



# AnaEE Stakeholder Handbook

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*Edition: December 2013*

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## Foreword from the Coordinator



Dear Stakeholder,

Whether you represent a European, national-level or local public or private sector body, you care about the future of this planet and want to work with all relevant actors to help find solutions to the grand challenges of today and tomorrow: climate change and its impact on land use changes and threats to biodiversity and food security.

This handbook aims to explain how AnaEE – a unique continental, long term, integrated research infrastructure for the experimental simulation of global changes and the measurement of ecosystem responses – can contribute to improving food security, building a 21<sup>st</sup> century bioeconomy, preserving and improving ecosystem services, while also contributing to the strengthening and deepening of the European Research Area.

A European research infrastructure on the ESFRI (European Strategy Forum on Research Infrastructures) roadmap, AnaEE will work with other research infrastructures and bring together *in natura* and *in vitro* experimental platforms, alongside *analytical* and *modeling* platforms, integrated through supra-national centres. This *stakeholder handbook* describes AnaEE's goals, structure and services, as well as its benefits for various stakeholder groups. We also present key governance and financial aspects, and other important factors that you need to take into consideration in deciding (we hope) to support our work.

We hope that it proves useful to you. We will ensure that this handbook is regularly updated as AnaEE progresses. Please do not hesitate to get in contact should you wish to find out more.

Kind regards,



Dr. Abad Chabbi  
AnaEE Coordinator

## 1. What is AnaEE?

AnaEE will be a research infrastructure for experimental manipulation of managed and unmanaged terrestrial and aquatic ecosystems. It will strongly support scientists in their analysis, assessment and forecasting of the impact of climate and other global changes on the services that ecosystems provide to society.

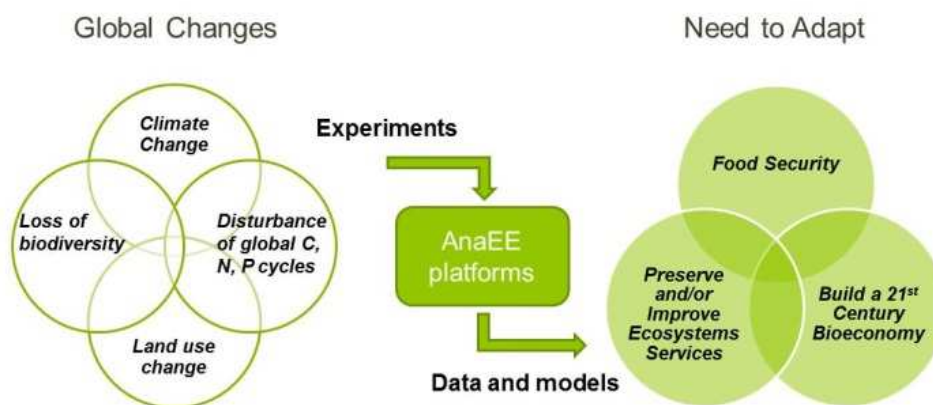
AnaEE will support European scientists and policymakers to develop solutions to the challenges of food security and environmental sustainability, with the aim of stimulating the growth of a vibrant bioeconomy. AnaEE will accomplish this mission by building permanent and substantial links among researchers, science managers, policy makers, public and private sector innovators, and citizens.

### 1.1 The context

The sustainability of agricultural, forested, freshwater and other managed and natural ecosystems is critical for the future of mankind.

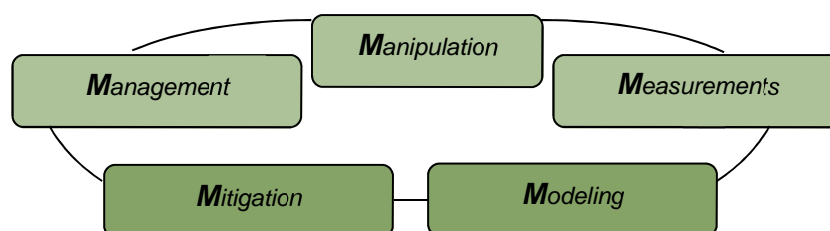
However, the services provided by these ecosystems are under threat due to climate change, loss of biodiversity, and land use changes. In order to meet the challenges of food security, build a 21<sup>st</sup> century bioeconomy and preserve or improve ecosystems services, we need to understand and forecast how ecosystems will respond to current and future changes including new management approaches and potential environmental tipping points.

