



Project acronym: BETTER Life

Title: Bringing Excellence to Transformative Socially Engaged Research in Life Sciences through Integrated Digital Centers

Project number: 101071314

Deliverable 2.2

Framework for SER in Life Sciences

Description: This framework will guide the development of the strategic plan and the establishment of SER Standards.

Lead party for deliverable: ACEEU

Document type: DEM

Due date of deliverable: 28. 04. 2023

Dissemination level: PU

Authors: Hugo Buitrago, Adekola Ashonibare.



Funded by the
European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.



Funded by the
European Union



BETTER Life PARTNERS:

ČESKA ZEMĚDELSKÁ UNIVERZITA V PRAZE (CZU)

PIC 999912570, established in KAMYČKA 129 SUCHDOL,
PRAHA 165 00, Czechia



MARTIN-LUTHER-UNIVERSITÄT HALLE-WITTENBERG

PIC 999871539, established in UNIVERSITÄTSPLATZ 10,
HALLE 06108, Germany



UNIVERSITÀ DEGLI STUDI DI CAMERINO (UNICAM)

PIC 999845737, established in PIAZZA CAVOUR 19F,
CAMERINO 62032, Italy



ACEEU GMBH (ACEEU)

PIC 896865008, established in WILHELM-SCHICKARD-STR 14,
48149, MÜNSTER, Germany



EESTI MAAILIKOOL (EMU)

PIC 999857280, established in KREUTZWALDI 1,
TARTU 51014, Estonia



DAUGAVPILS UNIVERSITĀTE (DU)

PIC 999830702, established in VIENIBAS STREET 13,
DAUGAVPILS 5401, Latvia



UNIwersytet Przyrodniczy w Poznaniu (PULS)

PIC 999880463, established in ULICA WOJSKA POLSKIEGO 28,
POZNAN 60 637, Poland



HELIXCONNECT EUROPE SRL (HELIXCONNECT)

PIC 893409868, established in 282A CAMERA 1,
BUCOVAT 307352, Romania



UNIVERZITET EDUCONS U SREMSKOJ KAMENICI PRIVATNE USTANOVE (EDUCONS)

PIC 973147263, established in VOJVODE PUTNIKA 87,
SREMSKA KAMENICA 21208, Serbia





Deliverable Information	
Title	Framework for SER in Life Sciences
Deliverable number	2.2
WP number	2
Lead beneficiary	ACEEU
Author(s)	Hugo Buitrago, Adekola Ashonibare
Type	DEM
Dissemination Level	PU
Delivery date	28. 04. 2023

Project information	
Title	Bringing Excellence to Transformative Socially Engaged Research in Life Sciences through Integrated Digital Centers
Acronym	BETTER Life
Project no.	101071314
Type of Action	HORIZON Coordination and Support Actions
Website	www.betterlifehorizon.eu

History of Changes			
Version	Date	Comment	Revised by
Version 0.1	10. 02. 2023	First draft	Hugo Buitrago
Version 0.2	13.03.2023	Second draft	Patrik Toula
Version 0.3	10.04.2023	Third draft	Viktoria Takacs, Michal Lošťák
Version 1.0	27.04.2023	Final version	Hugo Buitrago, Patrik Toula



TABLE OF CONTENTS

LIST OF ABBREVIATIONS	5
EXECUTIVE SUMMARY	6
1. INTRODUCTION	7
1.1 The BETTER Life Project.....	7
1.2 Socially Engaged Research and the Digital Centre of Excellence	9
1.3 Definition of a Framework.....	10
1.4 Methodology	12
2. FRAMEWORK FOR THE BETTER LIFE DIGITAL CENTRE OF EXCELLENCE	14
2.1 The BETTER Life Digital Centre of Excellence	14
2.2 Framework Elements of the Digital Centre of Excellence	15
2.3 Dimensions and Elements of the Digital Centre of Excellence.....	17
2.4 Usefulness of the Framework.....	19
3. FRAMEWORK FOR SER IN LIFE SCIENCES	20
3.1 Previous Frameworks for Engaged Research	20
3.2 The Frameworks for SER.....	21
3.3 Dimensions and Elements of the Framework	23
3.4 Benefits to Foster through the Framework.....	25
4. CONCLUSIONS	27
REFERENCES	28



LIST OF ABBREVIATIONS

CoE	Centre of Excellence
DCoE	Digital Centre of Excellence
HEI	Higher Education Institution
SER	Socially Engaged Research



EXECUTIVE SUMMARY

This report outlines the frameworks that the BETTER Life Project will use to establish the digital centre and to foster socially Engaged Research (SER) in life sciences. BETTER Life aims to develop the capacities of early career researchers to foster SER in their research through the creation of a digital centre of excellence (DCoE), an inter-institutional support structure that will develop the capacities of the participating institutions to foster SER. This will contribute to tackling societal challenges in diverse surrounding ecosystems while consolidating the DCoE as a reference for planning, supporting, and implementing SER in life sciences.

This report focuses on the presentation of the organisational framework that defines the planning, structure and assessment of the DCoE and a second framework that operationalises SER from the perspective of the institutions and the researchers as the main drivers of SER.

The framework for the BETTER Life DCoE presents the foundational elements of the centre and it is organised into four main dimensions related to the strategy, the existing capacities, the conditions created to foster the main objectives, and the assessment of the impacts of the DCoE. This framework works with the operational conditions of the centre

Furthermore, the framework for socially engaged research presents a multi-stakeholder perspective for fostering SER from the institutional, research function, stakeholder engagement, and the impacts generated in the ecosystem. This framework provides institutions with a tool for identifying their capacities, their processes and the impacts generated. Additionally, researchers could also see the requirements, support opportunities and impacts of SER. Finally, internal and external stakeholders could also scan the impact generated through SER and its scientific, social and economic value.

The frameworks presented in this report will support the subsequent layers of development over the dimensions and subdimensions: standards for SER in life sciences and the tools supporting the implementation of SER by early career researchers.



1. INTRODUCTION

This document aims at setting out the framing elements for the BETTER Life Project from the perspective of the Digital Centre of Excellence (DCoE) and Socially Engaged Research (SER) in Life Sciences. The frameworks introduced in this document collect the consensus on the key elements that the BETTER Life Centre must develop to foster SER in life sciences. The frameworks take the perspective of life sciences since the academic members of the consortium are focused on this discipline and the application of the BETTER Life project is aimed at early career researchers in this field, nevertheless, they allow inter and transdisciplinarity with diverse fields of study since they allow applicability in the field of life sciences and beyond.

