

5 - Financial and Funding Framework

AnaEE is a pan-European research infrastructure consisting of a central coordination body (AnaEE, which comprises a Central Hub and three Service Centres) with experimental, modelling and analytical facilities (i.e. national platforms), distributed across its Member States. Each Member State is independently responsible of funding the upgrades, maintenance and operation of its national platforms. The ERIC will be funded pro rata by Members and Hosts, while the research projects carried within the AnaEE RI and using the facilities will be funded through joint European research programs according to EU-defined strategies and objectives, through private-public partnerships, and national research grants. The funding framework will continuously be developed as AnaEE shifts from the Pre-operational Phase to Operational Phase and creates an ERIC. The final decisions regarding the funding model are made by the AnaEE Assembly of Members. This chapter describes the funding model of the Central Services during the Pre-operational Phase (i.e. before the legal establishment of the ERIC entity), introduces the Operational Phase (Section 5.2-5.4), and discusses the past and future investments in the national platforms (Section 5.6).

5.1 Member and Host Country Contributions

Countries that want to include platforms in AnaEE will invest in their upgrading and construction.

Pre-operational Phase investments for the central services

The hosting countries will be responsible of funding 100% of the investment necessary for the setup and activities of the AnaEE Central Hub and the Service Centres during the Pre-operational Phase.

Operational Phase

The Central Hub and the Service Centres constitute the AnaEE legal entity, and their funding model is decided by the Assembly of Members. AnaEE operative costs are covered largely by the Member States' public funding. The Member States need to agree on a five-year budget on annual basis.

The proposed minimum Host contribution is 50% of the hosted central facility costs, while the rest of the costs is covered by annual membership contributions towards AnaEE. Members with an observer status will not pay any contribution to AnaEE before becoming full Members. This exemption and the amount of the yearly membership contribution may be adjusted annually by the Assembly of Members in the end of calendar year.

Host contributions will be provided in-cash or in-kind, while membership contributions will be provided primarily in-cash to cover AnaEE expenses related to e.g. consumables, travel of staff, meetings, outreach, services (including legal, accounting, auditing, marketing, recruitment and subcontracting), equipment (software, licenses etc.) and the salary of the Director General. However, in-kind contributions in human resources from non-hosting countries can be considered and decided case by case in the Assembly of Members. AnaEE membership contributions will be allocated to the Central Services.

Regarding the membership contributions, combination of an equal share fraction, and GDP and platform number based fractions is recommended; *50% Equal Share + 25% GDP-based contribution + 25% platform number based contribution* (see the mathematical formula to calculate the membership contributions below). The equal share component ensures that a

certain baseline fee is paid by all Members, while the size of a state’s economy is also acknowledged by the GDP based contribution. In addition, each Member’s contribution to AnaEE is accounted for; the proposed model respects the added value of services that the Service Centres and the Hub provide to AnaEE platforms.

Platform-based fees shall cover 25% of the membership contributions. From this share, the price per AnaEE platform is determined. The platform price will naturally depend on the number of Members and platforms, and the number of platforms of each type. The platforms are divided into price categories according to the platform type and the manipulations done on the platform as follows:

Open-air ecosystem [In Natura] platforms (no climate change manipulations):	full price
Enclosed ecosystem [In Vitro] platforms:	full price
Open-air ecosystem platforms (climate change manipulations):	20% discount
Analytical platforms:	25% discount
Modelling platforms:	50% discount

Open-air ecosystem (no climate manipulations) and enclosed ecosystem platforms shall have the same price. Discounted price for Open-air ecosystem platforms performing climate manipulations is recommended since climate manipulations are strongly supported by AnaEE (see Section 1.6). Analytical and modelling platforms are expected to use altogether less AnaEE services, thus, they are recommended to have lower prices. However, the use of services by each of the platform type in the operational phase needs to be described more accurately before making the final decision on the discounts. Platform discounts will be agreed by the Assembly of Members, ensuring the sustainability and stability of the AnaEE budget.

The mathematical formula to derive the full platform price and the Membership contribution for a certain AnaEE Member (denoted with *i*) is given below.