Without sufficient understanding of the sensitive interdependencies between ecosystems and the environment, Europe will be unable to assess the impacts, control the risks, or potentially utilize the benefits of anticipated large changes in ecosystems structure and function. Typical benefits will include greenhouse gas mitigation and climate adaptation.



### 1.2 The approach

To achieve this goal, AnaEE will adopt an experimental approach built around *Manipulation*, *Measurements*, *Modelling*, *Mitigation* and *Management*.



At the core of AnaEE's approach are the distributed experimental facilities needed to expose

ecosystems to future conditions to quantify the role of each of the drivers of change and to identify their interactions.

To produce results that will inform predictive models and deliver realistic simulations, AnaEE research has to be process oriented and will address how major biogeochemical cycles, biodiversity and the relationship between biodiversity and ecosystem functions will change under the various experimental treatments.

The AnaEE experimental facilities will be equipped with state-of-the-art instrumentation and IT tools and they will use common standards to measurements and analysis. The facilities will be highly flexible and open to new experiments in order to be able to address the research questions of the future.

## 2. The components

AnaEE will be a unique continental scale, long term, integrated experimental research infrastructure. It will be based on distributed, existing and new, advanced experimental platforms of four types:

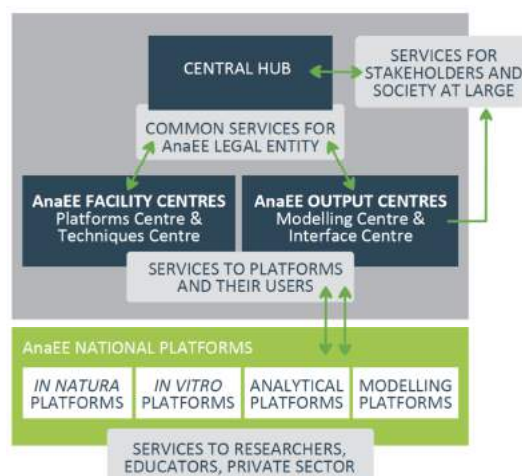
**2.1 In situ/in natura platforms** will comprise the predominant land use types of agriculture, forestry and nature, and the interfaces between managed and unmanaged as well as terrestrial and aquatic ecosystems transecting Europe's climatic zones.

**2.2 In vitro platforms** (such as ecotrons): complement in natura platforms by enabling higher level of environmental control and process measurement on ecosystems.

**2.3 Analytical platforms** will offer advanced biological, physical and chemical analyses for a deeper insight into processes.

**2.4 Modelling platforms** will analyse and synthesise the data from experimental platforms and make predictions of the structural and functional responses of ecosystems at a range of spatial and temporal scales.

The coordination and integration of these national platforms will be achieved through supra-national centres which will ensure international access, improved measurements and data harmonization, technology development, links between data and models, open access to raw data and syntheses. They will also allow researchers to network and provide an interface with key stakeholders.



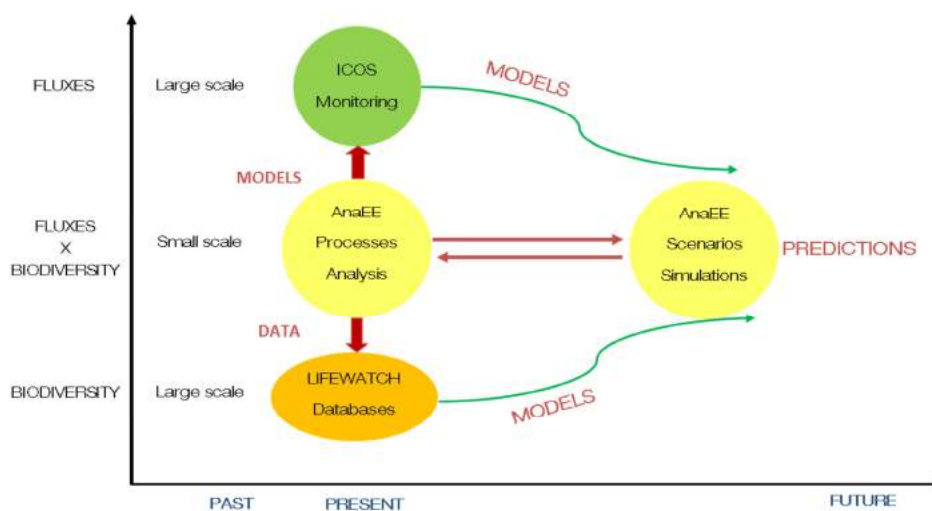
### 3. Complementary European infrastructures