This report is organised into three sections. The first section introduces the BETTER Life Project, its context, the concept of the framework, and the methodology. The second part, focuses on the framework for the BETTER Life DCoE as an organizational environment, emphasising the identification of key components that integrate the centre. The third part focuses on the framing elements of SER, which are the components that the BETTER Life Centre will foster. As a whole, the two frameworks contribute to the aim of enhancing the enabling conditions for fostering SER in life sciences from the perspective of a support unit and the research aspects.

The framing elements presented in this report are further enhanced in the Standards for SER in Life Sciences, an extension of this report where the elements of the framework are operationalized into specific standards to achieve.

1.1 The BETTER Life Project

BETTER Life “Bringing Excellence to Transformative Engaged Research in Life Sciences through Integrated Digital Centres” is a project funded by the European Commission under the Horizon Europe (Widening Participation and Spreading Excellence) Programme. This project enhances the capacities of higher education institutions to cooperate with their surrounding ecosystems in the field of life sciences.

BETTER Life aims to establish a DCoE for fostering SER in Life Sciences. The BETTER Life DCoE is an inter-institutional support structure for developing the capacities of early career



researchers to foster SER in their research. By developing these capacities, BETTER Life will contribute to tackling societal challenges in diverse surrounding ecosystems while consolidating itself as a reference for planning, supporting, and implementing SER in life sciences.

The BETTER Life Project is a response to the Survey on Researchers in European Higher Education Institutions (European Commission, 2020) showed that 32% of researchers collaborate with non-academic sectors, 32% receive any transferable skills training related to collaboration with other sectors, and only 24% of researchers have moved to other sectors during their research career. This number evidences the need for developing support structures, tools, and multi-stakeholder collaboration with the surrounding ecosystems to foster collaborative and transdisciplinary research for tackling global challenges. The BETTER Life DCoE addresses social engagement and collaboration in research as key elements to generate a wide range of impacts.

BETTER Life is based on the quadruple helix model of innovation, where the interaction of academics, research, industry, government, and civil society generate mutually beneficial partnerships. The specific objectives of the project are:

- To consolidate a strategic vision for the BETTER Life DCoE oriented to stand as a world reference in SER in life sciences and committed to long-term sustainability.
- To build intra- and inter-institutional capacities to foster SER in life sciences through resources, guidelines, network cooperation, and policy designs at regional and international levels.
- To build individual capacities for boosting the social impact of the research developed by early career researchers by providing support to design, develop, and valorise research engaged with the surrounding ecosystems.
- To consolidate the BETTER Life DCoE as a global reference point in developing and pioneering transferable tools to foster SER in life sciences at individual, institutional, regional, and international levels.

In the long term, the project will generate scientific impacts by designing transferable policies and tools, economic impacts by effectively attracting funding, and societal impacts by embedding local ecosystem needs and enhancing the real-life impact of academic institutions.



1.2 Socially Engaged Research and the Digital Centre of Excellence

The Consortium of the BETTER Life Project defined Socially Engaged Research (SER) as a strategic approach to the definition, planning, management, and execution of a research agenda in which there are meaningful interactions between diverse societal stakeholders. The aim of SER is to address relevant societal challenges to increase the accountability, responsibility, contributions, quality, relevance, and positive impact of research on society at the regional, national, and international levels.

SER brings together the stakeholders framed in the quadruple helix model of research and innovation: academia, industry, government and civil society. The interaction and collaboration among these stakeholders allow for the inclusion of non-traditional research paths related to non-technological and technological improvements, service creation, social entrepreneurship, and creativity exploitation (Carayannis & Campbell, 2009; European Committee of the Regions et al., 2016).

The quadruple helix model of research and innovation mirrors the enhancement of the modes of knowledge production framing SER. Beyond the dichotomy of “mode 1” (basic/theoretical research) and “mode 2” (applied research) of knowledge production, the emergence of “mode 3” integrated non-academic knowledge to catalyse, accelerate, and support the creation, dissemination absorption, and use knowledge assets (Carayannis & Campbell, 2009; Sattler et al., 2022).

SER and Mode 3 of knowledge production imply transdisciplinarity between academic and social issues to create tailored solutions that are scientifically sound and socially relevant (Sattler et al., 2022). The transdisciplinary approach also implies sharing power within the process and generating diverse outcomes including concepts and practices (Knapp et al., 2019; Ferguson et al., 2022). Hence, SER frames research produced in the context of the application, transdisciplinarity, heterogeneity, multi-stakeholder collaboration, and social and scientific accountability.

SER goes beyond the understanding of “engaged research” as research approaches in which citizens participate only as data collectors. SER encapsulates the engagement of academia, government, industry and civil society in defining research agendas, policies, conceptualization, and implementation. SER is framed in the role that research plays in strengthening knowledge-based economies and cohesive societies by demonstrating its accountability, social responsibility, and relevance to society.

The BETTER Life Project implements a Digital Centre of Excellence (DCoE) as a strategy for fostering SER in the field of life sciences. DCoEs are organisational environments focused on developing excellence and high standards in specific fields of research, innovation and



learning, smart specialisations, and intersectoral collaborations combining socioeconomic and academic goals (Hellström, 2013; Gartland, & Gartland, 2018).

DCoEs have emerged as a model with a strategic function of converging research excellence, capacity building, policies, processes, and attracting funding (Beerkens, 2009; Hellström, 2018). These centres are conceived as a platform for fostering transdisciplinarity and enhancing university-multi-stakeholder collaborations, nevertheless, there are no specific structures or blueprints these centres follow in their design (Borlaug, 2016; Hellström, 2018). Hence, the BETTER Life Project is looking for optimal organisational solutions for creating a suitable platform to foster SER in life sciences.

The consortium of the project includes seven universities from the Czech Republic, Estonia, Germany, Italy, Latvia, Poland and Serbia with existing strengths in research in life sciences that aim at enhancing the impact and pertinence of their research by building the capacities for fostering SER in life sciences. The BETTER Life DCoE will be the tools for building the capacities to foster SER in the field of life sciences.

1.3 Definition of a Framework

The first step towards building the BETTER Life DCoE is the identification of the framing elements articulating the centre. A framework maps out the essential factors and variables to show their relationship and visually represents the logical structure of connected ideas within a multifaceted concept (Grant & Osanloo, 2014). As a foundation or blueprint is essential in a house construction project, a framework is vital to understand the direction and structure of an organisational unit such as a DCoE.