Full platform price

$$\text{PlatformPrice}_{\text{full}} = \frac{0.25 \left(1 - \frac{HC}{100\%}\right) \text{budget}}{N_{\text{Openair},0} + N_{\text{Enclosed}} + 0.8 N_{\text{Openair},1} + 0.75 N_{\text{Analytical}} + 0.5 N_{\text{Modelling}}}$$

where *HC* is the Host contribution (%), *budget* is the total budget of the Central Services, *N* stands for the number of distributed national platforms in European AnaEE infrastructure and its subscripts describe the type of the platform; *Openair, 0* (Open-air ecosystem platform, no climate change manipulations), *Openair 1* (Open-air ecosystem platform, climate change manipulations performed), *Enclosed* (Enclosed ecosystem platform), *Analytical* and *Modelling*.

Membership contribution for AnaEE Member *i*

$$\text{MembershipContribution} = 0.50 \frac{\left(1 - \frac{HC}{100\%}\right) \text{budget}}{N_{\text{Members}}} + 0.25 \frac{GDP_i}{100\%} \left(1 - \frac{HC}{100\%}\right) \text{budget} + \left(N_{i,\text{Openair},0} + N_{i,\text{Enclosed}} + 0.8 N_{i,\text{Openair},1} + 0.75 N_{i,\text{Analytical}} + 0.5 N_{i,\text{Modelling}}\right) \text{PlatformPrice}_{\text{full}}$$

where *N_{Members}* is the number of full AnaEE Members, *GDP_i* is a Member specific percentage share of total GDP of all Members and *N_i* is the Member specific number of certain type of platforms (similar to above).

Since the activities of AnaEE will depend both on the number of Members and on the number of platforms, this will influence the costs. However, in order to avoid large fluctuations in the annual membership contribution, a constant median membership contribution of around € 50k/ year is proposed. To assure that the annual membership contributions are of similar magnitude throughout the years, regardless of the number of Members, a modular approach was suggested:

increase in the activity level of the Central Services along increase in the number of Members (**more details in Section 5.8**). First four operational years are considered as the initial ERIC phase (not fully operational infrastructure). Full operation of ERIC is expected in the fifth operational year.

5.2 Incomes and Revenues

Host and membership contributions shall cover the key operative costs of AnaEE (described in the concept paper of AnaEE Hub and Service Centres). Any additional activities e.g. development of new technologies, special training sessions or hiring AnaEE post-docs for the synthesis activities will need additional funding. The application and use of these additional funds are decided case-by-case by the AnaEE Assembly of Members. Additional sources of income under consideration include access fees from physical access to the AnaEE platforms, consultancy services, licensing and industrial sponsors. AnaEE is eligible to apply for funding from EU framework targeted funding instruments for the research infrastructures and technologies. It should be noted that structural funds cannot be used to cover Host or membership contributions i.e. cannot be spent on the operational activities of the Central Services. However, some members may be eligible to apply for structural funds to finance the upgrading or construction of their national platforms, and / or the construction of a Service Centre or the Hub during the pre-operational phase. Scouting new funding opportunities for the national platforms and promoting those to the Member Countries is part of the tasks of the Central Services. However, implementing those is on the responsibility of national partners and platforms.

Table 1 provides a conservative estimate of AnaEE incomes and revenues during the first five years of operation. It is assumed that the amount of the Host and Member contributions is equal. The activity level, and consequently the operational costs, of AnaEE will increase during the first five years along the number of ERIC Members ('Initial ERIC phase'). In the fifth year of AnaEE, full operation of the Hub and Service Centres is expected. The annual budget of fully operational ERIC should be kept stable. It remains with the hosting countries to approve that also their 50% Host share of the key ERIC costs increases at the same time as the number of new Members join and the total budget is estimated to increase. It is anticipated here that on the first year of operation, seven Members will join the ERIC; in the following years, two to three new Members are expected to join AnaEE each year. By 2022 (the fifth year of operation) AnaEE would comprise sixteen Members. Income over the first two years is assumed to come almost exclusively from the monetary contributions of AnaEE Members and Hosting Countries. Revenues from research and innovation programmes (e.g., Horizon2020) represent a conservative estimate. It should be noted there is a possibility to get funding already earlier than the third year of AnaEE and funding should be applied for the RI activities whenever available.