AnaEE will provide a unique, long-term and sustainable infrastructure that fills an important gap between the environmentally-oriented European research infrastructures in ecosystem sciences. In particular, AnaEE will work alongside, and provide synergies with, ICOS (involved in long-term observations of the global carbon cycle and greenhouse gas emissions) and LifeWatch (providing access to biodiversity and ecosystem science data and data processing tools).

AnaEE will uniquely provide:

- i) Experimental manipulations of natural and managed ecosystems which will improve understanding of ecosystem functioning and dynamics and make model predictions more reliable;
- ii) Insight into the consequences of biodiversity loss for ecosystem vulnerability and services;
- iii) Specific analysis of threats and opportunities for agricultural, forest and freshwater production, contributing to the European bioeconomy.

Linking AnaEE results with data from observational sites across Europe will allow models to be scaled-up to larger geographical areas. AnaEE will also complement and add value to emerging research infrastructures in the agri-food, forestry, bioenergy, and aquaculture sectors, as well as other infrastructures that already exist or are being developed, most particularly in the areas of technological developments, data exchange (e.g. ELIXIR), interoperability of models and the synthesis of summary results at a range of spatial and temporal scales.



Links with international counterparts of AnaEE such as NEON and AgMIP in the United States and TERN in Australia have already been established and participation in COOPEUS will be pursued. In addition to these collaborations, AnaEE will work hand in hand with the FACCE Joint Programming Initiative and the Group on Earth Observation (GOE).

### 4. Why AnaEE?

AnaEE is a European integrated infrastructure aiming to unite the scientific community within

ecosystem research. AnaEE will provide a unique one-stop-shop portal for users.

#### **4.1 Benefits for researchers**

While AnaEE is of interest for all Europeans and people around the world, it is first and foremost a tool for researchers, aiming to provide:

- Cost effective physical, virtual and remote access to key experimental ecosystem platforms across different climatic and land use regimes in Europe. Capabilities to test climatic, anthropogenic and biotic stress factors, as well as testing management options for mitigating them;
- Cost effective access to key analytical and modelling platforms;
- The provision and support of specialist expertise in planning, constructing and maintaining ecosystem experiments;
- Improved methodologies, standardized measurements, harmonisation of metadata as well as sustained personnel training;
- Training of young researchers and students.

#### **4.2 Benefits for national stakeholders**

National governments, NGOs, business and other key stakeholders will also stand to benefit greatly from AnaEE, notably through:

- Higher international visibility of national infrastructures, expertise, research programs, and data;
- Technical and organisational support to maximize the efficiency and effectiveness of data, models and scientifically solid syntheses of experimental ecosystem research for academic, education and commercial users;
- Definition and standardization of criteria for cost effective procurement of the advanced equipment needed for AnaEE platforms;
- Capacity building for assessing potential adaptation and mitigation strategies for climate change and loss of biodiversity in agro-ecosystems, forestry and freshwater ecosystems.

#### **4.3 Benefits for European policy makers and industry**

AnaEE will also help to build the European Research Area, through:

- Efficient, organized access to complementary competencies within the scientific community analysing the impact of global changes on ecosystems and assessing mitigation and adaptation responses;
- Ability to perform experimental verification of hypotheses and to test technologies and policies aimed at mitigating unwanted effects;
- Reliable results expressed through accepted standards and comparable formats;
- Training of highly qualified personnel at the regional experimental platforms;
- Coherent guidelines and specific indicators to track, measure, and assess ecosystem services impacts and dependencies. Support to decision processes in policy and business;
- Improved networking between science, policy makers and industries, sharing knowledge of impacts and dependencies of economic activities on ecosystem services;
- Technology transfer: resulting in the growth of innovative companies at both regional and international level.

