eLTER RI Cost Benefit Analysis : PPP Deliverable D4.2

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European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure
Preparatory Phase Project (eLTER RI PPP)
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European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure Preparatory Phase Project

eLTER RI Cost Benefit Analysis

PPP Deliverable D4.2

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Summary

Cost Benefit Analysis (CBA) involves collecting data from the eLTER RI components, and analysing them to quantify and / or monetize the associated cost and benefits offered by the eLTER from the RI design phase to the end of PPP period (ca. 2015 – 2025). The analyses of the financial (cost-benefit) and socio-economic impacts attributed to eLTER will provide crucial insights regarding the social return of the investment required for the development, implementation and maintenance of the eLTER RI, the formulation of the appropriate operational scheme, and the systematic monitoring of the RI operations for improving its performance and meeting its strategic objectives. The methodological approach will follow Florio et al. (2016) for monetizing some of the quantifiable benefits (e.g., publications, patents). Two separate questionnaires will be used to collect data from eLTER Sites/Platforms and Central Services. The CBA Questionnaire that is developed for Sites/Platforms was rolled-out for data collection in mid-June 2021. The results are expected by the end of summer 2021. We envisage that the CBA Questionnaire dedicated for Central Services will roll-out in Autumn 2021.

1. Introduction

The eLTER PPP WP4/ Task 4.1 (Cost Book and Cost Benefit Analysis) is intended to prepare a Cost Benefit Analysis (CBA – D4.2), defined in monetary terms, of all eLTER operations. Since they are tightly connected and designed to be complementary, the planning was done in collaboration with the PPP WP1/Task 1.3 (Socio-Economic Impact Assessment) to assess the overall impact in multiple quantitative and qualitative, monetary and non-monetary terms and to provide a complete assessment. The CBA will be used as a tool for quantifying and weighing the long-term economic advantages and disadvantages of investment decisions, and provide a clear and transparent analysis of the added value of eLTER RI. Along with the Socio-Economic Impact Assessment, the CBA will be a crucial tool for enabling a systematic review of the progress towards achieving desired objectives outlined in the Strategic Plan (PPP D1.1), with optimal cost-efficiency and quantifiable positive impacts. The full CBA requires participation of all components of the RI, including the National Research Infrastructures and the new and emerging Central Services. The results will provide fundamental guidance for creating the Business Plan (eLTER PPP WP4/Task 4.3 Business and Sustainability Plan).

The CBA is a technique used by public and private sectors to assist in reaching key decisions after fully assessing costs and benefits of a particular action [1]. It facilitates assessing the relevance of an investment (and to compare it with other investment options) by computing the Net Present Value (NPV) of its financial and economic costs and benefits over a certain reference period (weighing them over time). The CBA consists of two interconnected parts: Financial analysis and Socio-economic analysis. The present deliverable points out that the CBA is exclusively on monetary consideration. Therefore, the objective of the CBA is not to provide an all-inclusive evaluation of the socio-economic impacts, but to demonstrate that the economic NPV is positive, and that the economic rate of return is higher than the socio-economic discount rate [2]. However, some intangible benefits may be very difficult or even impossible to quantify but very important to identify eLTER value, especially with respect to the "S" of the "LTSER (Long-Term Socio-Ecological Research)" and those benefits and impacts will be covered by the PPP WP1/Task 1.3.

2. Uses of Cost Benefit Analysis

There are very many uses of the CBA at the Research Infrastructure (RI), as described briefly below [1]:

- *Determining the feasibility of an opportunity* – CBA helps to determine whether a project

or RI yields positive net benefits by identifying the entire range of costs and benefits and discounting them to present value in order to ascertain the overall viability of the project or RI.

- ***Providing a basis for comparing projects*** – CBA helps businesses and/or RIs to rank multiple projects according to their merit (i.e., relative benefits) and select most economically viable options.

- ***Evaluating opportunity cost*** – CBA helps businesses and/or RIs to identify the benefits that may arise if another option is chosen.

- ***Performing sensitivity analyses for various real-life scenarios*** – CBA helps to improve the credibility of a decision and is particularly helpful where there is ambiguity over the discount rate.

3. Cost Benefit Analysis Models

The CBA can be conducted by using two main methods, namely (1) Net Present Value and (2) Benefit Cost Ratio models [1]:

Net Present Value –The Net Present Value (NPV) of a project refers to the difference between the present value of the benefits and the present value of the costs. If NPV > 0, the project generally has economic justification to go ahead.

$$NPV = \sum Present\ value\ of\ total\ future\ benefits - \sum Present\ value\ of\ total\ future\ costs$$

Benefit Cost Ratio – Benefit Cost Ratio (BCR) of a project is the ratio of the sum of the present value of future benefits against the sum of the present value of the future costs. The greater the value above one, the greater are the benefits associated with the project.

$$BCR = \frac{\sum Present\ value\ of\ total\ future\ benefits}{\sum Present\ value\ total\ future\ costs}$$

4. Principles of Cost Benefit Analysis

The CBA applied in the business sector or for a RI predicated on certain principles, which are briefly described below [1]:

- ***Discounting the costs and benefits*** – The benefits and costs of a project must be expressed in terms of equivalent currency of a particular time. In the case of a distributed European RI, the currency can be Euro and the time can be considered as preparatory phase project period.