For approaching the concept of “framework” used in this report, relevant definitions from related literature outlined the concept as follows:

Source	Definition
NHS Health Research Authority (2020)	In policy, a framework is a set of principles, guidelines, and standards that inform decision-making.
Singh & Sarkar (2019)	In management, a framework is a set of concepts, methods, and techniques that provide guidance for decision-making
Powel (2018)	In organizational studies, a framework is a structure that



	outlines how certain activities are divided and how they are coordinated.
Padhi (2018)	In higher education, a framework refers to the policies and practices that guide the development and delivery of higher education programs
Kivunja (2018)	In research, a framework refers to the detailed logical orientation and relationships of whatever forms the essential structures, plans, methods and implementation of a research project.

For the BETTER Life Project, a framework refers to a set of formal structures necessary for service provision and for fostering the development of a specific field of study (life sciences). In line with Giddens and his structuration theory (Giddens, 1984) the frameworks are not intended to be a sort of “dictating rules” prescribing our activities but they are considered as the sets of principles enabling our activities. It envisions consistency in the conception, implementation, evaluation and follow-up of strategies. Such a framework is the precondition for the implementation and management of intervention tools. A framework shapes the scope and efficacy of interventions (OECD & ASEAN, 2018) and is composed of sub-dimensions that constitute the building blocks of a policy or institution. Under each dimension, there are standards and indicators that act as the specific goals reflecting a general strategy.

For the implementation of the BETTER Life Project, the consortium came to the consensus of creating two interrelated frameworks: one from the perspective of the DCoE and another from the perspective of SER in life sciences. The Framework for the BETTER Life DCoE presents the key dimension and sub-elements of the digital centre. The second framework focuses on the key aspects that need to be fostered in SER for its advancement. The Framework for BETTER Life DCoE establishes the blueprint for organisational aspects and the Framework for SER deepens the facilitation for building capacities in SER.

Both frameworks are connected by the topic of SER. The first one builds on the administrative unit of the DCoE and the second one build on enhancing the key components of SER. They are different levels of a support unit: operational and disciplinary levels.

The frameworks presented in this report aim at providing the following benefits for the BETTER Life Project:

D2.2 Framework for SER in Life Sciences



- To provide a clear picture of the core components of the BETTER Life DCoE and the elements it will support in research to foster SER that will be supported, further developed, and followed up.
- To help to organise and plan the efforts within the scope of what the project seeks to achieve within the strategic plan.
- To establish a dialogue with previous frameworks that will inform elements and dimensions of the interventions developed in the project.
- To guide the further development of standards, tools, implementation of capacity-building activities, refinement of instruments, and the assessment of the interventions.
- To provide a clear lens for the assessment, reflection and evaluation of the interventions of the project that will support further planning cycles and the introduction of continuous improvement measures.

In sum, the frameworks proposed in this report play a foundational role that provides a clear picture of how the BETTER Life Centre is organised and its scope of action. It is also interrelated to the strategic plan and the standards developed in the project.

1.4 Methodology

The creation of the frameworks for the BETTER Life Project followed a four-stage participative methodology. The first stage involved conducting a literature review to map the status quo of SER, existing frameworks, supporting conditions and characteristics of SER. The result of this stage is the Status Quo Report on Socially Engaged Research.

In the second stage, co-creation workshops were developed involving the consortium partners in discussing the elements of SER found in the literature to reorganise them into broad categories or dimensions. These workshops served as a collaborative platform for brainstorming and exchanging ideas. The result of the workshops were two canvases with the key dimensions for building a DCoE and for supporting SER.

In the third stage, the outcomes of the co-creation workshop were conceptualised into functional design reflecting the dimension and sub-dimension identified in the workshop. These dimensions and elements identified were integrated into a visually cohesive framework structure presented in this report. The visual representation of the framework served as a visual result, enabling easy understanding and communication of the framework structure.



Finally, in the fourth stage, the frameworks were validated by the consortium. This involved a thorough review of the frameworks to ensure their alignment with the goals and objectives of the BETTER Life Project. Feedback and input from the consortium partners were collected and incorporated into the framework to refine and improve its clarity, relevance, and applicability.

This four-stage methodology ensured that the frameworks were informed by existing knowledge, co-created by consortium partners, grounded in the relevant literature, visually represented for clarity, and validated for their alignment with the project's goals and objectives. This methodology also mimics the SER in the principles of mutual cooperation and co-creation. The resulting frameworks included in this report provided a robust and comprehensive structure for guiding the implementation of SER initiatives within the context of the BETTER Life Project.



2. FRAMEWORK FOR THE BETTER LIFE DIGITAL CENTRE OF EXCELLENCE

This section presents the organisational elements of the DCoE that the BETTER Life Project will develop. This framework is informed by existing literature on the development of centres of excellence for supporting the advancement of research. Additionally, this framework provides a general overview of the key organisational dimensions of the BETTER Life DCoE, which is enhanced and operationalized in the strategic plan of the centre.

This section further delineates the concept of DCoE from the perspective of the BETTER Life Project, introduces the framework of the centre and elaborates on its use. Therefore, this framework is a foundational element for the centre and will be operationalized in the development of its activities, which implies that further refinements will be needed once the project is implemented.

2.1 The BETTER Life Digital Centre of Excellence

The BETTER Life DCoE envision in the BETTER Life Project is an inter-institutional support structure, consisting of a network of cooperative partners focused on SER as a high-potential growth area that contributes to excellence in research in life sciences. The centre will support the consolidation of high standards in SER, innovation, and learning, and become a key strategic component for the design, development, and steering of SER in life sciences. The DCoE will also enable the consortium to undertake projects that meet international excellence standards.

A centre of excellence, in the BETTER Life project, is understood as a team, shared facility or unit fostering high standards of research, leadership, collaboration, capacity building, funding attraction, and creating innovative mechanisms to promote knowledge and scientific advancements in a specific field (OECD, 2014; Hellstrom, 2018; Nakov et al., 2020; Fekadu et al., 2021; Manyazewa, 2022). The BETTER Life DCoE will be a platform for fostering interdisciplinarity, enhancing university-multi-stakeholder collaborations, and building the capacities of the early career researchers and the research units of the university



participating in the consortium. This vision is in line with the analytical framework for CoEs proposed by Hellstrom (2013; 2018) and the experiences such as the Humana Health Plan (Itri et al., 2014), which emphasises strategic orientation, institutional support conditions, and capacity building and impacts.

The strategic orientation of the BETTER Life DCoE will be defined through its Strategic and Governance Plan, which is a living document, outlines the governance, roles, mission and vision of the centre. The plan will also establish strategic goals aligned with the main operational goals with corresponding measures of their achievement, such as capacity building, cooperation in research, science-citizens/public interface, innovation, or social engagement. The governance network will set the weight of these goals and establish the KPIs for each of them.