## 5. Legal, Governance and Funding Aspects

### 5.1 Current funding

As the AnaEE preparatory phase is in its first year, firm funding commitments are at this point not available except for those already committed in Member states for the upgrading and construction of national infrastructures (core structural funding) that will form part of the AnaEE distributed platforms:

- The European Commission's 7th Framework programme (DG Research & Innovation) is co-funding the Preparatory Phase of AnaEE (Grant Agreement n°312690) that will run from 1st November 2012 to 30th April 2016. The total EU contribution currently assigned to AnaEE is €3.4 million.
- The ANR (French National Research Agency) is funding AnaEE France under the "Investments for the future" programme for a total of €14 million.
- The BBSRC (Biotechnology and Biological Sciences Research Council) is funding the North Wyke Farm Platform Project for a period of 5 years for a total of €12 million.
- The Hercules Foundation for large infrastructure in Flanders has selected the construction of AnaEE Belgium as a top-priority national contribution to AnaEE Europe, and has proposed to the Department of Economy, Science and Innovation of the Flemish Government (EWI) to finance AnaEE Belgium with €14 million to cover a 5 year period (2 years construction phase + 3 years exploitation phase). In April 2013, EWI already partially financed the macrocosm ecotron at Hasselt University with €3.2 million..
- In Italy, AnaEE-Italia is now officially funded for the preparatory phase as of 2014, with €561k contributed to the CNR.

Several countries have included AnaEE on their national roadmaps or have left the door open for funding:

	Provided letter of support	Roadmap of existing with AnaEE	Roadmap updates with potential AnaEE involvement	National funding decisions for AnaEE	Pending national funding decisions for AnaEE
<b>UK</b>	Yes		Yes	Yes	
<b>Italy</b>	Yes	Yes		Yes	
<b>France</b>	Yes	Yes		Yes	
<b>Belgium</b>	Yes	Yes		Yes (Hasselt ecotron)	Yes (additional funding)
<b>Finland</b>	Yes		Yes		Yes
<b>Turkey</b>	Yes				
<b>Sweden</b>	Yes		Yes		
<b>Norway</b>	Yes				
<b>Denmark</b>	Yes				
<b>Czech Republic</b>	Yes				
<b>Turkey</b>	Yes				
<b>Germany</b>					Yes
<b>Austria</b>					Yes
<b>Israel</b>					Yes



A shareholders (funders) forum (Legal, Governance and Funding Advisory Group, LGF-AG) has been established by Work package 6 (Legal and Governance) and Work package 7 (Finance) where all potential Members of AnaEE are invited to contribute to planning of future AnaEE and to commit themselves into construction and operation of the RI.

Preliminary calculations have been made to estimate the anticipated financial commitments needed for the Construction phase are foreseen (100% by 2016 the project end) to ensure the Construction phase is completed by 2018. We are currently on target; however, costs for constructing centralised services (headquarters/central hubs) have not yet been estimated.

## **5.2 The need for an interim legal model**

The AnaEE Preparatory Phase consortium deems it necessary to put in place an interim phase non-binding agreement to encourage early buy-in from shareholders.

We are aware from previous experience (e.g. other ESFRI RIs) that a long-term legal framework takes a considerable time to develop and establish and AnaEE may run the risk of not being able to operate if an interim solution is not in place.

At the LGF-AG meeting on 24th October 2013 a recommendation of two different non-binding agreement types were proposed: a Memorandum of Understanding and a Letter of Intent.

An MoU is preferred due to its flexible yet informative nature and therefore a full version of an MoU will be drafted with the intention to share with preparatory phase project partners and potential members. This will start the negotiation process with the aim to have signatories from April 2014.

Drafting of potential statutes that may feature in an MoU are underway. It is envisaged that the MoU will not be a lengthy, detailed document and will be substantial enough to act as an interim non-binding framework to get AnaEE activities underway.

## **5.3 Long-term legal model**

In terms of a long-term legal model, work has begun on comparisons of different legal models available to AnaEE as well as recommendations on which legal model would suit AnaEE best.

