, to study threats and challenges, and deepen our understanding on how to achieve a resilient and sustainable agri-food system. This transdisciplinary project will bring together all representatives from the agriculture domain, with farmers will be at the forefront, and living labs across Europe ensuring a wide reach. By delivering a Europe-wide data ecosystem, AGROSERV aims to grow the agroecology research community and support the cross-fertilisation of knowledge.

December: The second AoM took place in Portugal (date), with the kind support of University of Trás-os-Montes and Alto Douro (UTAD). As the hosts, Portugal had the opportunity to present their infrastructures. During the AoM, the budget and Work Programme for AnaEE-ERIC in 2023 were adopted.

December: At the very end of the year, we moved to the permanent premises of our headquarters. The building was originally a farmhouse, which has a nice traditional facade, but the interior has been completely refurbished to provide us with a modern office space.

December: A Senior Programme Manager, Lavanya Premvardhan, was recruited in mid-December.

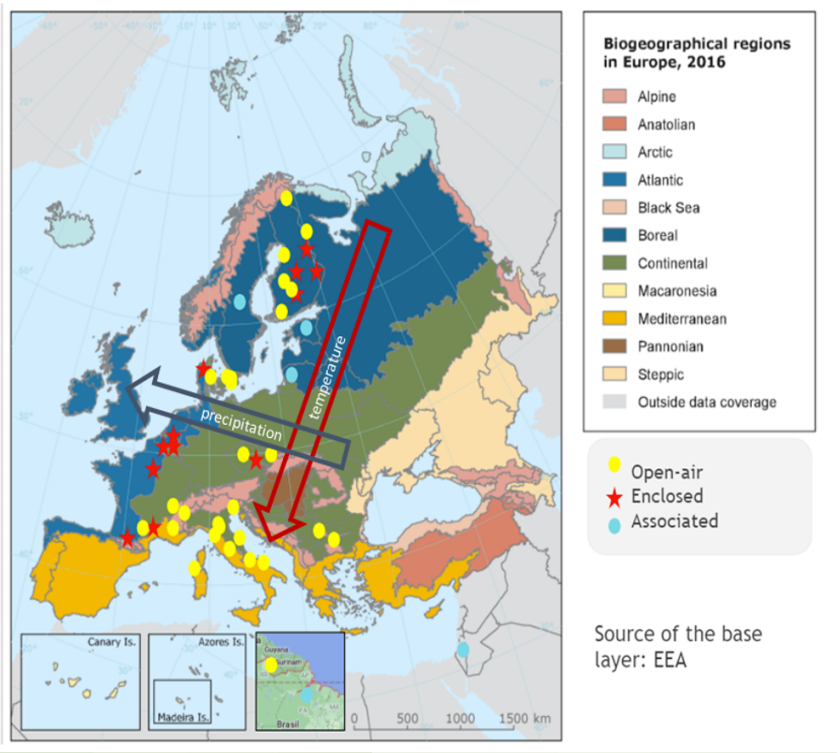
3. About AnaEE-ERIC: Mission, Vision, Values

Objective

As clearly stated in the statutes of AnaEE ERIC, "The principal task of AnaEE-ERIC shall be to establish and operate a distributed Research Infrastructure devoted to the Analysis of and Experimentation on Ecosystems. Its goal is to provide the tools, services, and knowledge necessary to tackle the complex global environmental and climate challenges facing human societies."

Scope

The national platforms can study multiple global change drivers, to quantify the role of each of these drivers of change, and to identify their interactions across all European climates. To this end, AnaEE RI services support, and advance, ecosystem research throughout Europe and can be used to address important questions pertaining to major biogeochemical cycles, biodiversity and food, feed, and fibre production, and how they will change under a variety of environmental drivers and anthropogenic pressures. In addition, AnaEE addresses advises society about ways to improve agricultural and ecosystem management practices to secure the provisioning and regulation of ecosystem services in a changing world.



Vision

The vision of AnaEE-ERIC is to "…develop technologies and know-how about ecosystem science and management, contribute to the transition to sustainable food systems and the general objectives of the European bioeconomy and the Farm to Fork strategy". It encompasses,

- Taking care of ecosystems, taking care of society
- Keeping ecosystems healthy, keeping people and places healthy
- Sustaining ecosystems, sustaining our future
- Keeping ecosystems healthy, keeping people and places healthy

Values

AnaEE RI has a strong focus on its community of around 60 platforms, and how to leverage this asset to the benefit of ecosystem research and society: the platforms support the highest quality of ecosystem science, and the outcomes and results are then used to benefit society.

Our performance objectives are closely linked to the scientific output that we facilitate and our capacity by, a) Enabling Science, b) Problem Solving, and c) Shaping of Science and Society

4. AnaEE Research Infrastructure services

Status of services

The services offered by the AnaEE-ERIC platforms fall into three categories:

- Experimental platforms, both open-air and enclosed facilities, that are unique to our ERIC, permit the measurements in the controlled environment of e.g., ecotrons (ecosystem analysers). Experimental drivers can be applied to determine the response of different types of ecosystems, including the effect of future climatic conditions such as, rainfall, drought or temperature changes, CO_2 or O_3 enrichment, as well as management methods to test adaptation and mitigation measures. In particular, increase carbon sequestration and reduce the N_2O, CH_4 emissions, increase biodiversity, and more generally address societal challenges by improving, or at least preserving, ecosystem services. Users may access these experimental platforms either by direct access or remote access (or both).
- Analytical platforms featuring state-of-the-art large instrumentation, for advanced biological, physical, and chemical analyses (mostly belonging to the -omics science branches). Moreover, some of these platforms are mobile, and can access remote sites, not usually accessible from a single site, via the use of drones or other aerial means. Analytical platforms extend the availability of advanced methods, otherwise inaccessible for most experimental platforms, to provide comprehensive data that permits the understanding of the mechanisms of response and adaptation to different environmental factors. Moreover, some of these platforms are mobile, and can access remote sites to provide advanced in-situ measurements such as the measurement of BVOCs, and apply remote sensing using drones or aircraft equipped with hyperspectral or LIDAR sensors.
- Modelling and data platforms are an important part of the RI offer, providing an important complement that allows robust predictions of an ecosystem's responses to global changes. These platforms provide users with access to numerical models and advanced software to develop models (model factories) that improve data analysis and synthesis, and thereby allow more robust and reliable predictions to global changes.

Developments in 2022

In addition to the evolution of the service offer of the AnaEE-ERIC platforms of members (see NN reports), our Service Centres (DMC, ISC and TC) continued their work on developing the services offer of the ERIC.

- The ISC continued its studies to identify gaps in the upscaling of experimental data to a higher spatial level and proposed potential solutions to facilitate the scaling-up process.
- As part of the Technological Foresight Workshop in Montpellier, the basic concept of an opinion paper focused on the gradual integration and complementarity of research carried out in Ecotrons and open-air experimental platforms was also formulated.
- In 2022, two web portals were made available to the community by the DMC: 1) data.anaee.eu, which is a hybrid catalogue and repository for FAIR data, compliant with the ENVRI community's recommendations, and 2) developer.anaee.eu, a catalogue, gateway, and authentication system for cloud services developed by, and for, researchers.

Both resources act as aggregators and thus allow for the federation of distributed resources, e.g. the inclusion and merging of third-party data catalogues, and are themselves distributed cloud systems, able to scale up automatically to accommodate both storage space and computational power demands of their users.

- The Data Management Plans was defined for AnaEE-ERIC (with the key contribution of the DMC), and the expertise developed in FAIR data management in 2022, will be translated into a new organisational DMP for the RI. The DMP is integral for AnaEE platforms as it pertains to the data resulting from AnaEE's service offer.

Catalogue and access to platforms

The ISIA resources catalogue was developed by AnaEE France for its experimental platforms (ecotrons, open-air and enclosed platforms), and was selected, after analysis of other options on the market, for AnaEE ERIC platforms as the catalogue of services that will be made available well beyond the AnaEE RI community.

In 2022, the TC took charge of overseeing the process of adapting the catalogue to include our diverse group of platforms spread out across Europe. On the existing framework, much effort was put into collating, and classifying the platforms. There were active exchanges between the TC and the platform managers to ensure that the SEISM platform would incorporate the necessary features for all our platforms. The first phase consisted of onboarding the experimental platforms, which was followed by preparing the stage for the inclusion of analytical and data management platforms. In addition, the requirements for providing "integrated" services, where multiple platforms could be used for their complementary services was also analysed. These activities were complemented by training and workshops, to ensure that platform managers would be able to easily integrate their services in the online catalogue. The catalogue will be our key resource to attract users to the services on our platforms and draw them into the practice of using integrated services.

The catalogue of services is available online at https://www.anaee.eu/services/platforms.

The data and models are accessible here: https://www.anaee.eu/services/data-and-models-portals.

5. Training

AnaEE Technology Foresight Workshop

The workshop was held at Montpellier (FR) in May 2022. The workshop was organised in collaboration with the AnaEE-France and the CNRS (Ecotron Montpellier). The on-site participants included 27 representatives from 16 AnaEE-ERIC platforms, and 12 online participants representing four additional platforms. The key objective was to discuss future collaboration between Ecotrons and open-air experimental platforms. The workshop was an opportunity for platform managers and staff, and related researchers, to interact with each other and develop ideas for collaborations.

