SUSTAIN|CE

QUALITY AND EVALUATION HANDBOOK

Table of Contents

FOREWORD

SUSTAIN CE – "Integration of Sustainable Design and Circular Economy Concepts in Civil Engineering Curricula", is an ERASMUS+ project - KA203 Strategic Partnerships for Higher Education - implemented between November 2020 and June 2022.

The project is being conducted by a consortium of six organisations from three European countries: Turkey, Greece and Portugal. All partners jointly cover the expertise needed to successfully implement the project goals, given an added value to the transfer of the project's products, thanks to their experience in the Circular Economy, Engineering, education and training, digital technologies and in international cooperation. The project work plan was made carefully and in detail to ensure an effective implementation and monitoring of the project activities, together with the smooth cooperation and collaboration among partners to reduce the chance of miscommunication and conflicts.

Table 1

Role	Organization	Acronym	Country
LP	YASAR University	YU	Turkey
P1	Izmir Institute of Technology	IYTE	Turkey
P2	Aristotle University of Thessaloniki	AUTh	Greece
P3	South East European Research Centre	SEERC	Greece
P4	Instituto de Soldadura e Qualidade	ISQ	Portugal
P5	Folkart Yapi Sanayi Ticaret A.S.	FOLKART	Turkey

In the scope of the SUSTAIN-CE project, and particularly according to the work involved in its project quality and evaluation strategy, this handbook is developed to facilitate the quality and evaluation of the project during its implementation, focusing on the 3P model - (i) Process and Project Management; (ii) Partnership and (iii) Products - to support the project management and to guide all partners on evaluation and quality issues. SUSTAIN-CE project is varied and covers a wide range of activities integrated within an implementation schedule and a budget and the basic principle is to ensure an optimal relationship between the goals to be achieved, at reasonable cost, and the resources (human, technical and financial) that are used.

PROJECT AIMS AND OBJECTIVES

Infrastructure is the backbone of sustainable development and forms much of the foundation for quality of life. However, it consumes vast material resources and energy. Hence, educating today's prospective engineers, who will design, construct, and maintain these systems for the next 50 or more years, with the awareness and knowledge of sustainable infrastructure design is critical in achieving a sustainable quality of life for generations to come. Civil engineering covers a wide range of disciplines that incorporates infrastructures: construction, environmental, geotechnical, water resources, structural and transportation engineering.

Therefore, it is imperative civil engineering undergraduate students get accustomed to concepts and principles needed to meet the requirements of sustainability in civil engineering projects. Contemporary civil engineering curricula mainly focused on safety, serviceability and an optimization process that mainly focused on initial cost reductions. As a response, SUSTAIN-CE project will attempt to enrich the contemporary civil engineering undergraduate programs' curricula by incorporating sustainability, resilience and circular economy concepts in various stages of the design courses. The partners will co-create a new innovative undergraduate civil engineering curriculum that covers sustainable infrastructure design to ensure graduates have the ability to apply concepts and principles of sustainable design (SD) and circular economy (CE) in the design and construction of civil engineering projects.

DESCRIPTION OF THE GLOBAL WORK PLAN

SUSTAIN-CE project is comprised in four intellectual outputs (IO) – output number 3 wasn't granted - distributed among the 32 months of the project. The responsibility for each of the IOs is distributed by partners. Below is presented an overview of the project work plan and a brief description of each IO, focusing on expected results and on information presented in the project application.

IO1 - Defining the Sustainable Design/Circular Economy (SD/CE) Principles and Methods to Transform the Contemporary Civil Engineering Curricula

DESCRIPTION:

O1 focuses on the enhancement of better knowledge, on one hand and the need to integrate existing achievements in the scientific field of sustainability to curriculum and training courses, on the other hand. This will be achieved through the collaboration of local Focus Groups that will work synergistically, in living labs aiming to assess the needs and come up with a blueprint that will feed O2.

ACTIVITIES:

Task 1: Methodology for the quadruple-helix co-creation
Activity Leader: SEERC
Participating: All Partners (academic and industrial)
Description: A quadruple helix co-creation methodology will be developed for the involved countries (i.e. a toolkit for a step by step guidance on how to engage the stakeholders and achieve consensus).