Potential long-term legal models for the LGF-AG and AnaEE Steering Committee to consider include a European Research Infrastructure Consortium (ERIC), an International not-for-profit Association, a Private Limited Company and/or an International Cooperation Agreement.

The choice of the legal entity and possibly an interim legal entity will be made in line with the business model under development and also the need or not to have a legal entity in place by the end of the Preparatory Phase.

In the meantime generic draft statutes are being developed including clauses on membership; governance; admission of members; roles of senior personnel; intellectual property and employment policy.

These clauses will be valid whatever the legal model selected.

## **5.4 Future working structure**

The Preparatory Phase project has identified a need for a central hub which will undertake the management of a range of common services as per the approach taken by some other distributed ESFRI projects.



This central hub will be the headquarters of the legal entity so it is able to administer activities such as:

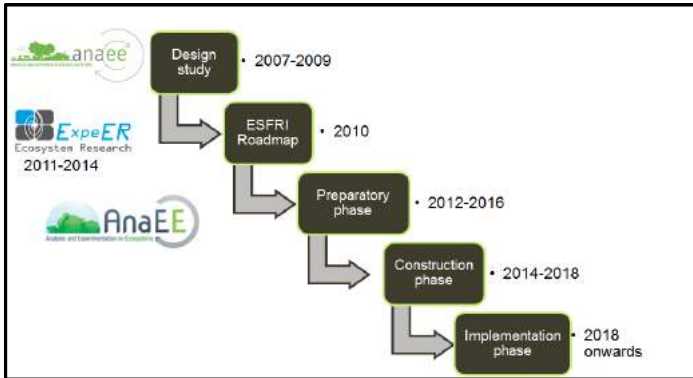
- Recruit and employ a Director/staff
- Manage internal agreements between centres/platforms
- Manage 'central budget'
- Manage communication and dissemination
- Manage secretariat for AnaEE between the centres
- Manage research access
- Manage procurement and Human Resources

AnaEE will also have central facilities or 'Centres' for specific scientific and technological services. The legal entity will encompass the central hub and most likely the centres and the national nodes will have their own national *modus operandi*.

There will be a call in 2014 for national platforms and nodes, open to all European countries. Required platform criteria will be outlined in the call. More information will be available on our website ([www.anaee.com](http://www.anaee.com)) in due course.

## 6. Preparatory Phase

### 6.1 Preparatory, construction and operation phases



AnaEE held its kick-off meeting in Versailles, France, on 14-16 November 2012, which was a chance to bring together relevant stakeholders from across Europe.

AnaEE is currently in its preparatory phase, which will last until 2016. The construction phase of AnaEE is foreseen to begin as of 2014 and last 4 years. Some initial construction (upgrading) work has already started. The operation phase is foreseen from 2018 on, although partners will explore the possibility of initiating pilot actions on the initial AnaEE platforms before then to test the potential of the system and identify bottlenecks and capacity gaps.



AnaEE subsequently held its first annual meeting and Scientific Stakeholder Forum in Venice, Italy, on 1-3 October 2013.



## 6.2 Project Partners

There are currently 13 partner organisations from 10 different countries.



- France represented by INRA and CNRS;
- UK represented by the BBSRC and supported for technical issues by Rothamsted Research;
- Norway represented by BIOFORSK (discussions ongoing with NIVA);
- Denmark represented by the Technical University of Denmark;
- Turkey represented by the Istanbul Technical University;
- Italy represented by the Fondazione Edmund Mach;
- Czech Republic represented by the Global Change Research Centre;
- Belgium (Flanders) represented by the University of Antwerp;
- Finland represented by the University of Helsinki;
- Sweden represented by the Umeå University (and Lund University as associated partner)

## 6.3 Growing AnaEE – additional countries

AnaEE is open to all European countries and also third countries.

Progress has been made in trying to integrate Germany, Spain, Portugal and Israel into AnaEE, and other national ministries have also been contacted.

## 6.4 Workplan

AnaEE's Preparatory Phase is being coordinated by Abad Chabbi and the French National Institute for Agricultural Research (INRA).

The workplan of the AnaEE Preparatory Phase has been built around the development of the AnaEE Strategic Vision (WP2) which will be the backbone and key deliverable of the preparatory phase project.