The main outcomes, ideas and plans from this workshop were,

- Similar workshops be organised again with a meeting of all AnaEE-ERIC platforms.
- A workshop for ecotrons and open-air platforms, with existing collaborations, to write a short opinion paper with their ideas and advice for future collaborations.
- Developing a simple, short-term 'phytometer' experiment to be run across multiple AnaEE ecotrons as a calibration experiment to test for inter-ecotron variability in results.
- A platform meeting with a focus on brainstorming opportunities for collaborations.
- A training event on greenhouse gas measurements potentially organised in collaboration between AnaEE-ERIC TC and DMC to integrate measurements with data modelling.
- Common initiatives for Horizon Europe / MSCA calls.
- Looking into possibilities for a Horizon Europe COST action or Marie Curie Doctoral Networks providing opportunity for collaboration across AnaEE platforms.

Online catalogue workshops

There were three online workshops in autumn/winter 2022 (16 September, 28 November and 14 December) to introduce the SEISM and ISIA system to platform managers. These sessions included time for managers to edit information about their platforms and receive support while doing so.

6. Projects

AgroServ

AgroServ in a Nutshell

Ensuring a viable agroecological transition towards sustainable and resilient agri-food systems

Agricultural land depletion, the loss of biodiversity and the growing scarcity of natural resources are some of the complex challenges we face in this century. Whether due to the competition for land-use or due to the tensions on agricultural modes of production, the necessity to adapt our current agricultural production methods to continue producing agricultural goods while concomitantly maintaining, preserving, and adapting the ecosystems, is a necessity.

AgroServ was thus born from the need for a collective action capable of enhancing the sustainability of food systems and food chains, while safeguarding human, animal, and environmental health, and preserving natural resources and biodiversity and mitigating climate change. The project was launched with the objective to better align approaches and capabilities, and more effectively and efficiently use resources to ensure a viable agroecological transition towards sustainable and resilient agri-food systems.

By bringing together several types of expertise, disciplines, and technologies, and by integrating the competence and know-how of ecologists, agronomists, biologists, chemists, bioengineers, analysts, social scientists, and economists, AgroServ is designed to advance our knowledge on agronomic and husbandry practices. While there is a focus on the threats and risks on agroecosystems, it simultaneously supports the development of new agroecological practices by fostering transdisciplinarity and integrating a socio-economic dimension in the offer to researchers.

AnaEE-ERIC role

Given the non-confirmed status of AnaEE-ERIC at the date of the grant agreement, it was agreed that CNRS would be the coordinator for the first year, and AnaEE-ERIC would take over coordination in September 2023.

Key statistics

Project start: 1/09/2022

Project duration: 60 months

AnaEE-ERIC involvement: beneficiary, then coordination (as of 1/09/2023)

Maximum grant amount for the project: 14,252,873€ (not including UK partners).

Maximum grant amount for AnaEE-ERIC: 720,863€.

Maximum grant amount for AnaEE RI partners, transverse work packages (1-9): 2,099,370€.

Maximum grant amount for AnaEE RI service delivery: 1,719,089€

PHENET

Project PHENET was conceived in response to the call INFRA-2022-TECH-01-01. It addresses Europe's need to urgently find pathways towards an agroecological transition of agroecosystems to support food security, climate change resilience, biodiversity and soil carbon stocks restoration. In PHENET, the European Research Infrastructures (RI) on plant phenotyping (EMPHASIS), ecosystems experimentation (AnaEE), long-term observation (eLTER) and data management and bioinformatics (ELIXIR) have joined their forces to co-develop, with diverse innovative companies, new tools and methods - meant to contribute to new RI services - for the identification of future-proofed combinations of species, genotypes and management practices to confront the most likely climate-change scenarios across Europe. With the ambition to go beyond current heavily instrumented, but often spatially and temporally limited RI

installations, PHENET derived services will allow wide access to enlarged sources of in-situ phenotypic and environmental data due to (i) new AI-based multi (agroecology-related) traits multi-sensors devices (ii) to unleash access to high-resolution Earth Observation data connected to ground-based data, (iii) FAIR data support for connection with (iv) new generation of predictive modelling solutions encompassing AI and digital twins. Developments will be challenged by, and implemented in, a series of eight Use Cases covering a large range of agroecosystems, as well as ecosystems, to demonstrate the portability of solutions. Several of these Use Cases will mobilise on-farm data. A large effort will be devoted to training RI staff and beyond through a sustained collection of training material fed by experts. Outreach activities will aim at enlarging the range of RI users. PHENET will not only strengthen the RIs, but will also have a major impact on the development of innovative companies on phenotyping, envirotyping and precision agriculture as well as on the emergence of climate-smart crop varieties and innovative practices fit for climate change and agroecological transition.

Key statistics

Project start: 1/01/2023

Project duration: 60 months

AnaEE-ERIC involvement: beneficiary, WP lead
Maximum grant amount for the project: 9,993,469€.
Maximum grant amount for AnaEE-ERIC: 198,750€.

AnaEE RI partners involved: Aix-Marseille Université (B, 292,000€), CNRS (affiliated AMU, 67,375€), U. Hasselt (B, 344,223€)

7. AnaEE-ERIC activities

Central Hub

The Central Hub (CH), the headquarters of AnaEE-ERIC, located in Gif-sur-Yvette (France), has been very active during 2022. The CH had a key role in starting the implementing process of AnaEE-ERIC and participated in several key actions, to ensure that our ERIC was both 'seen and heard' by the community, and the Commission. The CH ensured the debut of the normal life of an ERIC in the European Research Area (ERA), and as an intergovernmental organisation, and made its presence known by its participation in EU grants and proposals, that will ensure the future of AnaEE-ERIC.

Staffing

AnaEE-ERIC was staffed by Michel Boër (CNRS, in-kind), during the full calendar year of 2022; M. Boër was appointed interim Director General (iDG) until the first Assembly of Members in June, during which he was appointed the Director General (DG). Sarah Mahé (CNRS, in-kind) was the Project manager during the pre-ERIC period from September 2020, and during the first half of the year for AnaEE-ERIC until 30 June 2022. Nikoleta Nikolic, was hired as the Senior Project Manager from 5/09/2022 until 14/11/2022. Lavanya Premvardhan was employed as the Senior Programme Manager on 15/12/2022. Sarah Dramé, hosted by AnaEE-ERIC CH, was recruited in September by the CNRS, in consultation with AnaEE-ERIC, as the Project Manager of the AGROSERV project financed by the EU.

AnaEE-ERIC was notably understaffed in 2022, because it is the formative year of the organisation, the conjunctural difficulties of recruiting in France, and given that the budget was voted at the end-of-June 2022.

Preparation of legal and strategic documents

Several key legal and strategic documents were prepared and produced by the CH.

Rules of Operations (RoP). The RoP is a key document that serves as the basis/support to implement the statutes of AnaEE-ERIC. It provides a framework for the day-to-day operations of the ERIC, as well as defining the functional, and procedural, aspects for the AoM and other statutory and operational bodies of the ERIC.

Gender Equality Plan (GEP). The GEP engages AnaEE-ERIC to implement gender equality of staff personnel, and includes a set of actions and indicators to guide the management and staff of AnaEE-ERIC towards the GEP's objectives. The GEP and RoP were both approved by the AoM in June 2022 and are publicly available on the AnaEE-ERIC web site.

Work Plan (WP). The WP is a key document that lays out the roadmap for the coming year. Following AnaEE-ERIC's creation in 2022, the first WP, for the period 2022 – 2023, was approved by the AoM in June 2022. The second WP, for the year 2023, was approved by the AoM in December 2022.

Service Level Agreements (SLAs). The SLA is the agreement that binds the National Nodes (NN) and the National Platforms (NP) to AnaEE-ERIC, namely, the glue that holds us together. The NN SLAs provide the basic collaborative framework between the national communities and the ERIC, while the NP SLA framework includes, in greater detail, the respective roles and duties of both the ERIC and NP, including the available capacity of the NP, that can be offered through AnaEE-ERIC for Transnational Access (TA) or Virtual Access (VA). The SLA contract templates, to be used for the NN and NP, were approved by the AoM in June 2022. Currently, the SLAs are in the process of being signed by the various entities of the AnaEE-ERIC community, and co-signed by AnaEE-ERIC.

Administration, finance, and logistic

Since the Commission Implementing Decision (EU) 2022/289 of 22 February 2022 setting up AnaEE-ERIC, a number of the administrative and financial actions and activities were carried out by the CH for AnaEE-ERIC.

First, the task of implementing the EU decision within the French administrative system was undertaken, which required the recognition of the ERIC as a non-profit association as its legal identity in France. This entailed a two month-long series of discussions between the iDG and the *Préfecture de l'Essone*, to obtain approval for AnaEE-ERIC to be recognised as a legal entity in France.

Once the legal entity was established, the financial structural framework had to be created. A bank account was opened. This permitted issuing the call for membership fees and host premiums. As of 31/12/2022**,** all members, aside from Italy, had paid their dues for 2022. Additional details can be found in the financial report section of this document.

To ensure sound financial management, the accounting firm, EXPERTENS, was chosen based on its experience with the financial accounting practices of other ERICs headquartered in France, and an agreement duly concluded. Likewise, the auditor, Mr. Yves Pascault, from the auditing firm AVENTY, was appointed by the AoM in June 2022.