- ***Defining a particular study area*** – The impact of a project should be defined for a particular study area, e.g., a city, region, state, nation, or the world. In the case of a distributed RI, it can be defined as a Site/Platform (located in the distributed NRIs), or a central element like the Head office or Topic Centre (providing some parts of the Central Services).

- ***Addressing uncertainties precisely*** –The CBA must reveal areas of uncertainty and describe how each uncertainty, assumption or ambiguity has been addressed. In the case of CBA of a distributed RI, for the uncertainty of continuous and sustainable funding needs to be addressed.

- ***Double counting of costs and benefits must be avoided*** – Though each of the benefits or

costs can be seen as a distinct feature, they might be producing the same component of an economic cost or benefit, resulting the "double counting" of the cost or benefit. Such double counting needs to be avoided. In the case of a distributed RI, for example, counting of peer-reviewed articles and associated costs needs careful consideration especially for the co-located Sites.

5. Perimeter of RI Cost Benefit Analysis

Here, we provide examples of the indicators that are typically used to assess the economic benefits of the RI, in this case we use the slightly modified illustration (Fig. 1) from ELI (Extreme Light Infrastructure, a European ESFRI project) [2]. Some of the components in the financial analysis (investments, revenues, and operational expenditure) mentioned in Figure 1 are part of eLTER RI Cost Book (PPP D4.1) and beyond the scope of the CBA deliverable.

- *Knowledge* – Typical benefit indicators: number of publications in high impact journals, number of publications in other journals, and value of the access granted to external researchers through an open access policy.

- *Development* – Typical benefit indicators: number of national patents granted, national patents operated in practice, international patents (Europe, USA, and Japan) granted, number of technologies developed in-house and transferred, number of prototypes developed, and number of methodologies/industrial designs transferred.

- *Education and training* – Typical benefit indicators: number of MSc graduates trained in the infrastructure, number of PhD graduates trained in the infrastructure, number of students (MSc, PhD) using the infrastructure, and number of Site and Platform Coordinators trained in the infrastructure.

- *Employment* – Typical benefit indicators: number of newly created jobs for both researchers and non-research staff of the RI.

- *Knowledge transfer and collaborations* – Typical benefit indicators: number of collaborative projects with application sphere, volume of contract research, volume of competitive funding (national), and volume of international grants.

- *Ecosystem services* – Typical benefit indicators [3,4]: Provisioning services (e.g., forest food, fresh water, medicinal resources including herbs and shrubs); Regulating services (e.g., local climate and air quality, carbon sequestration and storage, moderation of extreme weather events, erosion prevention and maintenance of soil fertility, pollination, biological control); Habitat and supporting services (e.g., habitats for species, maintenance of genetic diversity); and Cultural services (e.g., recreation, aesthetic appreciation).
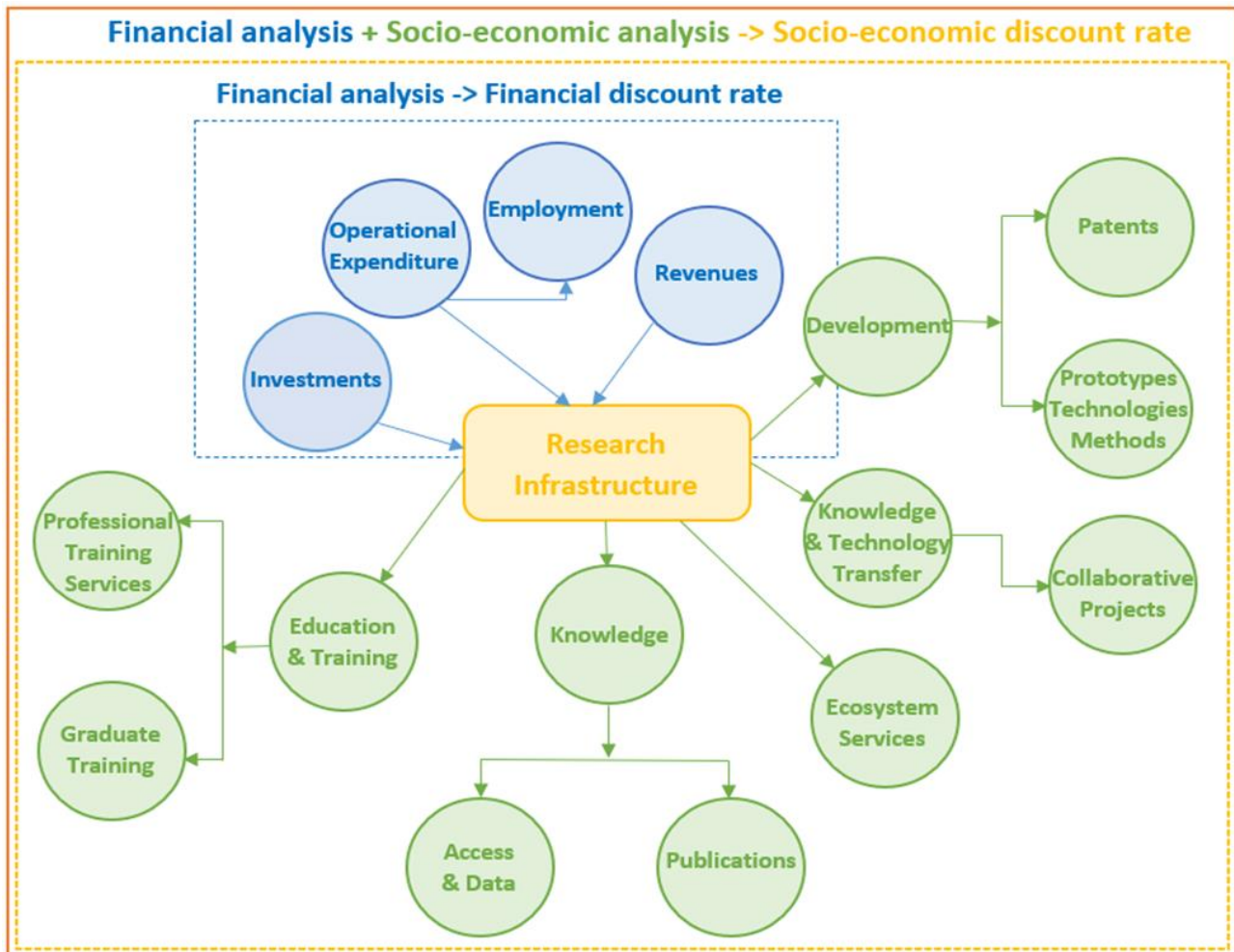
Figure 1. Perimeter of the RI Cost Benefit Analysis (adapted and modified from [2]).