Task 2: Co-creation Focus Groups for skills gap confirmation and curriculum area development
Activity Leader: YASAR
Participating: All Partners (academic and industrial)
Description: 2.1: A skills matrix analysis for identifying the skills gap will be conducted by a survey. 2.2: The consortium will conduct a worldwide benchmarking of SD/CE in civil engineering curricula/programs from top universities, in order to understand what trends and concepts are being offered by the leaders in this field. Each partner will research at least 10 best practices on a global or national level. 2.3: Three Focus Groups will be formed by the partners (one per country) to confirm and further elaborate on the results, of the skills matrix analysis and the benchmarking study(tasks 2.1 and 2.2), by using the co-creation methodology from Task 1. 2.4: The partners will meet and co-create with the Focus Groups members, to establish a specific list of the key intervention areas/thematic in the curriculum (based on the skills gap analysis and benchmarking results).

O1/A3: Task 3: A blueprint for the design of the new innovative curriculum
Activity Leader: SEERC
Participating: All Partners (academic and industrial)
To ensure standardization, accreditation and quality assurance, a blueprint for the new innovative curriculum design/development will be produced, to be used in O2. While the academic partners will focus mostly on the ECTS [21] blueprints and quality assurance process, the non-academic partners will be engaged into providing recommendations making the curriculum compatible with the ECVET [22] & EQAVET [24] systems for expanding the reach of the target group of this project to those future trainees that aim to acquire the knowledge and skills in a non-formal manner.

OUTPUT LEADER: SEERC
DURATION: Months 1-12

IO2 - DESIGN OF A NEW INNOVATIVE CIVIL ENGINEERING CURRICULUM WITH INTEGRATION OF SD/CE PRINCIPLES

DESCRIPTION:

SUSTAIN-CE aims at introducing the SD/CE as the fourth major design principle to the civil engineering undergraduate curricula. Considering the existing credit load, it is anticipated that the concept should be inserted into the existing related courses' contents and by introducing a new course. The new course is intended to introduce the necessary basic information about the natural cycles of the ecosystems and create awareness of the importance of SD/CE.

The main innovative element of O2 is the co-creation of the SD/CE related contents for the design courses of the civil engineering curriculum that involve the quadruple helix stakeholders. Integration of the SD/CE concepts to civil engineering education is one of the most effective tracks to prepare future engineers for future challenges and positively impact the future quality of life of society. Hence, O2 aims to create a short-term impact on the education of future engineers to ensure a long-term impact on the quality of life of future generations. Due to the quadruple helix approach and ECTS accreditation in the SD/CE related content development in O2, the entire developed content and the new course can be embedded to any undergraduate civil engineering curriculum and to those

of other engineering disciplines. Therefore, the impact of O2 spans to other HEIs and VET centers across Europe. In order to ensure the transferability of O2, education institutions across Europe will be contacted via dissemination activities. At least 30 HEIs and VET centers will be contacted to promote the results of O2 and enable them to incorporate the results in courses at their institutions.

ACTIVITIES:

Task 1: Evaluation of the degree of inclusion (level of embeddedness) of SD/CE concepts in the existing curricula in each of the selected thematics
Activity Leader: YASAR
Participating Organizations: Academic Partners
Each academic partner will perform an in-depth analysis on the curriculum content on the selected thematic in O1 (i.e., water resources engineering, transportation engineering, structural/geotechnical engineering, construction materials, and buildings) and will identify the level of the inclusion of SD and CE concepts in the existing design courses of the selected thematic. The quadruple helix Focus Groups in each country will be consulted to quantify the impact that the existing design courses actually produce in the related industry & society in order to make a proper assessment where the infusion of the new concept of SD/CE should be introduced.

O2/A2: Task 2: Integration of SD/CE concepts in the content of existing design courses of the Civil Engineering Curriculum
Activity Leader: IYTE
Participating Organizations: All Partners (academic and industrial)
The partnership will co-create the content that will be integrated to the design courses in the selected thematics from O1. The work will be distributed among partners. Each partner will

contribute to the creation of the design courses' contents relevant to their expertise. The blueprint developed in O1 will be used in co-creating the relevant content (syllabi, course notes, case studies, examples, etc) in order to ensure its ECTS [21] accreditation and ECVET [22] & EQAVET [24] compatibility. The general aim of content co-creation will be to fill the existing gaps and infuse SD/CE insights into the existing courses. The SD/CE content will be primarily developed by the academic partners in collaboration with the non-academic ones and will be peer-validated by the quadruple helix stakeholder Focus Groups.