Concerning the logistical aspects for the accommodation and resources that were to be provided by the CNRS to host the CH, this occurred in two phases. First, temporarily accommodation was provided in a single large room, with limited resources, at the Château de Gif sur Yvette, until mid-December 2022, when the permanent site for our HQ, in building 11 of the CNRS campus, was made available. The interior is newly refurbished, with 8 offices and one meeting room (around 200m^2). Key office equipment for the 5 staff members and common areas was purchased (computers, phones, furniture, etc.) with subscriptions to service providers for the internet, mobile phone lines, videoconferencing, etc.

Support of governing and executive bodies

The CH organised the logistics for the two preceding AoM: in June at Gif-sur-Yvette (FR) and in December at Porto (PT). This included organisation of the venue and accommodation, meals, and noting the minutes of the meetings. The first AoM was the occasion of an inaugural event for AnaEE-ERIC, with the presence of representatives from the European Commission (DG RTD), and the CNRS. The CH also organised the first meeting of the Independent Scientific Advisory Committee (ISAC) in November 2022, prior to the second AoM.

To facilitate discussions and the decision-making process, the DG convenes two monthly meetings. The first is a discussion among members of the Management Board (MB), which in addition to the DG includes the heads of the service centres (DMC/ISC/TC), and their key personnel. The second meeting convenes representatives of the national nodes and the four platform types (open-air, enclosed, analytical and data/modelling platforms), in addition to members of the MB. This body constitutes the Extended Management Board (XMB). The CH organises these online meetings, the minutes, and follow-up of actions.

Online presence and social media

The CH has the responsibility for the website and social media presence of AnaEE-ERIC. In 2022, the web site was hosted by the University of Grenoble Alpes (UGA). These activities are described in more details in the Communication section.

Proposal and grants

AnaEE led the preparation and set-up of the INFRA-SERV project AGROSERV in 2021/2022 under the umbrella of CNRS, prior to gaining ERIC status, and is the de facto coordinator until the status is officially transferred from CNRS to AnaEE-ERIC in 2023. The AgroServ INFRA-SERV project is described in more detail in the projects section. The CH was involved in the negotiation of the Grant Agreement (under the responsibility of CNRS) with the Commission. The CH also organised the project Kick-Off Meeting (KOM) that took place in Prague (Czech Republic) in October 2022.

In 2022, the CH additionally participated in the preparation of the PHENET INFRA-TECH proposal. At the end of 2022, we were informed of the granting of the project, which commenced in January 2023.

During the autumn and winter of 2022, CH was involved in the preparation of the ERIC Forum 2 in which it leads one Work Package. Additionally, it is involved in four INFRA-2023-DEV calls, and in three INFRA-2023-SERV proposals: IRISCC (services for the impact of climate change on the environment), AquaServ (services for aquaculture, fisheries and the blue economy), and MICROBES4CLIMATE (services for terrestrial biodiversity and ecosystems).

Events organisation and participation

The DG and CH participated in several events representing AnaEE-ERIC, as well as engaging in networking. The list does not include the many meetings and workshops organised by the EC, ESFRI, and other bodies.

- ERIC Forum, LS-RI and ENVRI clusters. Each of these bodies meet about thrice a year, and AnaEE-ERIC was represented at each meeting by its personnel: M. Boër, S. Mahé, N. Nikolic, L. Premvardhan
- The national communities
  - AnaEE-Italia: MB met colleagues from the Italian NN, organised in the tradition of the 2021 AnaEE "virtual tour". It was an opportunity to have discussions, and to present AnaEE-ERIC and its main projects.
  - AnaEE-France: As a link with the national nodes, M. Boër participated in a physical meeting of AnaEE-France in May 2023.
  - AnaEE-Denmark: MB met with the Danish community in Copenhagen in April.
- ESFRI 20th anniversary conference (25/03/2022): Participation of M. Boër and S. Mahé.
  M. Boër received the "AnaEE-ERIC plate" from Jean-Eric Paquet, Director of the DG RTD of the EC.
- ICRI 2022 (October 2022): Participation of M. Boër in the International Conference on Research Infrastructure (ICRI), in Brno, CZ.
- AGROSERV kick-off meeting (October 2022): organised jointly by the Czech University of Life Sciences (CZU), the CNRS and AnaEE-ERIC in Prague: participation of S. Dramé, N. Nikolic, M. Boër.
- AgroEcology International Meeting (December), Sofia Bulgaria: M. Boër was a speaker at the opening ceremony (online).

Partnership and enlargement

AnaEE-ERIC seeks to extend its membership base with the objective to strengthen its consortium with an expanded reach and better address vulnerabilities, and fill gaps, in the European ecosystem landscape. To this end, discussions with different countries have been opened, and have reached a more advanced stage with Portugal and Spain following the sustained interactions in 2022.

Portugal: A meeting was organised and hosted by the Universita Tras o Monte e Alto Douro (UTAD) in Vila Real, in, June 2022. This was followed by a presentation from the Portuguese Community at the second AoM in December 2022 at Porto. A Portuguese consortium of organisations has now officially submitted a request to the Fundação para a Ciẽnca e a Technologia (FCT, Foundation for Science and Technology) for the support of membership in AnaEE-ERIC.

Spain: A meeting was organised in Madrid with the Spanish community in November 2022, which was hosted by the Ministry for environment and sustainable development (MITECO).

Other: Online discussions took place with the community in Israel and Lithuania.

Data and Modelling Centre

The AnaEE Data and Modelling Centre (DMC) successfully concluded its first year of operations, during which they were established in a new HQ in Milan. Despite not having yet recruited all the requisite DMC staff personnel, a number of actions were begun and some concluded.

Cloud services and actions. Cloud cataloguing services for data assets and service have entered their operational phase. In 2022, the combined effort of the DMC and CREA-IT (host institution) personnel produced a set of FAIR (findable, accessible, interoperable and reusable) data compliant tools that AnaEE RI users may now use to publish their data and services in a federated way; it allows interoperability with other catalogues and a fast track towards EOSC onboarding. Researchers can both upload their assets on the AnaEE-ERIC services directly or import them from other established FAIR-data platforms, allowing for multimodal publication. While making available resources to third parties, publication of these assets permits an increased visibility and higher overall impact of their work. Furthermore, the DMC has completed the AnaEE-ERIC FAIR criteria implementation roadmap as foreseen in the ENVRI-FAIR project.

Additionally, the DMC has set up an AnaEE identity Provider System in the cloud, which is compliant with the ENVRI recommendations on User Authentication and Authorization Management, which has already been federated with other ESFRI RI's IdPs allowing trans-organisational digital access for AnaEE users.

Collaboration with other RIs. In late 2022, the DMC was engaged in the preparatory infrastructural IT work to support the AGROSERV TNA projects, which concomitantly supported the amelioration of the overall AnaEE digital capacities and EOSC readiness. As a result of these activities, the DMC was able to build (improved) cooperation between AnaEE-ERIC and other Research Infrastructures, thus establishing AnaEE-ERIC as a relevant player in the digital and data-centric RI landscape.

Training. The DMC is developing documentation for training and making available a software framework for implementation of simulation models.

Model development. BioMA (BioMA - Wikipedia) is the FoR – Framework of Reference, for model development within DMC provides an integrated developing environment for those who do not have already one.

The overarching goal of the DMC for the near future is to promote the dissemination of FAIR data management and cloud-based environmental modelling across the whole AnaEE-ERIC network, which will imply a two-pronged approach addressing both further technological development and training activities. On the technological side, actions planned for the year 2023 include the activation of the Virtual Research Environments (VRE) for researchers, the publication of new crop models as services, and an increasing participation in European digital initiatives promoted by ESFRI, EOSC, and other EU bodies and initiatives with the objective to further strengthen the positioning of AnaEE in the emerging digital research landscape. On the training side, a course on environmental models' development and operational lifecycle in the cloud is in preparation with the objective to making it made available to AnaEE members during 2023.

Figure 6: The CREA in Bologna, home of DMC (M. Donatelli, AnaEE-ERIC).

Interface and Synthesis Centre

In 2022, the AnaEE Interface and Synthesis Centre (ISC) concerned a diverse set of activities.

Events. The ISC focused its effort on the preparation of the AnaEE conference in Prague in June 2022, which, however, was postponed due to ongoing COVID-19 restrictions in some countries and the uncertainty concerning the participation of several planned participants.

Partnerships and Outreach. The ISC was implicated in communications and negotiations with representatives of candidate countries interested in becoming a member of AnaEE-ERIC, especially Spain, Portugal, Poland, Romania, Estonia and Germany. In some candidate countries, national consortia are already being created, or have been created, whereas in others, our interactions were at the level of initiation interviews and interactions.

The ISC also facilitated and initiated conversation with Danubius RI, with a focus on the complementarity of our two RIs.

RI Developments and advancements. In 2022, the ISC was involved in various studies and (technological) developments.

The ISC contributed to two meta-analyses focused on the interactive effect of UV radiation and drought (Jansen et al. 2022, Plant, Cell & Environment), and the effect of UV radiation on photo-protective mechanisms in plants by carotenoids (Badmus et al. 2022, Plant Physiology and Biochemistry).

In 2022, the ISC continued to work on identifying gaps in the upscaling of experimental data to a higher spatial level and proposed possible solutions to facilitate the scaling-up process.

As part of the Technological Foresight Workshop in Montpellier, the basic concept of an opinion paper was formulated. It focused on the gradual integration and complementarity of research carried out in Ecotrons and open-air experimental platforms.