6. Key challenges of RI Cost Benefit Analysis

Although the CBA aims to collect quantifiable data, there are some caveats in the analysis. The main challenge arises when it comes to the quantification and monetisation of the RI benefits [2].

- *Quantification* – For some benefits (e.g., number of jobs created, access policy), a reasonable estimate can be obtained based on the policies of RI*.* For other types of benefits, typically those related to the output of the RI (e.g., knowledge creation), the quantification of the benefits is complicated due to natural uncertainty regarding both the extent of the benefit and its impact and actual value of the benefit (see below) and serendipity.

- *Monetisation* – Absence of markets and prices causes difficulties for defining values of, for example, articles, patents, and hours of access. There are also uncertainties surrounding production *vs.* transfer issues. Transfer of technology is induced by demand on a case-by-case basis, e.g., patents transferred to the economy generate a socio-economic benefit. There are also value chain issues. There is a long value chain from research to final socio-economic benefit, which makes it difficult to break down and quantify/monetize the specific socio-economic benefit.

7. Steps of Cost Benefit Analysis

The six steps in the CBA are depicted in Figure 2 and briefly explained below [1]:

i. **Defining framework for the analysis** – Data sources, units of analysis, data collection techniques, means of data storing; type of analytical conclusions; and structure of final report.

ii. **Identifying and classifying costs and benefits** – e.g., Direct costs (variable costs), indirect costs (fixed costs), tangible costs/benefits (easy to measure and quantify), and intangible costs/benefits (hard to identify and measure).

iii. **Drawing a timeline for expected costs and revenue** – When the costs and benefits will occur and how much they will pan out over a phase.

iv. **Monetizing costs and benefits** – Placing all costs and all benefits in the same monetary unit.

v. **Discounting costs and benefits to obtain present values** – This implies converting future costs and benefits into present value.

vi. **Calculating net present values** – Net Present Value (NPV) calculates how profitable a project is after calculating for the initial investment required.
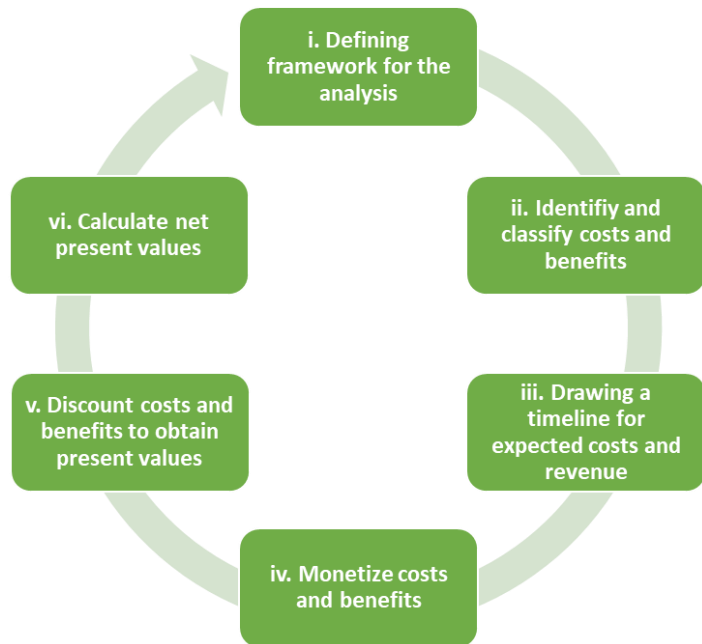