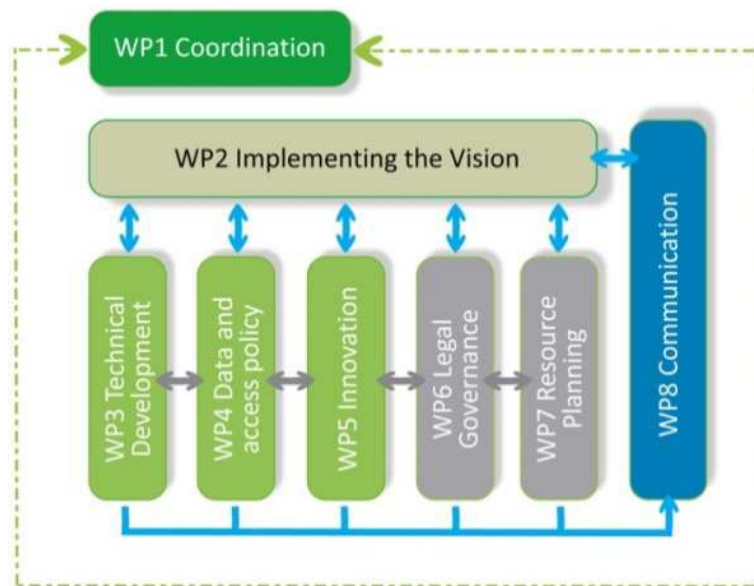
The AnaEE Roadmap (for the construction and implementation phase) will be developed in an iterative process through the tasks of WPs 3 to 7 supported by a strong coordination (WP1), communication and dialogue with stakeholders (WP8) to ensure that they are involved in the process from day one and thus contribute directly to the development and validation of the AnaEE Roadmap.

WP3 will deliver the technical plan for the construction phase based on end-user needs and long-term scientific considerations.

A data and access policy will be elaborated by WP4 taking into consideration the needs and innovative developments of private and public bodies (WP5).

WP7 will define the pricing policy and funding model that will ensure the financial feasibility and sustainability of the roll-out of AnaEE. WP6 will provide the governance and legal framework for this roll-out phase.

These activities will be conducted in close collaboration with national stakeholders (WP8) to ensure the necessary commitments are in place at project end (2016).



The work package leaders are as follows:

- WP 1: Coordination and Management  
*Abad Chabbi* ([abad.chabbi@lusignan.inra.fr](mailto:abad.chabbi@lusignan.inra.fr)), INRA
- WP 2: Implementing the AnaEE Vision  
*Jacques Roy* ([jacques.roy@ecotron.cnrs.fr](mailto:jacques.roy@ecotron.cnrs.fr)), CNRS
- WP 3: Technical Development Plan  
*Claus Beier* ([cbe@niva.no](mailto:cbe@niva.no)), Norwegian Institute for Water Research (NIVA)
- WP 4: Access to Infrastructure and Data  
*Chris Rawlings* ([chris.rawlings@rothamsted.ac.uk](mailto:chris.rawlings@rothamsted.ac.uk)), Rothamsted Research
- WP 5: Innovation  
*Francesco della Porta* ([francesco.dellaporta@fmach.it](mailto:francesco.dellaporta@fmach.it)), Fondazione Edmund Mach
- WP 6: Legal and Governance  
*Gabriela Pastori* ([gabriela.pastori@bbsrc.ac.uk](mailto:gabriela.pastori@bbsrc.ac.uk)), BBSRC
- WP 7: Financial and Human Resource Planning  
*Jaana Bäck* ([jaana.back@helsinki.fi](mailto:jaana.back@helsinki.fi)), University of Helsinki
- WP 8: Communication, Networking, Education & Training  
*Evan O'Connell* ([communication@anaee.com](mailto:communication@anaee.com)), INRA

## 6.5 Governance

### International Scientific Advisory Board



**Terry Callaghan**  
Professor of Arctic Ecology  
Royal Swedish Academy of Sciences  
Coordinator INTERACT



**Tim Clancy**  
Director, Terrestrial Ecosystem Research Network (TERN), Australia



**Russ Lea**  
Chief Executive Officer  
National Ecological Observatory Network (NEON), United States



**Ole Ostermann**  
Scientific Officer Biodiversity  
Institute for Environment and Sustainability, JRC-IES-H.08.  
Joint Research Centre (JRC), European Commission