Another study focused on ecometabolomics and its use in climate change adaptation research, was initiated.

Collaboration with other RIs. The ISC also started activities in defining the concept of assistance to candidate countries in developing a national ecosystem research strategy that included defining complementarities between research at the national level while being involved within AnaEE-ERIC. This included the evaluation of potential added value, and the strategy for facilitating the building of a national AnaEE consortium. This concept was then partially used in formulating the work package in the HORIZON INFRA-DEV-01-03 project, GRASSI.

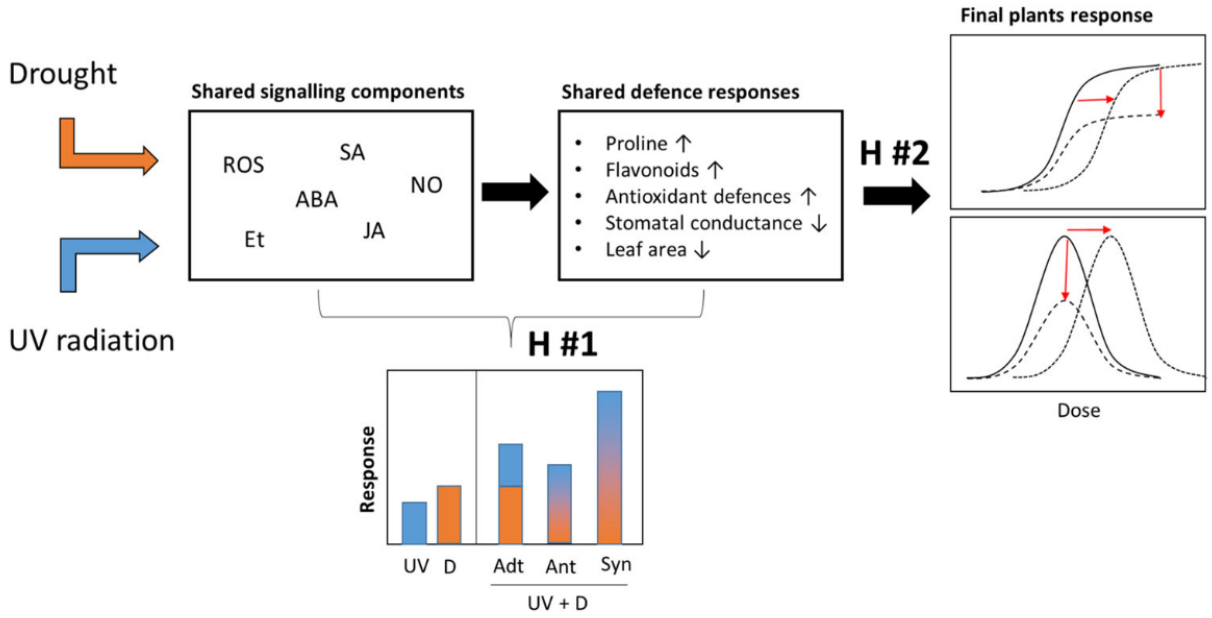


Figure 7: Conceptual scheme of interactive effects between drought and UV radiation (Jansen et al. 2022, Plant, Cell & Environment).

Technology Centre

The AnaEE Technology Centre (TC) was involved in different activities related to the platforms and here below are some highlights from 2022.

- **SLAs**. Collaboration with AnaEE-ERIC Central Hub on developing Service Level Agreements (SLAs)

In 2022, the AnaEE Technology Centre was involved in developing the templates for the SLAs to be incorporated between AnaEE-ERIC and, the a) national nodes, b) service providers, and c) platforms (SLA annex).

- **Technology training**. Co-organisation of the **Technology Foresight workshop** 2022 at Montpellier (FR)

The TC was involved in several activities engaging the AnaEE-ERIC community around the experimental platforms. In May 2022, the first official AnaEE Technology Foresight Workshop was held in Montpellier in collaboration with AnaEE-France and CNRS (Ecotron Montpellier). The workshop participants included 27 representatives from 16 AnaEE-ERIC platforms. The major aim of the workshop was to discuss future collaboration between Ecotrons and open-air experimental platforms. Overall, the workshop was received very positively as an opportunity to meet and develop ideas for collaborations between different platform types. There was a clear need and wish for similar workshops to be organised by AnaEE service centres in the future.

- **Online Catalogue**. Overseeing access to platforms to edit information for the new version of the online platform catalogue open during summer 2022. In collaboration with the Central Hub all platform managers were granted access and given guidelines to edit information about their platform.
- **Catalogue training**. Three online workshops were held (16 September, 28 November and 14 December) to introduce the SEISM and ISIA online cataloguing system to platform managers.

A major task for the TC in 2022 was the continuous and iterative co-development of the online platform catalogue together with the technical staff (at CNRS, AnaEE-France, and the Central Hub). This culminated in the release of the new online version of the catalogue permitting managers to log on and update their platform information directly in the online catalogue. To facilitate platform information updates a series of online workshops were held from September to December to introduce platform managers to the online SEISM and ISIA tools for platform service management. This included support for managers while inputting and editing information about their platforms.

- **Outreach**. Contact with new and potential new members (Bulgaria, Spain, Portugal) on AnaEE criteria.

Finally, the TC was busy interacting with new platforms (Bulgaria) and platforms of potential future members (Spain, Portugal) to inform and advise them on required platform technical criteria of AnaEE-ERIC, as well as potential definitions of experimental platforms that would include them in the AnaEE-ERIC family of platforms.

8. Reports from the National Nodes

Bulgaria

The National Node. AnaEE Bulgaria (BG) participated in several steering group meetings in 2022. The BG National Node participated in the preparation of new projects for using the AnaEE-ERIC Bulgarian Open-Air Platforms. In Bulgaria, AnaEE-ERIC includes the National Infrastructure for Research and Innovation in Agriculture and Food (RINA - Research, Innovation, Agriculture). RINA has been a part of Bulgaria's National Roadmap for research infrastructure since 2017. An important task in 2022 was to present the BG AnaEE platforms at the ISSAPPNP international scientific conference in December 2022 at Sofia, at the AnaEE workshops, and other national and international fora.

Developments at platforms. The experimental platforms in Bozhurishte and Tsalapitsa were equipped with portable gas analysers, ALMEMO "MA2590-4" for the determination of CO_2, and GASTiger 2000 for the determination of N_2O emissions. The devices wiil be used at both experimental platforms of Nikola Poushkarov ISSAPP to measure CO_2 and N_2O emissions during the growing period of crops with different rates of fertilisation and biochar amendments. Currently, users of the platforms are scientific and farmers organisations. New stakeholders from the industrial sector and the general public are being explored. The platforms are user, and included, in new experiments of projects with grants from the National Science Fund of the Ministry of Education and Science and the Agricultural Academy. Several new publications from the experiments conducted in the AnaEE-ERIC Bulgarian platforms have been produced.

Future developments. In 2023, experiments will be conducted on the Bozhurishte Open Air Platform, applying a new technology using bio-stimulants from algae in the cultivation of maize. Variants with mixed organic and chemical fertilisation, as well as only using chemical fertilisation, will be investigated. This will help farmers achieve recommendations for fertilisation and preservation of the health of plants through bio-stimulants, as well as for transitioning to organic farming, which will in turn lead to stimulation of soil microflora and preservation of soil health.

In 2023, a project including biochar used on Tsalapitsa Open Air Platform of the ISSAPPNP (N. Poushkarov Institute of Soil Science, Agrotechnology and Plant Protection) of the Agricultural Academy was funded by the National Science Fund of the Ministry of Education and Science, entitled "Effect of biochar application on immobilization and bioavailability of heavy metals and other pollutants in Technogenic soils" 2022-2025, Contract KP-06-PN66/5.

Belgium

The National Node. The Belgian National Node comprises the AnaEE-Flanders consortium, which groups the Flemish universities of Antwerp and Hasselt, and the Walloon partner University of Liège at Gembloux.

Developments at platforms. Over the recent past, different high-tech platforms were built or upgraded in Belgium. On the Flemish side this construction phase has now been completed with the delivery of the new Mesoscale Ecotron at University of Antwerp (see photo). The first trial(s) at this Ecotron will be run in 2023 on the optimal use of irrigation water to salvage a crop in the event of prolonged drought.

New projects in 2022 included the Horizon Europe infrastructure projects AGROSERV and PHENET on the agroecological transition, and the doctoral network QTOX on ecologically relevant risk assessment of toxic chemicals in the environment. A new project on the acclimation of Miscanthus to future climatic conditions will be developed in collaboration with INRAE (France) with support from the French Ecological Transition Agency (ADEME).

AnaEE-Flanders was refinanced in 2022 by the Research Foundation Flanders for the next two years.

Following recommendations from the funding agency, the consortium will have a greater investment in policy-relevant research, increasing connections with social scientists, collaborations with industry, and the further integration of its platforms.

To this end, AnaEE-Flanders has recently installed an Advisory Board (AB) composed of senior scientists who cover different subdomains of AnaEE-ERIC services for research (Maarten Loonen, Juliette Bloor and Tjeerd Bouma). This AB will guide the further development and integration process. The AB met once in 2022 (September). As part of the integration, two participating research teams at the University of Antwerp, the former ECOBE and SPHERE groups, have merged into a new group with six professors that will coordinate all the freshwater aquatic research within AnaEE Belgium: ECOSPHERE. This research is housed in the Mesodrome complex (enclosed platform).