O2/A3: Task 3: Design of a new course supporting the SD/CE concepts in civil engineering
Activity Leader: IYTE
Participating Organizations: Academic partners
In order to provide the basic knowledge about sustainability in nature and the main principles of SD/CE, the design of a new course is planned. The basic water, carbon, nitrogen, and biogeochemical sulphur cycles important for both aquatic and terrestrial habitats will be covered in the course. Understanding these will provide future engineers the ability to diagnose environmental vulnerabilities, better policymaking, and life cycle management. The course will continue with the discussion of the main SD principles and CE concepts. Based on the content developed in this task, a virtual online course will be integrated into the VLE platform developed in O4.

LEADER: IYTE
DURATION: Months 4-29

IO4 - DEVELOPING A VIRTUAL LEARNING ENVIRONMENT FOR PROMOTING SUSTAINABLE DESIGN AND CE CONCEPTS

DESCRIPTION:

Based on the new curriculum designed in O2 a Virtual Learning Environment (VLE) platform will be developed to provide online learning and support and promote awareness on SD and CE concepts. SUSTAIN-CE VLE will aim to provide a platform in delivering the learning materials developed in O2. It is also targeted to develop and enhance the collaboration, professional and academic skills of the target users. Both the designed curriculum (O2) and the developed VLE platform (O4) will be tested during the trainings.

ACTIVITIES:

O4/A1: Designing a Virtual Learning Environment Platform for supporting open and distance education
Activity Leader: YASAR
Participating Organizations: All Partners (academic and industrial)
Description: YU will collaborate closely with the other academic and industrial partners in the design phase of the VLE platform, incorporating both views and experiences of industry and academia in the development stage.

O4/A2: Developing the VLE platform and e-content
Activity Leader: YASAR
Participating Organizations: All Partners (academic and industrial)
Description: Sakai, a free, community, educational, open-source software suite will be used for the development of SUSTAIN-CE VLE platform. Since Sakai is a fully customizable, scalable, reliable, interoperable and extensible platform, it can fully support the aims and designed features of SUSTAIN-CE VLE, as well as handle a great number of users.
The content that will be developed during the work done in O2, will be adapted to fit the e-learning content requirements of the VLE.

O4/A3: Testing of the VLE platform
Activity Leader: FOLKART
Participating Organizations: Industrial partners
Description: FOLKART will be responsible for coordinating all activities for the testing of the VLE platform which will take place:
- before its launching (working as a beta-tester)
- after the VLEs pilot usage during Academies C3 and C4 (collecting and analysing the results of the users' feedback) and
- until the end of the project's lifecycle, for achieving the continuous improvement of the final version.
FOLKART will collaborate closely with YU ODLC for providing feedback to the developers of the VLE, giving the views of the industrial partner/end user.

LEADER: YASAR
DURATION: Months 7-31

IO5. GUIDELINES AND POLICY BRIEFING FOR RAISING AWARENESS

DESCRIPTION:

Following the experience gained from the implementation of the project, O5 aims at developing a set of guidelines to help HEIs and VET centres to improve the effectiveness of education for sustainable design and development. This set of guidelines will be targeting other HEIs in the partner countries, as well as other European countries and the world, to support them in educating the educators, on how to help societies become more sustainable.

ACTIVITIES:

O5/A1: Assessing the gaps and developing the policy recommendations and governance settings.
Activity Leader: AUTh
Participating Organizations: All Partners
Description: The main goal is to identify blockers that require specific recommendations and governance settings revisions. Similar exercises will be performed by the non-academic partners specifically in relation to enabling better co-creation with academia for joint/common interest. Additionally, interviews with related policy makers will also be performed (during the academies and multiplier events) in order to understand the requirements (policy-wise) that would enable the desired upgrade of universities capacities as mentioned in the above-description of O5.
Based on all the data collected in this task, recommendations and guidelines will be produced across various levels: systemic transformation of universities, content adaptation, cocreation, digital transformation, etc.

O5/A2: Developing policy briefings and recommendation paper
Activity Leader: SEERC
Participating Organizations: All Partners
Description: Based on the work developed in Task 1 (which is of very technical/specialist nature aimed to address expert audiences), simplified versions of the policy recommendations will be
produced and "translated" into the operational language of each quadruple helix stakeholder.

The recommendations will be addressing three stages of the transformation process:
a) recommendations for interpretation (i.e. how to interpret needs, objectives, opportunities and future trends)
b) recommendations for decision (i.e. how to proceed with decision making to address these needs, objectives, opportunities and future trends)
c) recommendations for action (i.e. how to put the above into implementation)

LEADER: AUTh
DURATION: Months 26-32

QUALITY AND EVALUATION CONCEPTS

Evaluation is a process which:

a) Supports a project, by measuring the extent to which the objectives are met,

b) Identifies achievements,

c) Identifies areas for improvement,

d) Encourages decisions to be taken, including changes to project objectives and/or methodologies.