**Jean-François Soussana**  
Head of Environmental Research at INRA (France)  
Head of the SAB of FACCE JPI  
Lead author of IPCC, WGII for AR5



**Pete Smith**  
Science Director of Scotland's Climate Change Centre of Expertise  
Convening Lead Author for Agriculture and Forestry Chapter of IPCC  
Royal Society-Wolfson Professor of Soils & Global Change, FSB, FRSE, Institute of Biological and Environmental Sciences, University of Aberdeen.

### AnaEE Steering Committee

- Abad Chabbi ([abad.chabbi@lusignan.inra.fr](mailto:abad.chabbi@lusignan.inra.fr)), INRA
- Gabriela Pastori ([gabriela.pastori@bbsrc.ac.uk](mailto:gabriela.pastori@bbsrc.ac.uk)), BBSRC
- Daniel Rasse ([daniel.rasse@bioforsk.no](mailto:daniel.rasse@bioforsk.no)), BIOFORSK
- Jacques Roy ([jacques.roy@ecotron.cnrs.fr](mailto:jacques.roy@ecotron.cnrs.fr)), CNRS
- Klaus Steenberg Larsen ([klas@kt.dtu.dk](mailto:klas@kt.dtu.dk)), DTU
- Nüzhet Dalfes ([dalfes@itu.edu.tr](mailto:dalfes@itu.edu.tr)), ITU
- Francesco della Porta ([francesco.dellaporta@fmach.it](mailto:francesco.dellaporta@fmach.it)), FEM
- Michal Marek ([marek.mv@czechglobe.cz](mailto:marek.mv@czechglobe.cz)), CVGZ
- Ivan Nijs ([ivan.nijs@ua.ac.be](mailto:ivan.nijs@ua.ac.be)), UA
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- Lennart Persson ([lennart.persson@emg.umu.se](mailto:lennart.persson@emg.umu.se)), UmU
- Chris Rawlings ([chris.rawlings@rothamsted.ac.uk](mailto:chris.rawlings@rothamsted.ac.uk)), RRes
- Angela Baker ([angela.baker@paris.inra.fr](mailto:angela.baker@paris.inra.fr)), IT

## AnaEE Project Office

AnaEE's Project Office in the Preparatory Phase is housed by the Europe Department of INRA Transfert (IT), in Paris, and staffed by personnel from INRA and IT:

- **Coordinator:** Abad Chabbi ([abad.chabbi@lusignan.inra.fr](mailto:abad.chabbi@lusignan.inra.fr))  
The Coordinator, Abad Chabbi, is in charge of the strategic steering of AnaEE, is WP1 Leader, and also leads Task 1.1 (Strategic Steering). He represents AnaEE at high-level meetings and chairs the Steering Committee.
- **Project Manager:** Yuchong Tang ([yuchong.tang@paris.inra.fr](mailto:yuchong.tang@paris.inra.fr))  
The Project Manager, Yuchong Tang, is responsible for the day-to-day administration and financial management of AnaEE, as well as playing a major role in internal communication and event organisation.
- **Communication/Lobbying Officer:** Evan O'Connell ([evan.oconnell@lusignan.inra.fr](mailto:evan.oconnell@lusignan.inra.fr))  
The Communication/Lobbying Officer, Evan O'Connell, is WP8 Leader, in charge of setting up and delivering the AnaEE Communication Plan and tools, including both stakeholder relations and lobbying activities and public relations outreach.
- **Consultant:** Angela Baker ([angela.baker@paris.inra.fr](mailto:angela.baker@paris.inra.fr))  
As Consultant, Angela Baker plays an advisory role, providing senior-level input on project monitoring and management, as well as ensuring the Coordinator, Project Manager and Communication/Lobbying Officer speak with one voice.
- **Administrator:** Lian Lomax-Hamster ([lian.lomax-hamster@paris.inra.fr](mailto:lian.lomax-hamster@paris.inra.fr))  
The Administrator, Lian Lomax-Hamster, assists with Project Office administration and management activities.