AnaEE-Flanders published its first policy brief (in Dutch): https://www.fwo.be/media/1024976/policy-brief-_-anaee.pdf

AnaEE-Wallonia received funding from the regional government to build additional climate-conditioned rooms in the TERRA-Ecotron of Gembloux. This platform is supported, and advised, by two bodies: a Management Committee and a Scientific Council.

CIHEAM

The Node. CIHEAM (The International Centre for Advanced Mediterranean Agronomic Studies) is an international organization that promotes research and development actions concerning important issues such as food security, more efficient use of natural resources, improvement of agricultural production and productivity, promotion of organic farming, development of sustainable food systems, resilience to climate change, integrated management of coastal areas, fisheries and aquaculture, integrated pest management, management of water resources and irrigation.

The CIHEAM General Secretariat is based in Paris and operates through its four Institutes based in Bari (Italy), Chania (Greece), Montpellier (France) and Zaragoza (Spain). CIHEAM is a member of AnaEE-ERIC as an international organization (IGO) since 2021.

The platforms. CIHEAM Bari provides access to a series of installations: (1) Multi-experiments platform that includes open-air experiments to study pressures of global changes at field, farm and landscape levels, (2) Controlled environmental system platform that includes an insectarium, centre for testing of PPPs, screen houses, storage rooms and plant pathogen's collections, (3) Analytical platforms for Plant pathology, Agricultural and Environmental Chemistry, Soil hydrology and environmental monitoring, Plant ecophysiology, (4) DataPro platforms consist of data processing, analysis and modelling, basic and multivariate statistical analysis, impacts assessments and bioinformatics, and (5) SDG-DSS employs tools, techniques and technologies, as data sensors, connected devices, remote control tools, drones, etc.

Developments. In 2022, we established the MEDILL living lab (Mediterranean Living Lab for rural and coastal development), which is a member of the European network of Living Lab (ENOLL) aiming to foster innovation/ collaboration capacities and offer better services. We are the partners in Horizon Europe projects (AGROSERV and NATAE on agroecological transition; and SOILL on soil living labs) in which the MEDILL will train, support, monitor, and promote the networks of LLs while ensuring co-created, user-centred, impactful, replicable, and sustainable lead of the transitions.

We also established new facilities cofounded by the European Neighbourhood Instrument (ENI) and the European Maritime and Fisheries Fund (EMFF) aiming to investigate and monitor the level of microplastics pollution in the marine environment. These facilities investigate the level of microplastics in marine species of commercial interest and the contaminants released by these pollutants in seafood products. The first results, which revealed a significant increase in microplastics pollution associated with different human activities, will be used to provide mitigation strategies to combat this pollution.

Czech Republic

The National Node. In 2022, the national project for support of large infrastructures - CzeCOS, which is a joint project for ESFRI infrastructures AnaEE-ERIC, ICOS ERIC, and eLTER at the national level, and which is hosted by CzechGlobe - Global Change Research Institute CAS, was successfully completed. Following this, a new project for the period 2023-2026 was submitted, successfully defended, and approved for support. However, due to the state of the national budget, the originally planned funding for this project was reduced by 25%, which will partially affect the planned upgrade of some experimental sites. Nevertheless, it will be sufficient to maintain the operation of the sites.

Collaborations with RIs. The CzeCOS project continued its efforts to integrate observational and experimental research on ecosystems (mainly among AnaEE-ERIC and ICOS ERIC infrastructures), particularly through modelling of ecosystem processes, remote sensing and the joint use of analytical infrastructure.

Within the CzeCOS project, work on the preparation of a common data repository continued, and harmonisation of data continued with other infrastructures in Czech Republic, in the cluster of environmental and biological sciences as a forthcoming part of the national EOSC.

Developments at platforms. In 2022, the airborne research infrastructure was certified for application with the PTR-ToF-MS (time-of-flight mass spectrometer) instrument, which now enables large-scale monitoring of BVOC (biogenic volatile organic compounds) emissions over various ecosystems. The airborne research infrastructure was also used, among others, in collaboration with Forschungszentrum Julich (DE) in a new study aimed at the development, data interpretation, and validation of a new fluorescence sensor FLEX with campaigns in Germany and Italy.

In 2022, an extensive reconstruction and upgrade of the open-air experimental site's automatic OTC chambers at Domanínek was carried out. It involved a complete replacement of the cladding material, mechanical parts, and electronics. This reconstruction is planned to be finished in May 2023.

In 2022, a mobile platform for measuring CO_2, CH_4 and N_2O emissions, with up to 8 manual chambers at the same time, was put into operation.

Platform usage. The use of experimental infrastructure by external users remained at a similar level as in previous years, despite extensive reconstruction of some experimental infrastructures. This represented more than 10 users, including industrial users such as CleverFarm, Future Farming, and GISAT.

There has also been a continued increase in user interest in the analytical infrastructure - laboratory of metabolomics and isotope analysis, with 10 publications in 2022 from the usage of this infrastructure, a large proportion of which were published by the international team using this infrastructure.

Denmark

The National Node. AnaEE Denmark has had three Steering group meetings in 2022. An important task in 2022 was to apply for a 3-year extension of the AnaEE Denmark consortium (no new funding), to enable the granted funding to be used for paying the Danish AnaEE ERIC membership fee for the years 2022-2025. The application was submitted in June 2022 and granted in August 2022.

Developments at platforms. One of the common activities in 2022 has been a stakeholder survey and analysis.

A number of new projects have been granted to use the AnaEE Denmark platforms (national overview is currently under preparation).

A number of new publications from activities at the AnaEE Denmark experimental platforms have been published (overview is currently under preparation).

A number of grants funded in 2022 include new technology updates such as multiple automatic greenhouse gas measurement chambers.

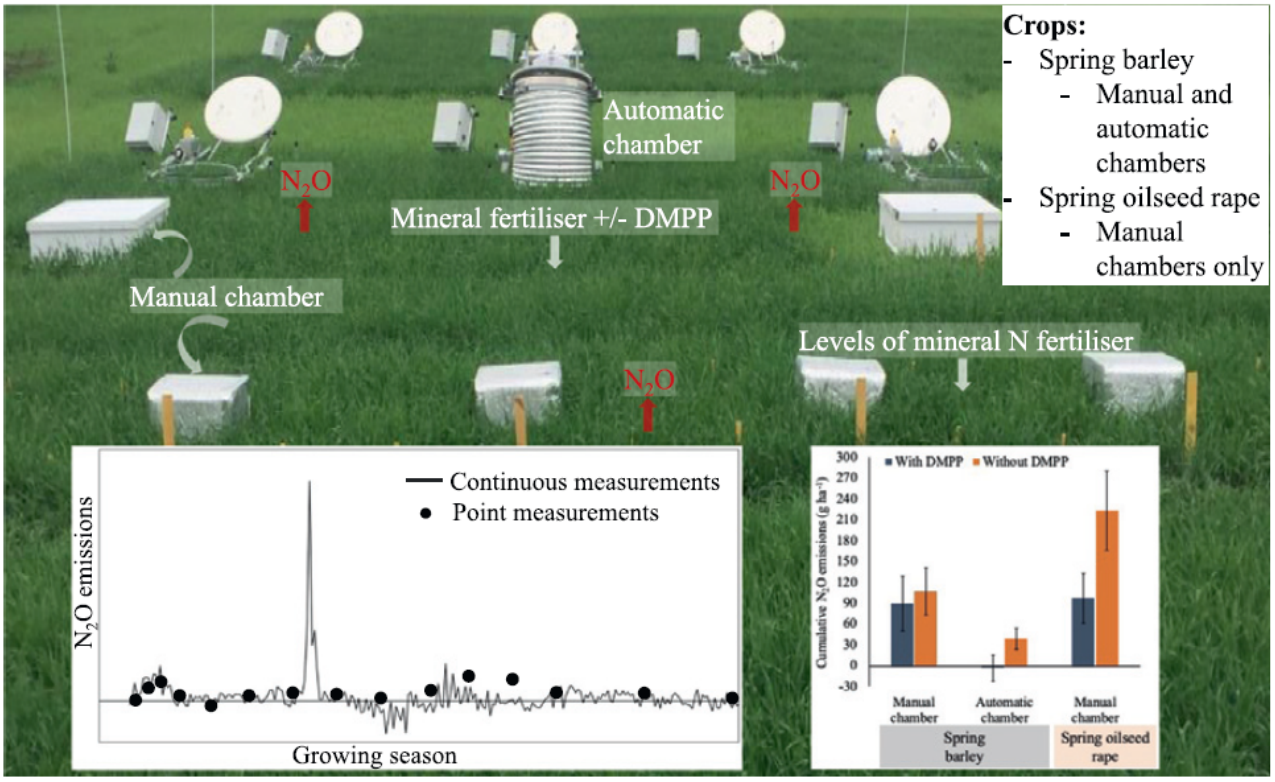


Figure 13: Automatic and manual chambers in operation at the Højbakkegård open air platform. Photo: Azeem Tariq, From Tariq A, at al.. Doi: 10.1016/j.scitotenv.2022.157650.