AnaEE will provide most of the services to its Members and other stakeholders without a charge. However, some services such as consultancy services and others mentioned above may have a fee. Pricing policy of AnaEE regarding members and non-members is still under development. However, it is clear that the data will be free and open access for all users; the terms of data usage will be captured in licenses. Revenues coming from the services AnaEE provides to the stakeholders are expected from the second year on. These services possibly include e.g.:

- Technical consultancy services: to build sites in specific areas around the world (sensor networks); to develop observatories for specific applications (e.g., artificial ecosystems).
- Monitoring and data products: data collection and integration at specific sites provided as a service; Data systems, architectures and products.
- Decision support tools, synthesis products from data or technology

Income (€ thousand)	INITIAL ERIC PHASE				FULL OPERATION
	Y1	Y2	Y3	Y4	Y5
Contribution by Host Countries	505	653	750	900	1073
Contribution by Members	505	653	750	900	1073
Technical consultancy services	-	-	50	100	150
Synthesized data products		30	100	150	200
Decision support tools	-	30	100	150	200
Research and innovation grants	-	-	40	80	150
Total Income	1010	1365	1790	2280	2845

Tab 5.1: Income estimation for AnaEE during the first five years of operations. It is expected that full operation is reached in the fifth year of operation with sixteen ERIC Members.

5.3 Costs

The governance structure and human resources affect the budget calculations to great extent, and as they are still evolving some of the assumptions used for these calculations are likely to change. The final global cost estimates and the value of the AnaEE infrastructure will become available after it is known which platforms exactly will be proposed by each Member as AnaEE components. To note, in this section the minimum operative costs of AnaEE Central Services will be estimated. These costs shall be covered solely by the Host and membership contributions.

Pre-operational Phase starts in 2016 and runs until the beginning of 2018 when AnaEE is expected to be established (Operational Phase) AnaEE. The functioning costs of AnaEE will consist of i) personnel costs including salary and indirect employee costs, ii) other AnaEE costs related mainly to operations, and iii) costs to cover the premises. To estimate the salary of personnel, salary categories based on Finnish salary level has been applied. This salary level is above the EU28 average but not among the highest (from Eurostat). Indirect employee costs include social and pension fees, salary during the annual leave, average sick leave and staff training leave, occupational health care and other similar costs. The other AnaEE costs related to mainly operations consist of consumables, allowances, travel of personnel, meetings, outreach, services that ERIC uses including law, accounting, auditing, marketing, recruitment and subcontracting, and equipment e.g. software, licenses, sensors. In the estimated budget, the costs related to premises account for 20 % of all of the costs covering e.g. the rent of premises, electricity, cleaning, furniture, IT (computers, mobile phones etc.) and insurances.

In the 2-year Pre-operational phase, the foreseen personnel costs are around € 1.4 million (nine FTE (*full-time equivalent*) in the Hub and Service Centres altogether) of around € 2.55 million total budget for the Central Services. The costs are likely to be altogether lower in the beginning of the pre-operational phase and increase upon construction and setup of the Centres. The budget estimate is subject to change and will ultimately depend on the available resources of the hosting countries and how developed their existing facilities are.

	80% of total budget		20% of total budget	
	<i>Personnel costs</i>	<i>Other costs related to personnel and operations*</i>	<i>Premises</i>	<i>Total</i>
<i>AnaEE Central Hub</i>	433 000	263 000	174 000	870 000
<i>Technology Centre</i>	254 000	70 000	81 000	405 000
<i>Data & Modelling Centre</i>	254 000	118 000	93 000	465 000
<i>Interface and Synthesis Centre</i>	254 000	70 000	81 000	405 000
Total expenditures	1 195 000	520 000	430 000	2 145 000

Tab 5.2: Estimated annual minimum operative costs AnaEE in full operation (in EURO)¹. These expenditures will be covered by Host and membership contributions. Personnel costs are based on the planned ERIC staff to fully operate the Central Services; Central Hub five FTE (full-time equivalent), Technology Centre three and a half FTE, Data and Modelling Centre three and a half FTE, Synthesis and Interface Centre three and a half FTE.