The DCoE will have a digital focus, as it will use digitalization to support research, innovation, and capacity building from a transnational perspective. It will also leverage digital platforms to connect with partners and stakeholders worldwide, enhancing its global reach and impact. The BETTER Life DCoE will be structured to enable cross-disciplinary collaborations, facilitate the sharing of resources and knowledge, and accelerate the translation of research into tangible outcomes that benefit society.

The BETTER Life DCoE will be a significant step towards establishing high standards of SER in life sciences. By fostering interdisciplinarity and transdisciplinarity, and enhancing university-multi-stakeholder collaborations, it will attract funding and enable the consortium to undertake projects that meet international excellence standards. The DCoE's digital focus will also enable it to leverage advanced technologies, connect with partners worldwide, and accelerate the translation of research into tangible outcomes that benefit society. The BETTER Life DCoE represents an opportunity for the life sciences field and will undoubtedly contribute to shaping the future of research and innovation.

2.2 Framework Elements of the Digital Centre of Excellence

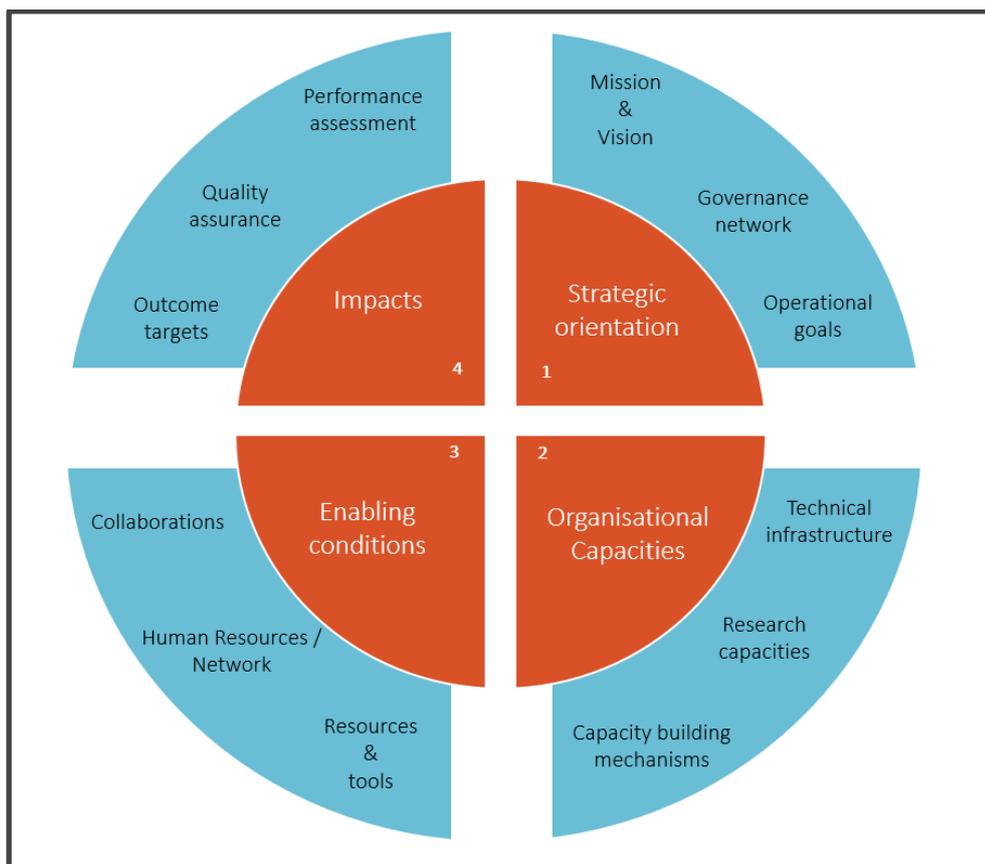
The BETTER Life DCoE framework is based on the key elements for defining the processes of excellence in centres of excellence according to Hellstrom (2013) and OECD (2014), which include strategic orientation, organizational capacities, enabling conditions, and impacts. It is essential for academic centres of excellence to have a strong foundation and work towards achieving excellence. As stated by Fekadu et al. (2021) in the “Key Processes of Excellence as a Prerequisite to establishing academic centres of Excellence in Africa”, organisational goals and governance structure are the foundations of excellence. The BETTER Life DCoE recognizes the importance of these foundations and aligns its mission, vision, and

operational goals accordingly. The framework also emphasizes the importance of building strong organizational capacities, enabling conditions, and measuring impacts.

The BETTER Life DCoE framework is also connected to the Framework for Big Data and AI Centre of Excellence by Curry et al. (2021). Both frameworks acknowledge the importance of measuring impacts and the backward flow of feedback from the impact created to the environment in which the centres operate. Additionally, the BETTER Life DCoE framework recognizes the importance of organizational capacity-building mechanisms and collaborations, which are also highlighted in Curry et al.'s framework.

The BETTER Life DCoE framework is a comprehensive approach to establishing a support unit for SER in life sciences, which is the aim of the project. The framework aligns with the foundations of excellence from previous the principles of previous frameworks and emphasizes the importance of building strong organizational capacities, enabling conditions, and measuring impacts as illustrated in Figure 1.

Figure 1: Framework for the BETTER Life Digital Centre of Excellence.



Note: This framework was created with the participation of the consortium representatives after identifying the key elements of existing frameworks for the development of centres of excellence for diverse field of study.



2.3 Dimensions and Elements of the Digital Centre of Excellence

This framework presents the foundational elements of the BETTER Life DCoE and it is organised into four main dimensions related to the strategy, the existing capacities, the conditions created to foster the main objectives, and the assessment of the impacts of the DCoE. The four dimensions and twelve subdimension of the framework are:

- i) Strategic orientation:** Strategic orientation highlights the institutional focus and strategic vision, and goals and governance of the DCoE for SER in life sciences. The centre aims to position itself as a global leader in SER in life sciences. The vision and mission, governance structure, and operational goals reflect the strategic vision for achieving this ambitious goal.
 - (1) Vision and Mission:** The mission and vision refer to the overall purpose, direction and goal of the DCoE and the operations implemented to achieve that goal. It provides a clear and inspiring picture of what the DCoE wants to become and serves as a guiding principle for decision-making and action.
 - (2) Governance structure:** the governance structure sets out the regulations, procedures, and roles and is the decision-making body. A clear governance structure will guide the DCoE in contributing their effort toward achieving the strategic goals.
 - (3) Operational goals:** these refer to key building blocks for attaining strategic goals. They are short to mid-term objectives whose achievement brings the DCoE closer to the vision of fostering SER in life sciences. The operational goals can be adjusted to changing internal and external organisational environments; consequently, the pathway to attaining long-term strategic goals also becomes flexible.
- ii) Organisational capacity:** refers to the mapping of the existing capacities in the consortium of the BETTER Life Project allowing the DCoE to carry out its functions and achieve its goals. This dimension is divided into:
 - (1) Technical infrastructure:** represents the physical and digital facilities necessary for the smooth operation of the DCoE. This technical infrastructure is already present in the consortium and should be mapped in the development of the tools for the centre as resources to share in the consortium. It also refers to the platform and technology used to operate the DCoE.
 - (2) Research capacity:** connotes human resources with vast research experience in conducting and operationalizing SER in life sciences. Experienced researchers and previous knowledge of the context are crucial to the implementation of SER.