Finland

The National Node. In April 2022, the Memorandum of Understanding (MoU) agreement was signed to establish AnaEE Finland, supported by the Academy of Finland. AnaEE Finland is coordinated by the Natural Resources Institute Finland (Luke) and involves the University of Helsinki, the University of Eastern Finland, the University of Oulu and the University of Turku. Luke has the responsibility of the functions of the AnaEE Finland Coordination Office, and represents the AnaEE-ERIC national research platforms in different activities. The operational management of the national platforms is carried out by platform representatives who also form the AnaEE Finland management board. Furthermore, AnaEE Finland has an advisory board with representatives from the Ministry of Agriculture and Forestry, the Academy of Finland, Luke and University of Helsinki, University of Eastern Finland, University of Oulu and University of Turku representatives with the national delegates. The advisory board sets national guidelines for the issues discussed in AnaEE-ERIC and defines national objectives. The AnaEE Finland Advisory Board was formed in October 2022.

In December 2022 AnaEE Finland launched its website which presents all 11 research platforms of the five Finnish partners for liaison activities of analysis and experimental research and knowledge at national level.

AnaEE Finland is closely involved at national level in the ecosystem activities of the umbrella organisation, Integrated Atmospheric and Earth System Science Research Infrastructure (INAR RI), to promote national experimental ecosystem research.

Developments at platforms. INAR RI received funding from the Academy of Finland for Integrated measurements for enhancing climate impacts from forests and peatlands project (2022-2025), where AnaEE Finland's Root laboratory and BoFoReg research platforms are developing their experimental equipment. In addition, during 2022 the national organisations hired new technical staff for several platforms to assist with maintenance and research work.

New technology and technology testing was also carried out at the platforms, such as the start of heat-exchange experiments on the Kevo open-air platform, the construction of a NorPeat water storage reservoir for groundwater regulation on the open-air research field (funded from ELY Centre of North Ostrobothnia and North Ostrobothnian Union), and the start of X-ray equipment testing on the BoFoReg closed research platform (see photo below). Cooperation with national research institutes was increased at Oulanka.

The SMEAR-Agri and AgriLeach platforms are still under construction, and testing will start in the coming years.

France

The National Node. Understanding the sensitivity of ecosystems to global changes is a major challenge and for which we need to manipulate ecosystems (drivers) in order to characterise their dynamic properties, understand the ecological interactions, and develop a body of knowledge for modelling and forecasting. To meet these challenges, AnaEE France as a research infrastructure brings together state-of-the-art experimental and analytical platforms for research on continental, terrestrial and aquatic ecosystems, in both the metropolitan and oversea territories of France. The infrastructure is characterized by, (1) an experimental capacity that makes it possible to study the multiple pressures of global changes, (2) disruptive devices such as the two French Ecotrons offering a conceptual and technological leap in environmental sciences, (3) analytical tools to characterise biodiversity and ecosystem functioning, and (4) a diversity of ecosystem types (grasslands, forests, aquatic environments).

AnaEE France also offers information systems and data production tools based on a very high level standardised semantic description that allows interoperability with data portals and with modelling tools.

The national infrastructure has defined its roadmap and its budget programming for the 2023-2030 period and requested funding to support the development of new services and the maintenance of existing services in good operational condition.

Developments at platforms. The year 2022 was marked by the continuation of strategic investments in individual platforms, via an internal call for projects financed by the Ministry of Research for actions of upgrade and maintenance. This includes critical maintenance operations on several experimental devices, the purchase of new analysers for the Ecotrons, and the installation of new experimental tools at the Lautaret site. The infrastructure also supported two innovative transversal research projects, one on the use of remote sensing techniques to monitor the vegetation of experimental devices *in natura*, and the other on the development of an eDNA method for zooplankton identification and monitoring. In addition to being involved in major national and international projects, we contributed to

the creation of a national database on soil carbon, the establishment of a data portal for research infrastructures dedicated to continental surfaces and biodiversity, and a collaborative Pan-European project led by EMBL.

Training. We carried out several training actions in parallel, notably a workshop on volatile organic compounds (VOCs), a week of technical training on sensors in aquatic environments, a summer school on the cycles of carbon and nitrogen.

Italy

The National Node. AnaEE Italy participates in a major Italian project that includes 22 Research Infrastructures (RIs) with interests in the environmental domain. The project is titled 'Italian Integrated Environmental Research Infrastructures' (ITINERIS) and started on 1 November 2022 with a total budget of 155 million euros (source: Italian Ministry of Research). The main aim of the project is to build an Italian Hub of RIs in the environmental domain for the observation and study of environmental processes in, the atmosphere, the marine domain, the terrestrial biosphere, and the geosphere, providing access to data and services and supporting Italy to address current and future environmental challenges. The final goal is to develop cross-disciplinary research in the environmental sciences through the use of existing data and services, and new observations, in order to address scientifically and societally relevant issues such as sustainable use of natural resources, implementation of Nature-Based Solutions, Green and Blue Economy, pollution reduction, critical zone and ecosystem management and restoration, carbon cycle, mitigation of the effects of climate and environmental change.

AnaEE Italy was selected to be in this project as it is listed among the top national priorities in the national plan of RIs, released in 2021. All AnaEE-ERIC platforms, and the DMC, participate in ITINERIS, with contributions to the WPs on terrestrial biosphere, on access to facilities, FAIR data and related services, and on virtual research environments (VRE) and cross-disciplinary activities. More precisely, AnaEE Italy will: contribute knowledge for developing a fully-functioning system for the virtual, remote and physical access to national environmental RIs; contribute to a Service for Nature-Based Solutions, with a focus on pollution-control initiatives; develop the guidelines for a service to contrast climate change (elevated nitrogen, CO_2, O_3) impacts on Italian terrestrial ecosystems, with a focus on: (i) grain quality, sanitary risk and crop selection; (ii) O_3 and N deposition critical levels; and develop a VRE on crop production, plant phenology, pest and disease spread, and cropping system management for the "Farm2Fork" strategy.

Developments at platforms. In 2022, contacts were developed for signing the NN SLA, and two platforms (FO3X and AeroLab) developed and submitted their SLAs. The same platforms contributed information for the AnaEE-ERIC platform catalogue (ISIA). Preparation commenced for signing a national JRU agreement among the platforms, and for dialoguing with the Ministry of Research about the future of AnaEE-ERIC in Italy.

From a scientific point of view, research visits re-started after the COVID break. For instance, FO3X hosted 1 visitor from France (1 month) and 3 visitors from Brazil (3.75 months) for working on the physiological responses to ozone pollution in coffee plants.

9. Governance

The Assembly of Members (AoM) is the ultimate decision-making entity composed of two representatives per member, one scientific, and one administrative. The AoM appoints the DG and takes all decisions related to the AnaEE strategy, governance and scientific development. Since 20 June 2022, the AoM is chaired by Sanna Sorvari Sundet, with Jean-Marie Flaud acting as vice-chair.

The AoM is advised by the Independent Scientific Advisory Committee (ISAC), Independent Ethical Advisory Committee (IEAC) and the Stakeholder Committee (StC). Members of all three, numbering between 3 and 10 each, are appointed by the AoM. The Stakeholder Committee will submit opinions on stakeholder interests related to the work programme and strategy; the ISAC on the strategic, operational, and scientific aspects of the ERIC (criteria for platforms, collaboration with other infrastructures and bodies, activities) as well their expert opinions related to ecosystem sciences and the links with food security and the bioeconomy; and the IEAC on ethical issues in ecology and life sciences.

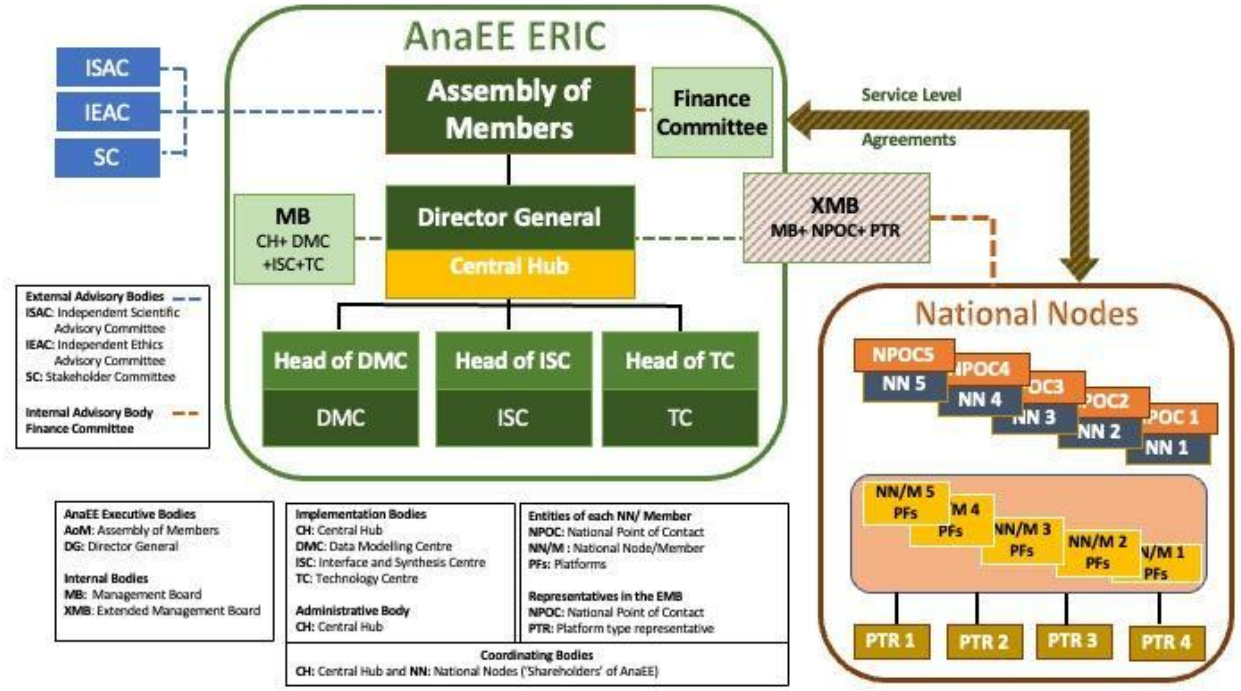


Figure 17: AnaEE-ERIC organisational chart.