*Other costs related to ERIC operations consist of consumables, allowances, travel of personnel, meetings, outreach, services including law, accounting, auditing, marketing, recruitment and subcontracting, and equipment e.g. software, licenses, sensors.

In order to ensure full functioning of the AnaEE Hub and delivery of the Service Centres (expected in the fifth year of ERIC’s operation) the estimated annual budget of the Central Services is around € 2.145 million (see Table 5.2). Annual direct and indirect personnel costs (fifteen and half FTE in AnaEE) are estimated to be around € 1.195 million of which the DG’s salary costs will be around € 0.19 million/ year. Other costs on the operations are estimated to sum up to around € 0.52 million/ year. Budget estimate for the premises (and related costs) is around € 0.43 million /year. All these costs are very dependent on the hosting countries’ general salary and price level, and more detailed numbers can be given when the Hosts are selected. Table 5.2 includes only the minimum costs that need to be covered by the Host and membership contributions. Obtained access fees and any other additional revenues shall be used for additional AnaEE RI activities (see Section 5.3). Based on the conservative estimates in Table 5.1, there would be around € 0.7 million of additional income (in addition to Host and membership contributions) in the fifth year of AnaEE’s operation. The use of this income shall be decided by AnaEE Assembly of Members.

5.4 Financial Sustainability

Minimum operative costs of AnaEE to maintain Central Services at a proper level of operation are covered by ERIC Members’ public funding; Host and membership contributions. In order to ensure the financial sustainability, ERIC Founding Members need to commit to AnaEE for long-term, minimum for five years. Strong state-level financial commitments to AnaEE will provide sustainable base funding for ERIC activities and operation. As discussed in Section 5.3, there are also other possible sources of funding to support the activities of AnaEE, however, income other than Member governments’ public funding, such as e.g. access fees, donations and industrial sponsorships, is not considered as part of AnaEE sustainable base funding since the amount of additional income may strongly fluctuate in time.

¹Minimum operative costs of AnaEE will be covered by ERIC Members’ public funding to maintain AnaEE Central Services at a proper level of operation.

Six countries in AnaEE Preparatory Phase assigned targeted funding to the national platforms, (Table 5.3) as their contribution to build the European AnaEE research infrastructure network, for a total of around 44 M€. Funding decisions in Czech Republic and Denmark are still pending (as per April 2016).

Country	Funding committed (€ million)	Explanatory notes	Status ²
ITALY	0.56	AnaEE-Italia is now officially funded for the Preparatory Phase as of 2014, contributed to CNR	N/A
FRANCE	14	The French National Research Agency (ANR) is funding AnaEE France under the “Investments for the future” programme	Lol signatory
FINLAND	0.170	Academy of Finland provided initial funding to AnaEE Finland (within a larger environmental infrastructure consortium)	Observer status requested
UK	12	The Biotechnology and Biological Sciences Research Council (BBSRC) is funding the North Wyke Farm Platform Project for a period of 5 years	Observer status requested
BELGIUM	>13	The Hercules Foundation for large infrastructure in Flanders has selected the AnaEE Belgium as a top-priority national contribution to AnaEE. In the Flanders, the Macrocosm Ecotron of Hasselt University, has been funded. Funding decisions on the other components are still pending. In the Flemish region, total investments so far are € 5.239 million. In the Walloon region, the current investments towards AnaEE-Wallonia are € 8 million	Lol signatory
ESTONIA	4	Construction and upgrading of a national integrated network of experimental environmental platforms during a period of 2010-2015; 95% of the funding was acquired from the EU structural funds and the rest from national sources (university budget). Additional annual funding of € 40,000 is provided to support the infrastructure (mostly to cover personnel costs) by the Estonian Government. Most of these stations fit with the focus of the AnaEE.	Observer status requested
CZECH REPUBLIC	0.15 / year	Applied funding of € 0.15 million/ year. Funding decision pending.	Lol Signatory
DENMARK	6.8	Applied funding of € 6.8 million. Funding decision pending.	Lol Signatory
TURKEY	N/A		N/A
NORWAY	N/A		N/A