Quality assurance is a component of quality management and is focused on providing confidence that quality requirements will be fulfilled (ISO 9000).

Below it is given an overview of concepts and terms concerning quality assessment and evaluation.

Table 2

CONCEPTS	**QUALITY**	Quality can be determined by comparing a set of inherent characteristics with a set of requirements. If those inherent characteristics meet all requirements, high or excellent quality is achieved. If those characteristics do not meet all requirements, a low or poor level of quality is achieved. Note: Quality is always relative to a set of requirements.
	EVALUATION	Systematic collection and analysis of information on the actual performance of a project. Its aim is to analyse the relevance, progress, success and cost-effectiveness of the project. An evaluation compares planned results with the actual results of a project. It is a diagnostic tool.
	MONITORING	Continuing management exercise. Its aim is to supervise the accounting and administrative processes of a project. When implementing a project, monitoring deals almost exclusively with the conversion of inputs into outputs. This exercise will help to evaluate if what was supposed to be done really is. Adjustments to the project are possible when monitoring is done throughout the project management life cycle.
	PERFORMANCE MEASURES	Indicators that provide information (either quantitative or qualitative) on the extent to which the results of a project have been achieved. Evaluation is often confused with measures used to evaluate. Any activity which aims at interpreting results, or data obtained from measures, are part of an evaluation. To assure that the evaluation process leads to good decision-making, it must rest on correct and precise measures.
	EFFICIENCY	Refers to producing planned outputs within budgetary limits and established deadlines. For example: Was the implementation of the project well managed?
	EFFECTIVENESS	Refers to achieving planned results and contributing to attain established goals and objectives. For example: To what extent were the project's objectives achieved?

IMPACT	Refers to the intended or unintended, negative or positive, consequences of a project, some of which happen only sometime after the end of the project. For example: What were the consequences and the effects of the project for the target groups?
GOALS	A general statement of desired outcomes to be achieved over a specified period of time (the reasons for which the National Agency wishes to undertake the project).
OBJECTIVES	The essential and long-term benefits towards which efforts are directed and for which outputs are to be produced.
OUTPUTS	Tangible products (including services and events) that are necessary to achieve the objectives of the project and delivered to the project's target groups and stakeholders. Outputs relate to the completion (rather than the conduct) of activities and are the type of results over which partners have a high degree of influence. They are also the specific results obtained from the management of inputs.
INPUTS	Activities and resources (human, material, financial) used to carry out activities, produce outputs and achieve results.
RESULTS	The consequences or changes directly attributed to the activities of the project. The results achieved may be measured with respect to the inputs, outputs, goals and objectives of the project.
PRODUCT QUALITY	The quality of a product is the degree to which it satisfies a specified set of attributes or requirements.
INDICATORS	A description of the project's objectives in terms of quantity, quality, target group(s), time and place.

QUALITY AND EVALUATION GOALS

Evaluation is an important part of project management. It consists of measuring the effects of the project and the process to achieve each result. Its goal is to learn from the evaluation, in order to better understand it and to improve it. Project evaluation consists of:

✓ Describing the flow of a project and its activities;

✓ Identifying the progress achieved and the results obtained through the implementation of the project, by collecting appropriate data and submitting it to a comprehensive and systematic analysis;

✓ Making a value judgment on the results and comparing them with established objectives and in accordance with defined criteria;

✓ Using the process to gain a better understanding of the project and/or of its completed activities and drawing lessons that could potentially change on-going activities in order to better align them with the project's goals.

Evaluation allows the project coordinator and partners to become aware of:

✓ Their perceptions of the goals and objectives of the project, its activities, its flow and the use of resources to bring it to fruition;

✓ The overall results achieved, as well as the impact and outcomes of the overall project and its activities.

The aim of this Quality and Evaluation Handbook is to ensure that the goals of SUSTAIN-CE project are met to the highest standard. Specific aims of the handbook are to present an evaluation strategy focused on the 3P model and establish a quality control system (i.e. indicators and procedures to ensure project results within the desired standards).

QUALITY AND EVALUATION STRATEGY

Taking into account the goals outlined for quality and evaluation, this project's evaluation strategy and consequent methodology will be developed with the collaboration of project partners. This strategy will be focused on an Internal Evaluation Approach (IEA).