10. Partnership

The main activities about future partnership and membership have been described under “Partnerships and Enlargement” in Section 7 (AnaEE-ERIC activities). Here below, we present a map of the operational partnerships with other Research Infrastructures that were developed in 2022 via the LS-RI and ENVRI groups.

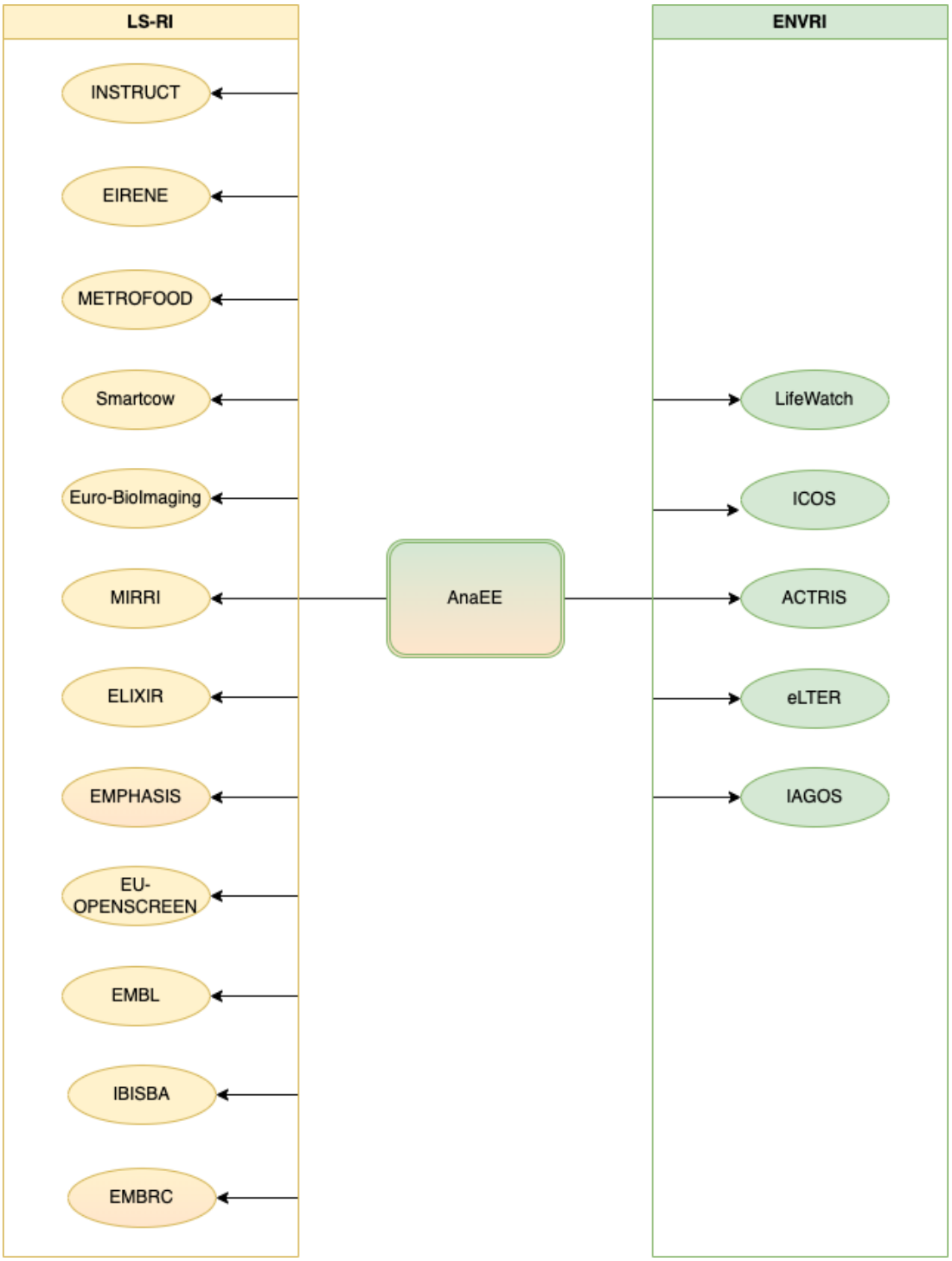


Figure 18: The operational network developped by AnaEE-ERIC in the LS-RI and ENVRI clusters.

AnaEE-ERIC also built strong relations and understanding with the RIs involved in the AGROSERV and PHENET projects (see Section 6 on Projects), which will be further strengthened as these projects were accepted by the Commission.

11. Communication, dissemination, and outreach

AnaEE-ERIC was strongly invested in various communication, dissemination and outreach activities ensuing its ERIC status; it was important to be visible and implicated in activities that duly reflected the capacity and capabilities of its RI platforms and personnel. Internal communications were complemented by external activities where the presence of AnaEE ERIC was evident to its scientific base and external stakeholders.

The key communication tools for external stakeholders employed the classical digital communication tools.

Website https://www.anaee.eu/

The AnaEE website that was created in 2020 was enriched in 2022 with information about the activities and updates about AnaEE following its ERIC status. It was thus an important window to our activities, outside our community. In addition, the various legal and operational documents that are available on the website, made it a reliable reference resource for the AnaEE community of platforms. The presentation of our platforms, sharing news (additionally via newsletters), and publicising events organised or hosted by AnaEE and its partners, permitted the community to stay informed. Additionally, the website provides easy access to data portals, data models and APIs. Altogether it has helped enhance the impact of AnaEE-ERIC.

Social media

Social media accounts on LinkedIn, Twitter and Facebook were created for AnaEE-ERIC. All these platforms were used to promote AnaEE-ERIC and interact with a wider community while simultaneously receiving real-time feedback and interacting with its "followers".

434 followers on LinkedIn / 338 followers on Twitter / 81 followers on Facebook.

Newsletter

The AnaEE newsletters, of which there were seven, including one in early 2022, was continued as the AnaEE-ERIC newsletter. The first newsletter, disseminated in June, encapsulated all key information about the 'young' ERIC, with the foreword by the AoM chairperson, the description of the formal ERIC status ceremony, the first AoM, meetings and events, and a focus article on an AnaEE-ERIC platform. The format for the newsletter will be maintained with sections devoted to updates from National Nodes, and a feature on an AnaEE-ERIC platform and/or platform staff personnel.

Workshops, conferences, and seminars

The first Technology Foresight Workshop on the theme "Using ecotrons in ecosystem research and integrating them in multi-site ecological experiments" was a great success an important vehicle to communicate about the activities of the different platforms and disseminate information about ongoing and future events.The event, sponsored by AnaEE France, took place on 10 May 2022, at the Montpellier Ecotron in France (see section on Training in this report.

News flashes and announcements

Four key events were announced, and widely publicised:

- Selection of the AgroServ proposal led by AnaEE-ERIC & CNRS (January 2022),
- AnaEE becomes AnaEE-ERIC (March 2022),
- AnaEE-ERIC participates in the ERIC forum (May 2022),
- Inaugural event of AnaEE-ERIC, 20 June 2022. During this event a photo exhibition on AnaEE-ERIC platforms was opened in the CNRS castle at Gif-sur-Yvette.

12. Financial report

Data presented in this report are divided into two main categories: the revenue and the expenditure.

Revenue

Table 1: Revenue of AnaEE-ERIC (cash only).

Revenue categories	Amount
Membership fees	435,000.00€
Observer fees	30,000.00€
Host Premium contribution	57,000.00€
EU project income (AGROSERV)	2,850.18€
Other	1.21€
Total	**524,851.39€**

The revenues only account for cash contributions received by the AnaEE-ERIC. Out of the **465,000 €,** representing the annual membership fees (including observer fees) as described in Annex III of the Statutes, **373,000 €** was collected in 2022. Italy has not yet paid its 2022 contribution.

Concerning in-kind contributions (host premiums), a lump sum of 378,000€ has been estimated from the statutes of AnaEE-ERIC (annex III) for Denmark, France and Italy. This revenue is mentioned in this report for information purposes. The in-kind evaluation is ongoing, and the Finance Committee will examine the proposal that shall be submitted later in the year to the AoM for approval.

The Czech Republic has paid its host premium contribution in cash, as shown in Table 1

In 2022, two Horizon Europe projects in which AnaEE-ERIC is a beneficiary or partner were granted. They amount to a maximum of **919,613 €**: AGROSERV (**720,863 €)** and PHENET (**198,750 €).** However, since neither project had related expenses in 2022, they cannot be included in the revenues of the Financial Report for AnaEE-ERIC. In the case of AGROSERV, the advance received cannot be included in this financial report, as it has not yet been spent, hence not validated, according to normal accounting practices. PHENET was launched 1 January 2023.