² In May 1, 2016 regarding joining in the AnaEE pre-operational phase

SWEDEN	N/A		N/A
POLAND	N/A		N/A
ISRAEL	N/A		N/A
GERMANY	N/A		N/A
IRELAND	N/A		N/A
NETHERLANDS	N/A		N/A

Tab 5.3: National roadmaps and secured funding from AnaEE PP partners with explanatory notes

In addition, several countries have included AnaEE on their national roadmaps or otherwise expressed interest in contributing to AnaEE development. The Expression of Interest (EoI) call which was sent to platforms in summer 2014, resulted in almost 200 research sites and facilities (open-air, enclosed, analytical and modelling platforms) showing great interest in joining the European AnaEE. Information regarding the past and future national investments in experimental ecosystem research became available along with the call. The construction of the current ecosystem infrastructure has received close to € 360 million investments, while the planned investments for experimental ecosystem research are estimated to be roughly € 80 million. The numbers are based on the call answers of 143 out of 152 platform owners, which are not all directly related to AnaEE.

5.5 Five-year Financial Plan

Commitment of Members to a multi-year budget from the start of the Operational Phase in the beginning of 2018 is essential for a proper start of the operations. This early push is needed to enable the appointment of the required management, specifically the Director General and also the secretariat. The Director of sufficient caliber and experience is unlikely to commit to a post, most likely outside his/her own country, without sustainable funding being in place, especially as he/she will be asked to live in Paris, an expensive capital. Multi-year budget also ensures efficient strategic planning of project delivery to be put in place. The estimated expenditure estimate for first five years of AnaEE’s operation is presented in Table 5.4.

The minimum operational costs of the Central Services are likely lower with less Member States and increase with the number of Members towards full operation. As a rough estimate, with 7 Member States and fixed Host contribution of 50%, the total budget of the AnaEE is around € 1 million / year with median membership contribution of around € 50,000/ year. However, to maintain a proper level of operation in the Central Services, also the Host contribution can be adjusted if the Host is willing and the Assembly of Members so decides.

	Operational Phase				
	Initial ERIC Phase				Full operation
	2018	2019	2020	2021	2022
N. of Members	7	9	11	13	16
EXPENDITURES					
AnaEE Central Hub	700 000 (80%)	870 000 (100%)	870 000 (100%)	870 000 (100%)	870 000 (100%)
Technology Centre	200 000 (50%)	240 000 (60%)	280 000 (70%)	360 000 (90%)	405 000 (100%)
Data & Modelling Centre	55 000 (12%)	140 000 (30%)	230 000 (50%)	370 000 (80%)	465 000 (100%)
Interface and Synthesis Centre	55 000 (13%)	55 000 (13%)	120 000 (30%)	200 000 (50%)	405 000 (100%)
Total expenditures	1 010 000	1 305 000	1 500 000	1 800 000	2 145 000

Tab 5.4: Expenditure estimate for AnaEE minimum operative costs during the first five years of operation with anticipated number of ERIC Members for each year³.