- (3) Capacity-building mechanisms:** refers to skilling intervention which enhances capacity and targets a broad range of actors and systems such as individuals, institutions, and wider economic and regulatory capacities (OECD, 2018). UNESCO (2007) identified examples of capacity-building modalities such as the provision of network development, technology and equipment, and convening meetings and conventions.
- iii) Enabling conditions:** underscore the support mechanisms which will be provided by the DCoE for researchers to facilitate SER in life sciences. Further, enabling conditions are also external conditions (regional or national) and opportunities created by stakeholders. Enablers for SER research offer motivations, tools and actions to foster SER. The enabling conditions are described as follows.
- (1) Resources and tools:** A digital centre for socially engaged research requires adequate funding to support its activities, including technology infrastructure, personnel salaries, training, and research projects. Funding sources can come from government grants, private donors, or institutional support.
- (2) Human resources/Networks:** The centre must have skilled human resources with existing networks in the field of higher education that allows for fostering the goals of the DCoE.
- (3) Collaborations:** establishing a DCoE for SER requires building collaborative partnerships with stakeholders in the community, including local organizations, government agencies, and community members. This subdimension refers to strategic partners for the centre.
- iv) Impacts:** a digital centre for SER can have several expected outcomes including but not limited to:
- (1) Outcome targets:** this subdimension refers to the definition of the KPIs that were already established in the project. These targets are aligned with the operational goals and constitute targets that should be considered when planning the activities.
- (2) Quality assurance:** refers to the processes and practices put in place to ensure that services provided align with specified quality standards of SER. Key aspects of quality assurance constitute the follow-up of the development of capacity-building actions.
- (3) Performance assessment:** this dimension deals with the evaluation of the indicators set in the project and the results generated by the DCoE. This information should feed the reports on the performance of the centre and future improvement actions.



This framework presents a general perspective for an organisational unit dedicated to supporting the implementation and enhancement of institutional initiatives such as SER. However, this framework needs to be complemented with the disciplinary initiative to foster, in this case SER, which will be described in section three of this report.

2.4 Usefulness of the Framework

The usability, applicability, and usefulness of the organizational framework for the BETTER Life Project, which is aligned with the CoE analytical framework methodology proposed by Hellstrom (2013), can be highlighted in several ways.

The framework provides a clear strategic orientation for the DCoE, defining the goals, mission, and vision of the centre. This strategic orientation is operationalized in the Strategic and Governance Plan, which guides the overall strategy of the DCoE. The governance network of the DCoE is responsible for setting strategic goals and key performance indicators aligned with the main orientation of the centre, whether it be capacity building, research, or innovation, among other possible orientations. This strategic orientation helps to align the efforts of the consortium partners and provides a clear direction for the DCoE's activities.

The framework also ensures that the DCoE operates within institutional supporting/operational conditions that are conducive to research excellence. The framework includes sub-dimensions that constitute the building blocks of the DCoEs. These sub-dimensions can be broken down into standards or indicators that reflect the performance of the centre. Then, this organisational framework helps to shape the scope and efficacy of the DCoEs interventions, providing a consistent and organized approach to the conception, implementation, evaluation, and follow-up of strategies.

Additionally, the framework enhances the analytical approach taken to develop the organizational environment for the BETTER Life Project. It provides a structured and systematic way to organize and plan the efforts within the scope of the project's objectives. The dimensions and subdimensions in the framework are key factors that need to be examined in order to achieve the creation of the BETTER Life DCoE. This analytical approach helps to ensure that the research effort is coherent, comprehensive, and aligned with the overall goals of the project.

Finally, the transferability of the organisational structure to different support strategies for diverse topics is another key advantage of the framework approach to the BETTER Life DCoE. The clear identification of the dimensions and subdimensions allows to easily embed into different support strategies for various topics, providing flexibility and adaptability to different contexts.



3. FRAMEWORK FOR SER IN LIFE SCIENCES

The need to promote SER has increasingly gained the attention of policymakers and scholars. According to the European Economic and Social Committee (2015), “the future of Europe depends on the availability of state-of-the-art knowledge and talented people in an open and knowledge-driven society.” Extant studies on engaged research primarily focus on community engagement, which means the collaboration of a wide range of research stakeholders with shared interests working together toward a common goal. For this research, we take engaged research to represent a broad range of practices, approaches and methodologies that employ collaborative engagement with society to improve, understand or investigate a problem of public interest. It is important to note that in engaged research, relevant stakeholders are involved in all the stages of a research effort from the beginning rather than through “outreach” or “consultation.”

The following section introduces the background of the framework for SER, its characteristics, components, and the expected benefits of its use.

3.1 Previous Frameworks for Engaged Research

To develop the framework for SER, the consortium participating in the BETTER Life Project draw on a range of existing frameworks and guidelines to implement best practices in engaged research. The existing frameworks and theoretical context of engaged research developed in the Status Quo Report in SER provided the basis for diagnosing the lack of a framework articulating the practices of engaged research, the institutional conditions and the assessment of the impact.

The first perspective focuses on the research processes and the opportunities for engaging diverse stakeholders. The framework for engaged research developed by CampusEngage (Bowman et al., 2018) and by the National Coordinating Centre for Public Engagement (NCCP, 2020) emphasises the main stages of a research project and the strategies to be employed before, during and after the research project to involve the stakeholders, ensuring the relevance and impact of the research. However, this perspective focuses on the researchers alone without framing them in the institutional context, the strategies for



developing pertinence and strategies to measure the impact from a project and institutional perspective.