Figure 2. Steps of Cost Benefit Analysis (adapted and modified from [1]).

8. eLTER RI Cost Benefit Analysis Methods

The CBA as conducted for the eLTER RI involves collecting data from the National Research Infrastructures (NRIs i.e., the national eLTER Sites[1] and Platforms) and later also the Central Services, and analysing them to quantify and/or monetize the associated costs and benefits offered by the eLTER from the RI design phase to the end of PPP period (ca. 2015–2025). Data is to be collected for the periods, 2015–2020 (Design Phase of eLTER) and 2021–2025 (Implementation Phase of eLTER, the duration of eLTER PPP). While the past shows the realized benefits, the future shows the anticipated benefits, which should be increasing because eLTER will hopefully add value to the operations and bring in e.g., new projects. It is worthwhile to note that the timespan limits the assessment of benefits to a narrower set of outputs, and much of the broader benefits will only be captured later - either in future iterations of the CBA, or through the Socio-Economic Impact Assessment.

The financial analysis of CBA is covered by the eLTER PPP D4.1 (eLTER RI Cost Book), which was

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[1] eLTER Sites currently include three categories in the Cost Estimate Collecting Tool: Master, Regular and Undefined. The 'Undefined Site Category' implies that the site is currently not having a firm decision of the site category. More information of eLTER Sites and Platforms can be retrieved from: https://www.lter-europe.net/lter-europe/infrastructure/sites-platforms/categories

submitted on 09 March 2021. The Cost Estimates will be further supplemented by data from more Sites and Platforms at a later stage, together with the Central Service Units. The socio-economic analysis (only quantifiable and monetizable part) of CBA will be covered by this deliverable (D4.2 eLTER RI Cost Benefit Analysis) using a questionnaire developed by the task force members of the PPP WP4/ Task 4.1 Cost Book and Cost Benefit Analysis and PPP WP1/Task 1.3 Socio-Economic Impact. The methodological approach will follow Florio et al. (2016) [5] for monetizing some of the quantifiable benefits (e.g., publications, patents). This D4.2 covers the background information on the RI Cost Benefit Analysis and data collection questionnaire (cf. Section 9). Since the D4.2 is closely associated with the outcome of PPP D4.1 (eLTER RI Cost Book) and PPP D1.4 (eLTER RI Socio-Economic Impact), the final outcome of all three deliverables will be presented to eLTER PPP beneficiaries and to eLTER Interim Council tentatively between the project months M36 and M42 (January and July 2023).
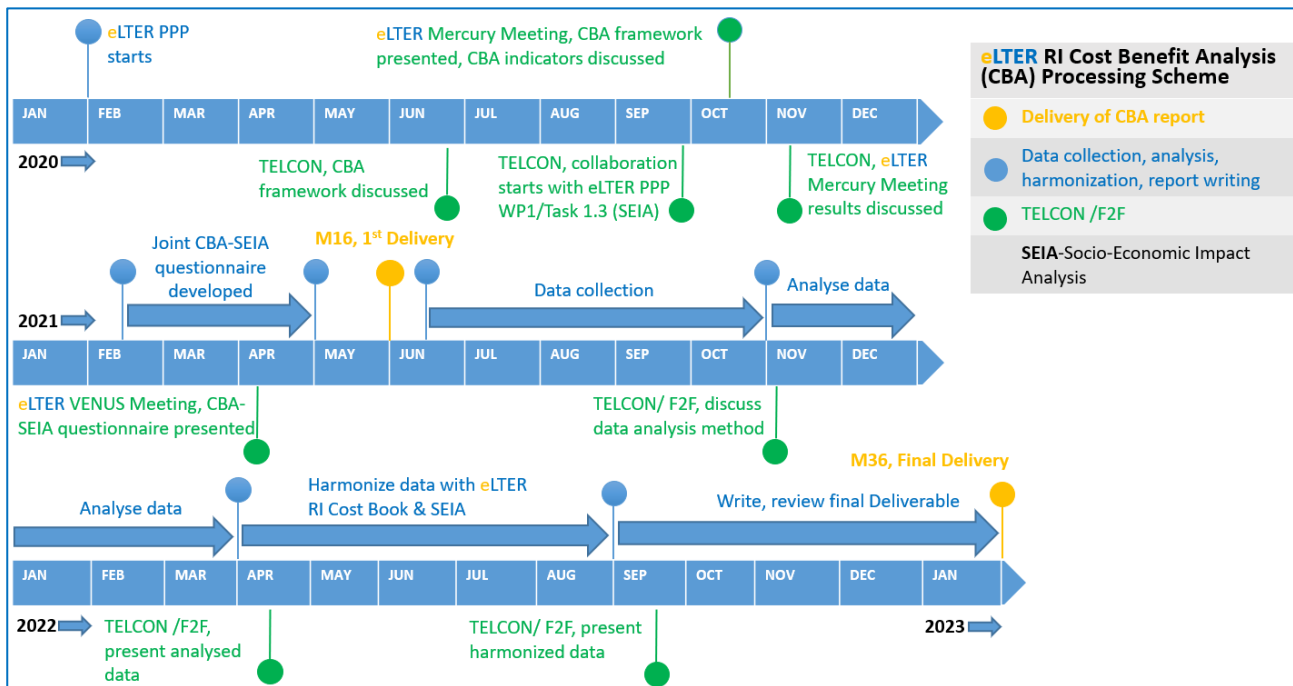