IEA is mainly related to the monitoring of the effective implementation progress in comparison to the agreed work plan, with special reference to project milestones. Thus, the internal evaluation should be considered a continuous process generated in real time by each project partner. Nevertheless, there are two main internal evaluation moments: by the first half of the project (M17) and at the end of the project (M32), just before closing. In the first project evaluation report, a SWOT analysis will be carried out. In the second project evaluation report, a SWOT analysis will be done, as well as an impact analysis.

Despite the fact that this project's quality and evaluation strategy is focused on an IEA, an external evaluation will also occur in specific moments of the project: in the Training Academies evaluation (C1, C2, C3 and C4) and in the Multiplier Events - where feedback from the participants will be collected and used to, if necessary, fine tune the final products.

It is expected that, by following this methodology, project intellectual outputs are developed in a timely and effective fashion and, furthermore, their development is in accordance with the needs of end-users and the project goals.

This Quality and Evaluation Handbook was developed with the intention of communicating to partners the methodological approach to evaluation and monitoring. The same principle is applied to evaluation instruments: several assessment tools will be developed during the project lifetime to ensure that all dimensions of the 3P Model will be evaluated and introduced to all partners.

To summarise, we present the next table:

Table 3

Evaluation instrument	When?	Where will it be reported?
Meetings evaluation questionnaire	After each transnational project meeting (TPM)	In every TPM meeting Interim Evaluation Report Final Evaluation Report
3P Evaluation questionnaire (SWOT analysis)	At the first half of the project (M17)	Interim Evaluation Report
Multiplier Events evaluation questionnaire	In each Multiplier Event	National Multiplier Evaluation Report
Training Academies evaluation questionnaire	In each Learning, Teaching and Training Activities	C1, C2, C3 and C4 Evaluation Reports
3P Evaluation questionnaire (includes SWOT analysis + Impact analysis)	At the end of the of the project (M32)	Final Evaluation Report

At the end of each evaluation report, a table will summarise the results obtained through the use of the evaluation instruments, using the following scale: Bad (< 60%); Adequate (≤60% - >80%); Good (≥ 80%).

3P EVALUATION AND MONITORING MODEL

The 3P evaluation model adopted for SUSTAIN-CE project allows a tri-dimensional assessment of project progress:
i) Process and Project Management;

(ii) Partnership;

(iii) Products.

This model aims to:

- ✓ Develop clarity and realism about the project objectives;

- ✓ Recognize the importance of a partnership in creating value;

- ✓ Develop an environment of knowledge sharing;

- ✓ Increase motivation and confidence;

- ✓ Monitor and assess the project performance;

- ✓ Identify strengths and weaknesses;

- ✓ Implement improvement measures just in time;

- ✓ Create useful products and value for end-users.

The way SUSTAIN-CE project is driven forward and managed is to be assessed and measured considering the following aspects:

- ✓ Clarity and feasibility of the project objectives;

- ✓ Fulfilment of the planned schedule;

- ✓ Adequacy of the management model;

- ✓ Efficiency of the project communication process;

- ✓ Adequacy of the planning, logistics and usefulness of project activities;

- ✓ Involvement of all partners in the continuous improvement of processes.

Checking the effectiveness of the partnership will give a sense of progress and direction for the future. The partnership interaction is to be evaluated at an internal level, considering the following aspects:

✓ Clarity and importance of the project objectives for each partner;

✓ Level of sharing, trust, clarity of responsibilities and tasks;

✓ Promotion of higher quality results within working groups;

✓ Overcome the geographic distance between partners;

✓ Assurance of the IOs planning and control;

✓ Promotion of empowerment and communication;

✓ Monitoring of partnership performance;

✓ Reengineering the working process.

Partnership

The level of quality of the products and their usefulness to partners, end-users and stakeholders and how they are evaluated will be explored, in a context of future sustainability, considering the following topics:

✓ Level of the products quality taking into account the specified set of attributes or requirements defined by the partnership;

✓ Level of the products incorporation potential by each of the partners;

✓ Level of the products transferability potential to external stakeholders;

✓ Identification of weak and strong points of the products;

✓ Reengineering of products to ensure their sustainability.

Products

ACTIVITIES AND RESULTS

Each project output has been designed to ensure a balanced distribution between the objectives and activities of the project and to guarantee that each activity will be led according to each partner's expertise.