In the second perspective, we found the frameworks focused on institutional conditions. Frameworks such as the Engaged Participation framework (Ferguson et al., 2022) or the partnership Building Framework (Jagosh et al., 2015) focus on the creation and maturity of the relations inside the ecosystem of higher education institutions. In this case, the research projects and their impacts are missing from the scene.

Finally, frameworks such as the Effect categories of participatory research over time (Wiek et al., 2014) focus on the instrumental impacts of engaged research in the ecosystems. In this case, these types of frameworks respond to the need to establish mechanisms for measuring impact from the perspective of the benefits generated on the ecosystems. This perspective could be very useful to provide assessment elements for SER, nevertheless, it misses the conceptual impacts, the institutional conditions and the research project development.

Hence, considering the characteristics of the existing frameworks and their gaps, the consortium engaged in the creation of a holistic framework for SER.

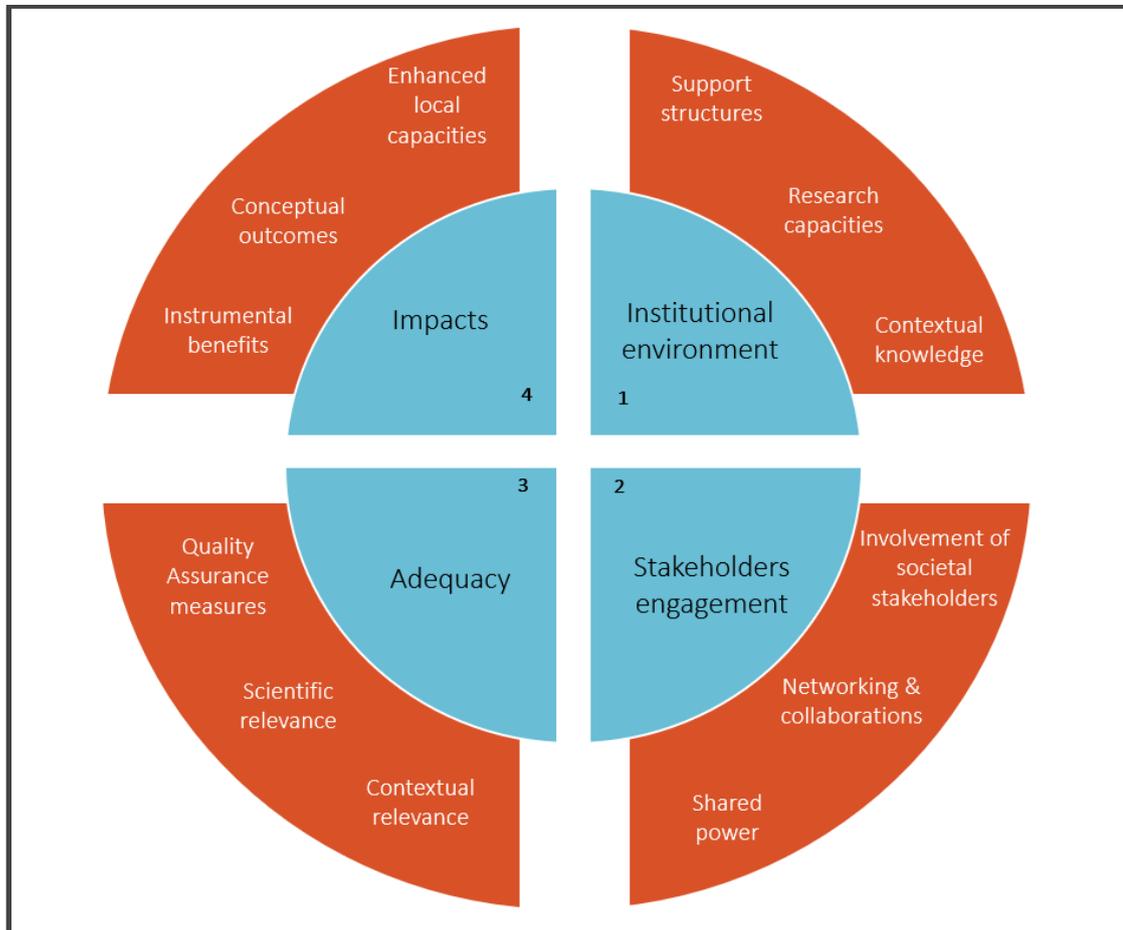
3.2 The Frameworks for SER

SER has increasingly garnered attention as a means to promote a knowledge-driven society and address societal needs in diverse fields of study, and the life sciences field is no exception. While community-based research has been a primary focus of engagement with communities and civil society organizations, SER extends beyond that to include a range of practices, approaches, and methodologies that uses collaborative engagement with diverse societal stakeholders (academia, industry and businesses, government, and civil society). Existing frameworks on engaged research, such as the Campus Engage framework (2018) and the Considerations for Engaged Participation Framework (Ferguson et al., 2022), have identified key components including co-creation, capacity-building, ethical research practices, and impact, among others. In this report, we propose a suggested framework for socially engaged research in the life sciences, building upon these existing frameworks and considering aiming at being applied in the field of life sciences.

This framework will offer insight into how SER can be applied from an institutional and research perspective, promoting a positive impact on the surrounding ecosystems while prioritizing the interests and well-being of all stakeholders involved. At this stage, disciplinary elements of life sciences are not visible due to the high conceptual level perspective. This framework will be the basis for developing the SER standards for life sciences, where each of the subdimensions will be operationalized into specific standards

to achieve. The framework for socially engaged research, as illustrated in Figure 2, is composed of 4 dimensions and twelve subdimensions.

Figure 2: Framework for Socially Engaged Research.



Note: This framework was created with the participation of the consortium representatives after identifying the key elements of existing frameworks related to engaged and transdisciplinary research.

The four dimensions of the framework balance the institutional conditions, the levels of engagement, the adequacy of SER and the diverse impacts generated. At the same time, the subdimensions deepen into the diverse components of each dimension. In the end, institutions and researchers should be able to use the framework to evaluate the readiness, the support mechanisms, the characteristics of their research and the impacts generated.



3.3 Dimensions and Elements of the Framework

The framework developed by the BETTER Life consortium aims at providing a multi-stakeholder perspective. First, institutions could use the assessment of this dimension and subdimension and gather data on their capacities, the actions taken and the impacts generated through SER. Researchers could use the information generated for the framework to learn about the institutional maturity and support available for SER, as well as to determine the measures to take in order to implement the perspective of SER. Finally, internal and external stakeholders could clearly see the conceptual, but also the practical benefits generated, as well as the impacts created in the ecosystem. Therefore, the framework for Ser represents a complex interaction of elements and stakeholders to develop SER.