Figure 3. eLTER RI Cost Benefit Analysis processing scheme. Results are planned to be presented tentatively between the M36 and M42 (January and July 2023).

The eLTER RI CBA processing (Fig. 3) started in June 2020 (M5 of eLTER PPP) with the aim of planning, executing, and delivering the PPP D4.2. The work was connected to the Cost Book exercise (PPP WP4.1). The WP4 issued a call to all LTER Europe National Coordinators and received initial interest from 87 Sites/Platforms to participate in eLTER RI Cost Book exercise. This is very promising and gives good indications that Sites/Platforms will also participate in the Cost Benefit Analysis.

During the year of 2020, three telecons (in June, September, and November) were held among the task force members of PPP WP4 T4.1 and PPP WP4 T1.3 leads to prepare the CBA framework. During the eLTER Consortium Meeting in October 2020, the CBA framework was presented to the wider community and the beneficiaries' feedback was received regarding the eLTER RI potential benefits and their indicators. The eLTER RI Cost Benefit Analysis Questionnaire (emphasizing quantifiable and in some cases monetizable indicators only) was developed during February and April 2021, and was presented to the whole project during the eLTER Consortium meeting in April 2021.

The initial data collection period for the CBA Questionnaire is set between June and October 2021, the data analysis period between November 2021 and March 2022, and the harmonization of CBA data with the Cost Book and Socio-Economic Impact Analysis will take place between April and August 2022. The period between September 2022 and January 2023 is reserved for writing and reviewing the final delivery of D4.2. Final delivery of D4.2 has been set for M36 (January 2023), but it might shift to the M42 (July 2023) to fully consider the eLTER RI Cost Book (D4.1) outcome, which is also due in M36. Several telcons are also planned for the task force members of PPP WP4 T4.1 and PPP WP4 T1.3 leads to discuss the data analysis method, present the analysed and harmonised data in November 2021, and April and September 2022, respectively. The results of the CBA and Cost Book will feed directly into the Business Plan, and form part of the structure of the impact assessment of the eLTER RI in the future operational stages.

9. eLTER RI Cost Benefit Analysis Questionnaire

Two separate questionnaires will be used to collect data from eLTER Sites/Platforms and Central Services. The CBA Questionnaire (see below; also available online: https://elomake.helsinki.fi/lomakkeet/112022/lomakkeet.html) that is developed for Sites/Platforms was rolled-out for data collection in mid-June 2021. It was sent to all 377 Site and Platform Coordinators and to the 29 National Coordinators (NCs) of LTER Europe. The NCs were expected to advice and encourage the Sites and Platforms Coordinators to fill in the questionnaire, and also emphasize them that such collections of data will be also taking place in the future, when eLTER RI is in operation. The 87 Sites and Platforms that answered to the first Cost Estimate collection are naturally likely to contribute to the Cost Benefit Analysis Questionnaire as they already have some of the data readily available. The results are expected by the end of summer 2021.

Since the eLTER concepts for eLTER Central Services are not yet complete, the CBA for those components of eLTER RI will be done later. We envisage that the CBA Questionnaire dedicated for Central Services will roll-out in Autumn 2021.

PREAMBLE

eLTER RI (the integrated European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure) is currently in Preparatory Phase (PP). Once in operational stage, eLTER RI will provide high quality services to many different stakeholder groups, including researchers, private sector, public authorities and governments, and civil society. The eLTER service portfolio is developed in two EU H2020 funded projects, eLTER PLUS and eLTER PPP, running between 2020 and 2025. Services will be provided through one access point, Service Portal, by the Topic Centres (currently being planned) and by the distributed eLTER in-situ facilities (the eLTER Sites and eLTSER Platforms).