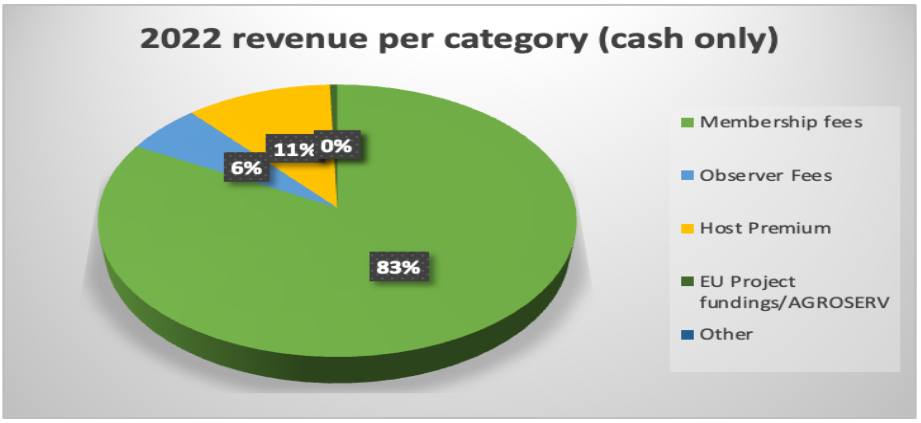


Figure 20: Distribution of revenue per category.

Expenses

In 2022, the total expenses amounted to **56,287.26 €** for AnaEE-ERIC 53,437 € of which AGROSERV amounted to 2,850.18€ for travel and subsistence. A summary of the 2022 expenses per cost categories is illustrated in Table 2.

Table 2: Expenses of AnaEE-ERIC (cash only).

Expenses Categories	Amount
Human Resources (salaries, insurance...)	20,359.16€
Travel and subsistence	9,014.09€
Office management	4,567.80€
Outsourcing & Services	17,065.28€
Outreach and communication	2,430.75€
Total	**53,437.08€**

In this expense summary, only the in-cash expenses of the CH is considered.

The 2022 expenses of the three other AnaEE-ERIC Centres (TC, DMC and ISC) are not yet available. There are certain in-kind contributions from the hosting countries, e.g. human resources, that still need to be evaluated and approved. In 2022, the only expenses made for the AgroServ project were related to travel and subsistence (2,850.18€).

Table 3: Expenses for the project AgroServ.

Expenses Categories	Amount
Human Resources (salaries, insurance...)	
Travel and subsistence	2,850.18€
Office management	
Outsourcing & Services	
Outreach and communication	
Total	**2,850.18€**

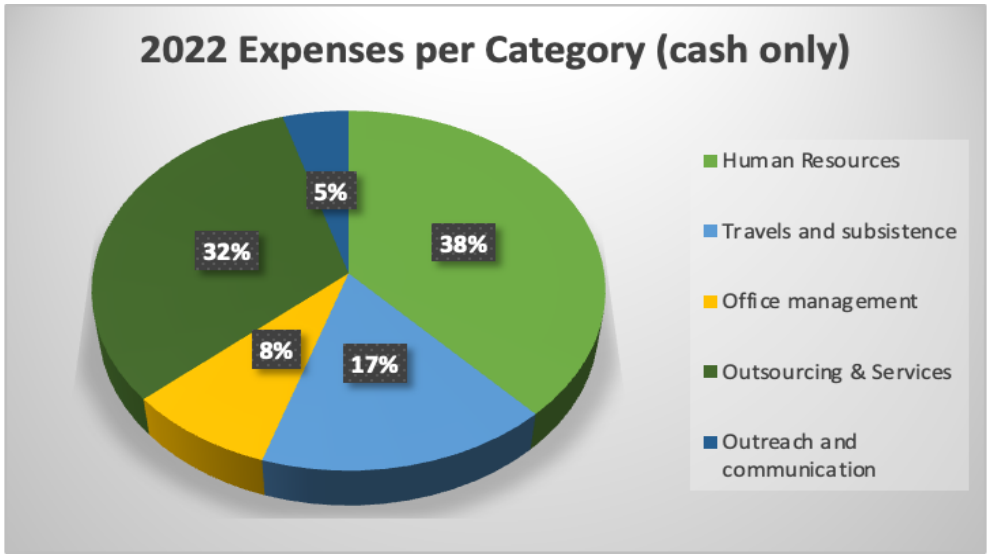


Figure 21: Distribution of expenses, per category.

In conclusion, 2022 was the first year of AnaEE-ERIC existing as a legal entity, resulting in a relatively low expenditure on Human Resources (HR). The expenses from the three Service Centres (DMC, TC, ISC), couldn't be included in this report because they could not be evaluated at the time of writing this Financial report. The evaluation of in-kind contributions from CH, TC, DMC, is in progress and will be submitted to the Finance Committee and the AoM for approval, as stated in the Statutes.

Thus, the AnaEE-ERIC total revenue to be considered for 2022 is **524,851.39 €** (including AGROSERV), out of which **56 287,26€** was spent in 2022 with a balance of **468,564.13 €** on 31 December 2022 as illustrated in the following diagram.

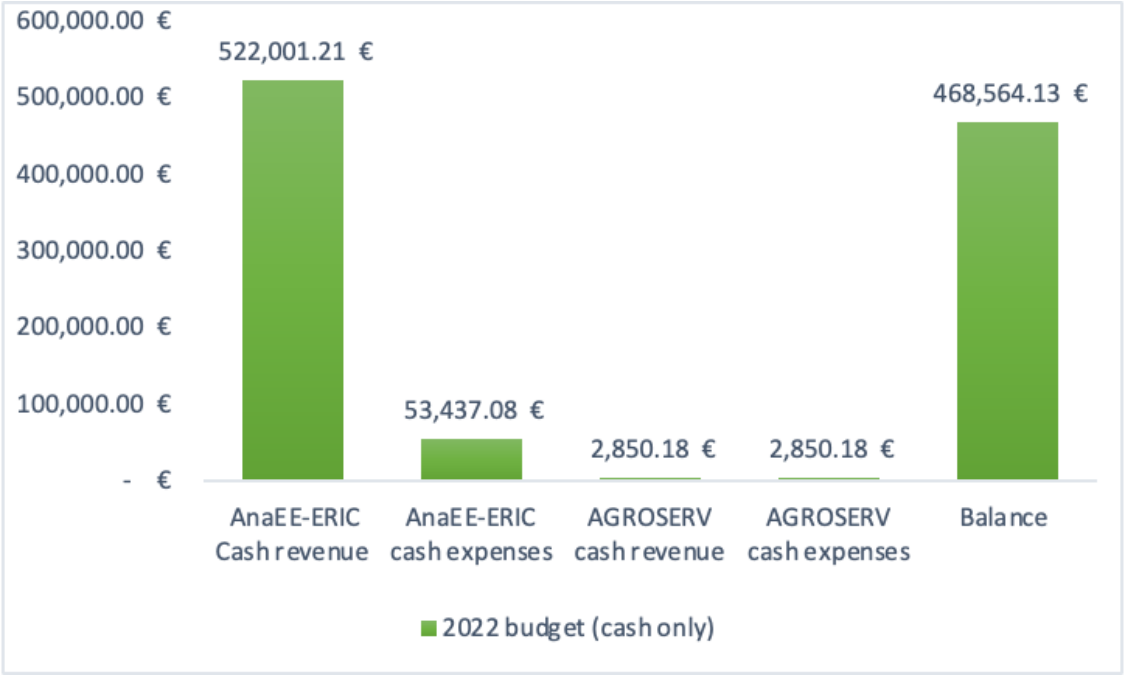


Figure 22: The distribution of the 2022 budget of AnaEE-ERIC.

Annex 1: List of acronyms

AGROSERV *Integrated Services supporting the Agroecological Transitions*
AnaEE *Analysis and Experimentation on Ecosystems*
AoM *Assembly of Members, Assembly of Members*
CH *Central Hub*
CNRS *Centre National de la Recherche Scientifique (National Centre for Scientific Research)*
DG *Director General*
DG RTD *Directorate General Research and Technology Development*
DMC *Date and Modelling Centre*
DMP *Data Management Plan*
ENVRI *Environmental Research Infrastructures*
ERA *European Research Area*
ERIC *European Research Infrastructure Consortium*
ESFRI *European Support Forum for Research Infrastructures*
EU *European Union*
FCT *Fundação para a Ciẽnca e a Technologia*
GEP *Gender Equality Plan*
HQ *Headquarters*
ICRI *International Conference on Research Infrastructures*
INRAE *Institut National de la Recherche en Agriculture pour l'Alimentation et l'Environnement (National Institute for Research in Agriculture for Food and Environment)*
ISAC *Independant Scientific Advisory Committee*
ISC *Interface and Synthesis Centre*
KoM *Kick-off Meeting*
KOM *Kick-Off Meeting*
LS-RI *Life Sciences Research Infrastructures*
MB *Management Board*
NN *AnaEE National Node*
NP *National Platform*
RI *Research Infrastructure*
RoP *Rules of Operations*
SLA *Service Level Agreement*
TA *Transnational Access*
TC *Technology Centre*
UTAD *University of Trás-os-Monte e Alto Douro (Portugal), Universita Tras o Monte e Alto Douro*
VA *Virtual Access*
VRE *Virtual Research Environment*
WP *Work Program or Work Package*
XMB *Extended Management Board*

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