The framework is organized into four dimensions that represent the core elements that compose SER in a research institution and the sub-elements in which those could be operationalized

- i) Institutional conditions:** This dimension focuses on the existing institutional capacities to support and foster SER. This dimension shows the availability of resources and the experiences that the organisations have accumulated in working with external stakeholders. This dimension is useful for the organisations to evaluate their capacity and for researchers to overview the elements they can use from the institution. The subdimensions are:
 - (a) Support structures:** This subdimension refers to the availability of organizational structures, such as funding, policy frameworks, tools, and administrative support, that enable and foster SER.
 - (b) Research capacities:** This subdimension emphasizes the need for researchers to have the necessary skills and expertise to engage in SER, including opportunities for participating in institutional and personal capacity building.
 - (c) Context knowledge:** This subdimension emphasizes the systematisation of previous experience, the existing impacts, the knowledge of the regional challenges and the factors that shape and determine the research interventions.
- ii) Stakeholders engagement:** This dimension focuses on the involvement and participation of stakeholders (academia, industry/businesses, government, and civil society organizations) in the SER process. The subdimensions are:
 - (a) Involvement of citizens:** This subdimension refers to the active engagement of citizens and communities in the SER processes, including the co-creation of



research questions and methods, collection of data, and sharing of knowledge and expertise.

(b) Networking and Collaboration: This subdimension emphasises the importance of building and maintaining mature networks and collaborations among stakeholders, including researchers, community groups, policymakers, and other stakeholders. These networks might be allocated at the institutional, faculty, or departmental level.

(c) Shared power: This subdimension emphasises the need for power-sharing among stakeholders, including equitable distribution of resources, decision-making, and recognition of diverse perspectives and contributions.

iii) Adequacy: This dimension focuses on the quality and relevance measures to ensure that SER is meeting the need of the specific ecosystem. The subdimensions are:

(a) Contextual relevance: This subdimension focuses on the importance of the research being relevant and meaningful to the stakeholders involved, addressing the specific issues and challenges faced by the community or society.

(b) Scientific relevance: This subdimension refers to the relevance of SER being scientifically rigorous, with appropriate research methods and data analysis techniques.

(c) Quality assurance measures: This subdimension emphasises the need for quality assurance measures throughout the research process, including ethical considerations, data management, and stakeholder feedback.

iv) Impacts: This dimension focuses on the outcomes and impact of SER in terms of research and instrumental outcomes, as well as ecosystem impacts. The subdimensions are:

(a) Instrumental benefits: This subdimension refers to the tangible outputs and benefits that SER creates, such as improved health, education, or economic outcomes.

(b) Conceptual outcomes: This subdimension refers to the new insights, datasets, conceptual frameworks, etc., that the SER generates, contributing to the development of new theories, ideas, and knowledge.

(c) Enhanced ecosystem capacities: This subdimension refers to the capacity-building and strengthening of social, economic, and environmental systems and processes, including community development, policymaking, innovation and trust.



The logic of the framework is organized by levels, with SER as the core concept, operationalized into dimensions, and into subdimensions. This last level allows for setting indicators and/or standards as a further development to be implemented in the next work package of the project.

3.4 Benefits to Foster through the Framework

The implementation of the framework for socially engaged research in the BETTER Life DCoE aims at fostering diverse benefits for researchers, HEIs, and society. These groups of beneficiaries of SER were considered in the design of the framework and are reflected in the dimensions of the framework that allow to clearly see the components related to the institution (dimension 1), the external stakeholders (dimension 2), the researchers and their projects (dimension 3), and the impacts generated through SER in the academic and social spheres of the ecosystems. The specific benefits that the framework aims to foster are:

For researchers:

- Enhancing their skills and expertise in community engagement, collaboration, and communication.
- Providing an opportunity to address the specific issues and challenges faced by the community or society.
- Offering a chance to participate in meaningful research that can have a significant impact on society.
- Facilitating networking and collaboration with other stakeholders, including community groups, policymakers, and other researchers.

For higher education institutions:

- Helping to establish a global centre in SER with an application in life sciences.
- Aligning with the foundations of excellence and emphasising the importance of building strong organizational capacities, enabling conditions, and measuring impacts.
- Providing a comprehensive approach to establishing SER for academic centres of excellence.
- Enabling the institution to contribute to social, cultural, economic, and political contexts in which research is taking place.

For society:

- Providing an opportunity to participate in research that addresses the specific issues and challenges faced by the community.



Funded by the
European Union



- Bringing tangible benefits to society, such as improved health, education, or economic outcomes.
- Facilitating the sharing of knowledge and expertise between researchers and communities.
- Helping to build and maintain networks and collaborations among stakeholders, including researchers, community groups, policymakers, and other stakeholders.
- Facilitating power-sharing among stakeholders, including distribution of resources, decision-making, and/or recognition of diverse perspectives and contributions.



4. CONCLUSIONS

The BETTER Life Project implements a DCoE as a strategy for fostering SER in the field of life sciences and through this report defined, first, the framework for defining the organisational dimension of the centre and, second, the key dimensions of SER to foster in the centre. Both frameworks are complementary since one defines the structure of the centre and the other the elements of excellence it must focus on. However, they could also be used separately to adapt them in other fields of study and in other support units for research.

The BETTER Life framework for the DCoE is based on the key references for defining the processes of the centres of excellence, which include strategic orientation, organizational capacities, enabling conditions, and impacts. The framework also emphasises the importance of building strong organizational capacities, enabling conditions, and measuring the impacts of the performance of the centre. This BETTER Life DCoE framework is a comprehensive approach to establishing a support unit for SER in life sciences.

On the other hand, the framework for socially engaged research is based on the dimensions of engaged research, underscoring the institutional conditions, the engagement of the stakeholders, the scientific and social relevance, as well as the diverse impacts and benefits generated by SER. This framework could be applied at an institutional level allowing the institutions to assess their capacities, as well as researchers to determine where their research stands in the institutional context and the opportunities they have for engaging their projects with SER.

Overall, frameworks gather existing knowledge, recommendations, and guidelines to delimitate the scope of the BETTER Life Centre and the key elements that allow defining and fostering SER from the institutional, research, and impact perspective.

The results of this report will build on subsequent layers of development over the dimensions and subdimensions. The following activities of the project will enhance the subdimensions into standards and those standards will later be operationalized into specific tools that support the activism of the standards.