The eLTER PPP project aims at defining the most appropriate and cost-efficient long-term operations for eLTER RI. The analyses of the financial (cost-benefit) and socio-economic impacts attributed to eLTER will provide crucial insights regarding the social return of the investment required for the development, implementation and maintenance of this research infrastructure, the formulation of the appropriate operational scheme, and the systematic monitoring of the RI operations for improving its performance and meeting its strategic objectives.

The purpose of this survey is to identify and quantify the benefits generated by the operations of the Sites or Platforms, and the socio-economic impacts on the broader stakeholder community. In addition to contributing to the self-assessment of the research infrastructure, participating in this survey will help to better understand the benefits generated to organizations and institutions that participate in the development, implementation, and maintenance of large distributed

research infrastructures like eLTER in the future. Furthermore, it will provide useful insights for evaluating the social return of the investment required for developing and maintaining eLTER RI. We are asking you to fill in data from the past 6 years (2015–2020) and the expected/forecasted data from 5 years to come (2021–2025).

The questionnaire is sent to the Site and Platform Coordinators (SPCs) (and the National Coordinators (NCs) for information) in each country participating in eLTER RI. We ask all the Sites answer the questionnaire individually. For Platforms, if there are several Sites operating in your area, fill-up the questionnaire only with the data that has not been provided by your sub-Sites. We will sum up the data from the sub-Sites and thereby, we will avoid double-counting.

The deadline for answering the questionnaire is 15 August, 2021. Your participation in the survey is voluntary, but the PPP project highly appreciates all input and will present the results in the decision-making body (eLTER Interim Council), to gain their support for the implementation of the eLTER RI. Results from the questionnaire will also allow us to highlight your achievements and identify crucial areas where we can improve our performance. Some of the questions (in Section 5) are similar to the 'Cost Estimate Questionnaire' (compiled by 87 Sites and Platforms in autumn 2020), so you may consider using the already collected numbers also here.

Your participation in this study will consist of a completion of this questionnaire. You will be asked a series of questions about the participation of your Site and Platform in eLTER and the potential financial (cost-benefit) and socio-economic impacts generated. Please feel free to consult with colleagues when answering the questionnaire, if you think it is necessary for providing more accurate information. **Since your participation in the survey is voluntary, you may skip any question if you desire to do so**. Insights provided by you and other participants will be used in writing the Deliverables for the cost-benefit analysis (and possibly for the socio-economic impact analysis) of eLTER PPP. The information gathered is for internal purposes; it will only be published as aggregate data across Sites and Platforms; and that information will be kept confidential and seen/analysed only by the eLTER central administration and PPP WP team.

You are encouraged to ask questions or raise concerns at any time about the nature of the study or the methods used. If you have any questions, please contact Syed Ashraful Alam (ashraful.alam@helsinki.fi).

FOR THE QUESTIONS INCLUDED IN SECTIONS 2–5:

- Try to provide numeric estimates for the indicators included in the corresponding tables.
- Data should be provided for the periods, **2015–2020 (Design Phase of eLTER)** and **2021–2025 (Implementation Phase of eLTER, the duration of eLTER PPP)**.
- All the Sites (independently if they belong to a Platform or not) should provide their own answers individually.
- Platforms should provide ONLY additional data that is not reported by the individual sub-Sites belonging to it.

1. INTRODUCTORY DATA

Name of Site/Platform	
Country	
Primary Responsible Institution	

Site Category (Regular/Master/Platform/Not known)	
DEIMS.ID [1]	
Does your Site belong to a Platform? (Yes/No)	
If YES, name of the Platform	
If YES, DEIMS ID of the Platform	
Other RIs at the Site/Platform (If applicable; for co-located Sites)	
Respondent Name	
Respondent Email	
Submission Date	

[1] DEIMS-SDR

2. EDUCATIONAL AND PROFESSIONAL ACTIVITIES

PLEASE PROVIDE ESTIMATES ON HOW eLTER CONTRIBUTES TO THE EDUCATIONAL AND PROFESSIONAL ACTIVITIES OF YOUR SITE/PLATFORM.

INDICATORS	2015–2020	2021–2025
STUDENTS ACTIVITIES AT YOUR SITE/PLATFORM		
2.1 No. of MSc students carrying out research (field work or use of data) 2.2 No. of PhD students carrying out research (field work or use of data) 2.3 No. of students that have used the data for their MSc theses 2.4 No. of students that have used the data for their PhD theses 2.5 No. of students [1] attending training activities 2.6 Percentage of foreign [2] students of all students trained		
RESEARCH AND TECHNICAL STAFF EMPLOYED AT YOUR SITE/PLATFORM		
2.7 No. of permanent staff employed for eLTER related activities 2.8 No. of contractual staff employed for eLTER related activities 2.9 Percentage of foreign [2] research and technical staff of all staff working at the Site/Platform		
COMMUNITY ENGAGEMENT PROJECTS/EVENTS ORGANIZED AT YOUR SITE/PLATFORM		
2.10 No. of citizen science projects 2.11 No. of participants in citizen science projects (total) 2.12 No. of student groups events, K through 12th Grade [3] 2.13 No. of participants in student groups events, K through 12th Grade [3] (total)		

2.14 No. of community events (e.g., open houses, public lectures)		
2.15 No. of participants in community events (total)		

[1] Do not include students that use the RI directly for their MSc and PhD theses work.
[2] Including those from outside the EU or within the EU but outside the country of Site/Platform.
[3] From Kindergarten to 12th Grade (include both primary and secondary education).