5.6 Implementation Funding Requirements

The Member contributions to fund the AnaEE Hub and Service Centres should not fluctuate significantly between the years – annual median contribution of € 50000 is targeted. Therefore, it is important that when planning the operations and activities of the Central Services, the number of Members using the services is accounted for. This is done by applying a modular approach. Modular approach means in this context increase in the activity level, i.e. the budget, of the Central Services with an increase in the number of AnaEE Members. Full operation of the Central Services is expected in the fifth year with sixteen Members with an annual budget of € 2.15 million. The activities in the first year of operation with seven Members shall be around 50% of the full operation – i.e. annual AnaEE budget of around € 1 million (Table 5.4). AnaEE Hub should become fully operational as soon as possible after establishing the ERIC and it is expected that the Service Centres will also enter in full operation as soon as possible during the first years, in order to provide the expected added value to the scientific community as well as to policy makers and society as a whole. Of course, the full range of activities is likely to develop progressively, for instance, data and metadata standards will be developed by the DMC before starting all the modelling activities. ISC is likely to start with developing its modus operandi, i.e. building connections with the scientific community and AnaEE stakeholders before producing the first synthesis of AnaEE data. Regarding the synthesis activities it is envisaged that in the full operation the ISC shall mainly focus on arranging working sessions (1 or 2 weeks) for groups of top-level scientists from around the globe to facilitate joint analysis of large data sets. The core budget of AnaEE may not be able to cover the travel costs of the working group participants but the ERIC may provide help in raising additional funds. For instance, with additional income as discussed in Section 5.3, it would be possible for AnaEE to fund 1-2 post-docs to work for the synthesis groups, and / or provide additional financial support to arrange the workshops. A draft plan on how the

³ It is expected that AnaEE becomes fully operational in the fifth year of operation with sixteen Members (see Table 2). Percentage values in parenthesis illustrate the operational level of a Centre in question.

development of the Centres towards full operation of AnaEE could be arranged is illustrated in Table 5.4 and Figure 5.1. For the DMC and ISC for the first 1-2 years, AnaEE could cover only the salary of the Head of the Centre (estimate € 55000 / year, 12-13% of the budget of the Centres) in order to enable the preparations for the integrated operations of the Centre and functioning of the management board. Starting from the third year the ERIC should be ready to offer services also to the market in sectors that have been described in the previous sections.

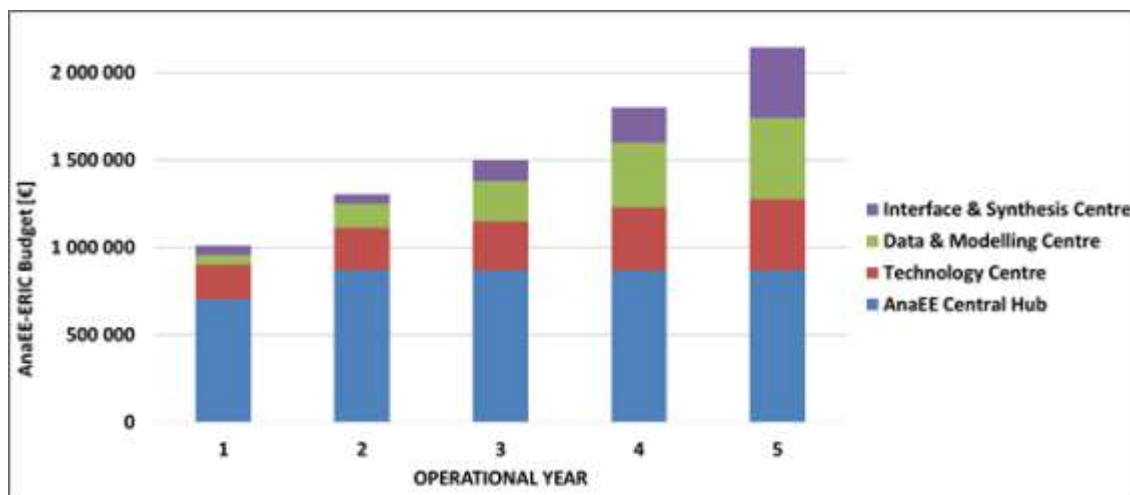


Fig 5.1: Estimated annual budget of AnaEE (i.e. minimum operative costs to be covered by Host and membership contributions) and the budget allocation to the Hub and Service Centres during the first five years of operation. The Hub shall become fully operational in the second year of operation while for the Service Centres full operation is expected in the fifth year of operation. For fully operational AnaEE, the estimated minimum operative costs are 2.145 M€ as shown in Table 5.2 and Table 5.4.