REFERENCES

- Beerens, E. (2009). Centers of Excellence and Relevance: The Contextualization of Global Models', *Science, Technology & Society*, 14/1: 153–75. http://www.beerens.info/files/Beerens_CER_STS19102008.pdf
- Borlaug, S. B. (2016). Moral Hazard and Adverse Selection in Research Funding: Centers of Excellence in Norway and Sweden, *Science and Public Policy*, 43/3: 352–62.
- Carayannis, E. and Campbell, D. (2009). 'Mode 3' and 'Quadruple Helix': Toward a 21st Century Fractal Innovation Ecosystem, *International Journal of Technology Management* 46, no. 3-4, pp. 201–34. <https://doi.org/10.1504/IJTM.2009.023374>
- Curry, E., Osagie, E., Pavlopoulou, N., Salwala, D., Ojo, A. (2021). A Best Practice Framework for Centres of Excellence in Big Data and Artificial Intelligence. In: Curry, E., Metzger, A., Zillner, S., Pazzaglia, J.C., García Robles, A. (eds) *The Elements of Big Data Value*. Springer, Cham. https://doi.org/10.1007/978-3-030-68176-0_8
- European Commission, Directorate-General for Research and Innovation. (2020). MORE4: Support data collection and analysis concerning mobility patterns and career paths of researchers: Survey on researchers in European higher education institutions. Publications Office. <https://data.europa.eu/doi/10.2777/117072>
- European Committee of the Regions, Volpe, M., Friedl, J., Cavallini, S., et al. (2016). Using the quadruple helix approach to accelerate the transfer of research and innovation results to regional growth. Committee of the Regions. <https://data.europa.eu/doi/10.2863/408040>
- European Economic and Social Committee (2015). Engaged universities shaping Europe. <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/engaged-universities-shaping-europe>
- Fekadu, A., Oppenheim, C., Manyazewal, T. et al. (2021). Understanding the key processes of excellence as a prerequisite to establishing academic centres of excellence in Africa. *BMC Med Educ* 21, 36. <https://doi.org/10.1186/s12909-020-02471-0>
- Fekadu, A., Oppenheim, C., Manyazewal, T., et al. (2021). Understanding the key processes of excellence as a prerequisite to establishing academic centres of excellence in Africa. *BMC Med Educ*.21(1):36.



- Ferguson, D., Meadow, A. & Huntington, H. (2022). Making a Difference: Planning for Engaged Participation in Environmental Research. *Environmental Management* 69, 227–243. <https://doi.org/10.1007/s00267-021-01585-5>
- Gartland, K.M., & Gartland, J.S. (2018). Opportunities in biotechnology. *Journal of biotechnology*, 282, 38-45 . <https://doi.org/10.1016/j.jbiotec.2018.06.303>
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge: Polity Press.
- Hellstrom, T. (2013), Center of Excellence as a Tool for Capacity Building. OECD. https://www.oecd.org/sti/Draft_OECD%20synthesis%20report_final.pdf
- Hellström, T. (2018). Centres of Excellence and Capacity Building: from Strategy to Impact, *Science and Public Policy*, 45,(4), PP. 543–552, <https://doi.org/10.1093/scipol/scx082>
- Itri, J. N., Bakow, E., & Woods, J. (2014). Creating an outpatient centre of excellence in CT. *Journal of the American College of Radiology : JACR*, 11(12 Pt A), 1137–1143. <https://doi.org/10.1016/j.jacr.2014.08.032>
- Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International journal of higher education*, 7(6), 44-53, DOI: 10.5430/ijhe.v7n6p44.
- Knapp, N., Reid, S., Fernández-Giménez E., Klein A., & Galvin A. (2019) Placing transdisciplinarity in context: a review of approaches to connect scholars, society and action. *Sustainability* 11. <https://doi.org/10.3390/su11184899>
- Manyazewal, T., Woldeamanuel, Y., Oppenheim, C., Hailu, A., Giday, M., Medhin, G., Belete, A., Yimer, G., Collins, A., Makonnen, E., & Fekadu, A. (2022). Conceptualising centres of excellence: a scoping review of global evidence. *BMJ open*, 12(2), e050419. <https://doi.org/10.1136/bmjopen-2021-050419>
- Nakov, R., Sarafov, S., Gospodinova, M., et al. (2020). Transthyretin amyloidosis: Testing strategies and model for center of excellence support. *Clin Chim Acta*. 509:228–234.
- NCCPE (2020). Enhancing place-based partnerships in public engagement. <https://www.publicengagement.ac.uk/nccpe-projects-and-services/nccpe-projects/enhancing-place-based-partnerships-public-engagement>
- NHS Health Research Authority. (2020). UK Policy Framework for Health and Social Care Research. <https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/uk-policy-framework-health-social-care-research/>
- OECD (2018). Reporting on capacity-building and technology support under the Paris Agreement: issues and options for guidance. https://www.oecd.org/environment/cc/Reporting_on_capacity-building_and_technology_support.pdf



- OECD. (2014). Promoting research excellence: A new approach to funding. OECD Publishing. <https://doi.org/10.1787/9789264207462-en>
- OECD/Economic Research Institute for ASEAN and East Asia. (2018). Institutional framework. In SME Policy Index 2018, Boosting Competitiveness and Inclusive Growth. OECD Publishing. <https://doi.org/10.1787/9789264305328-12-en>
- Padhi, P.K. (2018). Towards a Sustainable Value Co-Creation Framework: Ethical Cognitive Couture, Cognitive System, and Sustainability. International Journal of Engineering and Management Research.
- Powell, C.R. (2018). Improving success with information technology using an organizational epistemology. Online Journal of Applied Knowledge Management.
- Sattler, C., Rommel, J., Chen, C., García-Llorente, M., Gutiérrez-Briceño, I., Prager, K., Reyes, M. F., Schröter, B., Schulze, C., van Bussel, L. G. J., Loft, L., Matzdorf, B., & Kelemen, E. (2022). Participatory research in times of COVID-19 and beyond: Adjusting your methodological toolkits. One earth (Cambridge, Mass.), 5(1), 62–73. <https://doi.org/10.1016/j.oneear.2021.12.006>
- Singh, P., & Sarkar, P.K. (2019). A framework based on fuzzy AHP-TOPSIS for prioritizing solutions to overcome the barriers in the implementation of ecodesign practices in SMEs. International Journal of Sustainable Development & World Ecology, 26, 506 - 521.
- UNESCO External Evaluation Team (2007). A review of UNESCO's capacity-building functions. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000149993>
- Wiek, A., Talwar, S., O'Shea, M., & Robinson, J. (2014). Toward a methodological scheme for capturing societal effects of participatory sustainability research. Research Evaluation, 23, 117-132.



**BETTER
Life**