Additional Notes for Section 2 (max. 1000 characters):

3. SCIENTIFIC ACTIVITIES

PLEASE PROVIDE INFORMATION ON eLTER-SPECIFIC SCIENTIFIC ACTIVITIES PERFORMED AT YOUR SITE/PLATFORM.

INDICATORS	2015–2020	2021–2025
PUBLICATIONS RELATED TO YOUR SITE/PLATFORM		
3.1 No. of peer-reviewed articles published in scientific journals [1]		
3.2 No. of peer-reviewed articles published solely by scientists from within the country		
3.3 No. of peer-reviewed articles published in collaboration with international scientists		
3.4 No. of peer-reviewed articles published in collaboration with other RIs		
3.5 No. of articles published in proceedings of international conferences [1]		
3.6 No. of articles published in proceedings in collaboration with other RIs		
3.7 No. of books (chapters or extended sections) published [1]		
3.8 No. of books (chapters or extended sections) published in collaboration with other RIs		
3.9 No. of PhD theses completed [2]		
3.10 No. of PhD theses completed in collaboration with other RIs		
3.11 No. of new methodologies, prototypes or designs developed [3]		
SCIENTIFIC EVENTS ORGANIZED AT YOUR SITE/PLATFORM		
3.12 No. of workshops		

3.13 No. of conferences		
3.14 No. of working groups		
3.15 No. of others (specify in Additional Notes field below)		
RESEARCH AND ACCESS GRANTS [4] AWARDED FOR RI ACTIVITIES [5] AT YOUR SITE/PLATFORM		
3.16 No. of competitive research grants [6]		
3.17 Total volume of competitive research grants (in million €)		
3.18 No. of individual Transnational Access [7] visitors		
3.19 No. of Transnational Access visitor days		
3.20 Total volume of Transnational Access grants (in thousand €)		
3.21 Total volume of Remote Access [7] grants (in thousand €)		
3.22 Total volume of Virtual Access [7] grants (in thousand €)		
COLLABORATION, VISITS AND PRIZES RELATED TO YOUR SITE/PLATFORM		
3.23 No. of collaborative projects with other RIs (across countries)		
3.24 No. of exchanges between site managers (across countries)		
3.25 No. of visits by research staff		
3.26 Duration of visits by research staff (total no. of days)		
3.27 No. of visits by PhD/MSc students		
3.28 Duration of visits by PhD/MSc students (total no. of days)		
3.29 No. of international researchers [8] hosted at the Site/Platform		
3.30 No. of prizes won for eLTER research [9]		

[1] Please provide a list of these articles/books (using the file attachment option at the end of the questionnaire) to develop a coordinated list for all the consortium to avoid double-counting, especially in case of co-located Sites.

[2] Refers specifically to PhD theses that have been predominantly- or partly based on the use of your Site/Platform. Please provide a list of these PhD theses (using the file attachment option at the end of the questionnaire) to develop a coordinated list for all the consortium to avoid double-counting, especially in case of co-located Sites.

[3] Method is a particular way of doing something. A prototype is an original model constructed to include all the technical characteristics and performances of the new product. Design is a drawing or set of drawings showing how a building or product is to be made and how it will work and look. Please provide some additional information (using the file attachment option at the end of the questionnaire) on the new methodologies, prototypes or designs developed.

[4] Actual costs or unit costs (either from bookkeeping or estimates) that are awarded to the Site/Platform based on the access projects.

[5] e.g., RI construction/upgrading, research work, workshops, and training.
[6] Please provide a list of these grants (title, funding agency, funding period, total award value) using the file attachment option at the end of the questionnaire.
[7] eLTER PLUS: TA-RA Scheme.
[8] International researchers are those from outside the country of the Site/Platform; not including students, TA grant recipients or workshop participants. Hosting means acting as a host for research visit; does not mean having accommodation etc.
[9] Please provide a list of these prizes (title, year, awarding organization) using the file attachment option at the end of the questionnaire.

Additional Notes for Section 3 (max. 1000 characters):

4. INNOVATION AND BUSINESS ACTIVITIES

PLEASE PROVIDE DATA ON HOW eLTER INFLUENCES INNOVATION AND BUSINESS OPPORTUNITIES AT YOUR SITE/PLATFORM OR AREA.

INDICATORS	2015–2020	2021–2025
INDUSTRY AND BUSINESS COLLABORATION (IBC) PROJECTS AT YOUR SITE/PLATFORM		
4.1 No. of IBC projects funded by EC or other international funding agencies to the research in eLTER [1]		
4.2 Total volume of EC-funded (in million €) IBC projects		
4.3 No. of IBC projects funded by national agencies to the research in eLTER [1]		
4.4 Total volume of national agencies-funded (in million €) IBC projects		
4.5 No. of IBC projects funded by private sector entities to the research in eLTER [1]		
4.6 Total volume of private sector-funded (in million €) IBC projects		
START-UPS, CONTRACTS AND PATENTS RELATED TO YOUR SITE/PLATFORM		
4.7 No. of start-ups and/or spin-offs created, utilizing products or expertise from eLTER-related research		
4.8 Total turnover [2] (in million €) related to start-ups and/or spin-offs		
4.9 Total earnings [2] (in million €) related to start-ups and/or spin-offs		
4.10 No. of procurement contracts signed for development and upgrade of research equipment		

4.11 No. of companies involved in procurement contracts		
4.12 No. of patent applications [3]		
4.13 No. of patents granted [3]		

[1] Identify research projects of your institution that predominantly or partially utilize the RI in question.
[2] Turnover is the amount of money that is earned by a company after selling its products/services. The earnings (profit) of the company after all the costs have been deducted. Provide aggregated figures for all companies and for the corresponding period.
[3] Please provide some additional information, using the file attachment option at the end of the questionnaire, on the patents granted or applied (name, patent No., ….).

Additional Notes for Section 4 (max. 1000 characters):

5. ECONOMIC IMPACTS

PLEASE ESTIMATE THE ECONOMIC IMPACTS ATTRIBUTED TO DEVELOPMENT AND IMPLEMENTATION OF eLTER AT YOUR SITE/PLATFORM.

INDICATORS	2015–2020	2021–2025
INVESTMENTS AT YOUR SITE/PLATFORM		
5.1 Total investment undertaken for developing eLTER Site/Platform (in million €) [1]		
5.2 Total budget of procurement contracts signed for development of RI and equipment (in million €) [2]		
JOBS CREATED AT YOUR SITE/PLATFORM		
5.3 No. of jobs [3] directly generated for setting up the physical infrastructure [4] (in person-years of FTE jobs) [5]		
5.4 No. of jobs generated to suppliers for setting up the physical infrastructure [4] (in person-years of FTE jobs) [5]		
5.5 No. of jobs directly generated to your institution or to start-ups/spin-offs associated with research in eLTER (in person-years of FTE jobs) [5] [6]		
5.6 No. of jobs indirectly (e.g., external contractors) generated to your institution or to start-ups/spin-offs associated with research in eLTER (in person-years of FTE jobs) [5]		

[1] Please include salaries, development and implementation costs, purchase of equipment and services, etc., for the whole period identified in the corresponding columns.
[2] This should be a sub-total of the budget identified in Section 5.1.
[3] Do not include employees of suppliers.
[4] Including building, data/metadata systems and work related to management etc.

[5] Examples: For a person who worked 6 months in 2020, 3 months in 2021 and 3 months in 2022 in developing eLTER, you should write 1 person-year in the column 2020–2024. For a person who works full-time in implementing eLTER during the period 2020–2024, you should write 5 person-years. For a person who works half-time during the same period you should write 2.5 person-years.

[6] This sub-section should be filled-up in case if you identified in Section 4 that there is funding from research projects, and/or turnover from start-ups and/or spin-offs utilizing eLTER.

Additional Notes for Section 5 (max. 1000 characters):

[ ]

6. ADDITIONAL INFORMATION & FILE ATTACHMENT

Additional Information (max. 1000 characters):

[ ]

Attach a file for all publications/grants/methodologies/prototypes/designs/prizes/patents (docx/xlsx format):

10. References

[1] Chartered Financial Analyst Institute, 2021. https://www.wallstreetmojo.com/cost-benefit-analysis/

[2] Brottier, F. & Gliksohn, F. 2012. ELI's experience in the ex-ante evaluation of socio-economic impact. Presented at the ERF workshop 'The socio-economic relevance of RIs' on 31 May 2012, Hamburg.

[3] Vallecillo, S., La Notte, A., Ferrini, S. & Maes, J., 2019. How ecosystem services are changing: an accounting application at the EU level. Ecosystem services, 40, p.101044.

[4] Leemans, R. & De Groot, R.S. 2003. Millennium Ecosystem Assessment: Ecosystems and human well-being: a framework for assessment.

[5] Florio, M., Forte, S., Pancotti, C., Sirtori, E. & Vignetti, S. 2016. Exploring cost-benefit analysis of research, development and innovation infrastructures: an evaluation framework. Development and Innovation Infrastructures: An Evaluation Framework. Discussion Paper Presented at the EIBURS-UNIMI Workshop (2015) hosted by DG Research, EC, Brussels.