Under SUSTAIN-CE logic, some of the activities will run simultaneously while others will depend on the completion of an earlier activity. Consortium management, quality and evaluation procedures will be ongoing throughout the project to ensure the highest standards, while dissemination and exploitation will also be a key aspect to ensure long-term impact, sustainability and mainstreaming of the project's results.

All results should respect the templates developed by the IO leader and agreed by the partnership. All templates should always include: (i) project acronym and tittle; (ii), project number/reference; (iii) project logo; (iv) title of result and IO identification; (v) date; (vi) ERASMUS+ Co-Funding logo; (vii) disclaimer text (if needed, according to the ERASMUS+ rules).

It is important to notice that the minimum height of the EU emblem shall be 1 cm.

The following disclaimer shall be added to the inner pages of the publications and studies written by external independent bodies with support from the European Commission:

"The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsi-ble for any use which may be made of the information contained therein."[1]

PROJECT MONITORING

Cooperation and Communication

The consortium cooperation and communication will be based on four different pillars:

❶ **Management model**: Empowering all partners and sharing responsibilities, equally and per activity. Partners will be actively involved in the project development and participate in decision making and products testing and validation.

❷ **Open and daily communication**: The majority of technical communication and remote management will be done via email and the email subject should always start with the project acronym: "SUSTAIN-CE". Webex or another remote conference platform can be used for intermediate distance meetings and Google Drive will be used as a project repository. No document should be uploaded in Google Drive without informing the partnership about it.

❸ **Transnational Project Meetings:** There are five transnational meetings planned during the project duration and these are of extreme importance, as they provide an opportunity to strengthen the partnership, allowing a face-to-face project monitoring, the development of common tasks, information exchange, joint problem solving and definition of next steps. For sanitary reasons, regarding Covid-19, face-to-face meetings can be substituted for online meetings, as long as all the meeting objectives are met, as well as their effectiveness and efficiency.

Meeting agendas should be sent by the project coordinator to all partners at least **three weeks before the meeting**.

After each project meeting the coordinator will produce the **meeting minutes**. All minutes must contain: i) date; ii) location; iii) presences list; iv) topics discussed; v) decisions taken; vi) tasks to be carried out by partners and deadlines.

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[1] https://eacea.ec.europa.eu/sites/eacea-site/files/multilingual_disclaimers_for_beneficiaries.pdf

Meeting minutes shall be sent by email within two weeks after the meeting. It is expected that all partners give feedback and approve the minutes within five working days after receiving them and that the project coordinator will then send the final version to all within the next five days.

❹ **Communication channel adopted to tackle non-responsiveness from partners:**

i. In the first instance, the partner will be e-mailed by the project coordinator to enquire as to any concerns that may be preventing them from completing tasks. If no reply:

ii. Follow up e-mail will be sent with a specific to-do list and deadlines attached. At this time, this partner will be encouraged to call the project leader with specific times given. If no reply:

iii. Follow up email stressing the urgency of getting in touch and the implication of further delays for the project. The coordinator shall call the partner. If no reply:

iv. Registered official letter 1 to the Partner and its Legal representative offering an opportunity to negotiate deadlines to support the non-responsive partner. If no reply:

v. Registered official letter 2 to Partner and its Legal representative setting a formal deadline for the partner to communicate problems/ complete work. If no reply:

vi. Registered official letter 3 to the Partner and its Legal representative dissolving its participation in the partnership.

❺ **Decision making process**: All situations will be analysed, and the decisions will be taken collectively after the facts are presented to all partners. If no agreement is reached, the project coordinator will submit a preliminary decision to all partners for their comments and approval. The decision can be changed, taking into account all partners opinions, until an amicable and mutual decision is agreed.

PROJECT PERFORMANCE INDICATORS

For each IO, a number of performance indicators (PI) has been identified by the leaders and will be used to assess the project performance taking into account the achieved results compared to the planned ones.

Next the PI set by the partnership for each IO or activity are presented:

Table 4

IO/Activity	LEADER	PI
IO1	**SEERC**	1.1. A quadruple-helix co-creation methodology is created identifying, at least 24 best practices; 1.2. Three stakeholders' lists (1 per country) are created; 1.3. Minimum of 120 responses, in total, from project stakeholders to the skills gap survey; 1.4. Minimum of 60 best practices, in total, on a global or national level, are identified by partners on a benchmarking exercise of SD/CE; 1.5. One focus group per country (three in total) is formed to confirm and further elaborate on the skills matrix and benchmarking results;

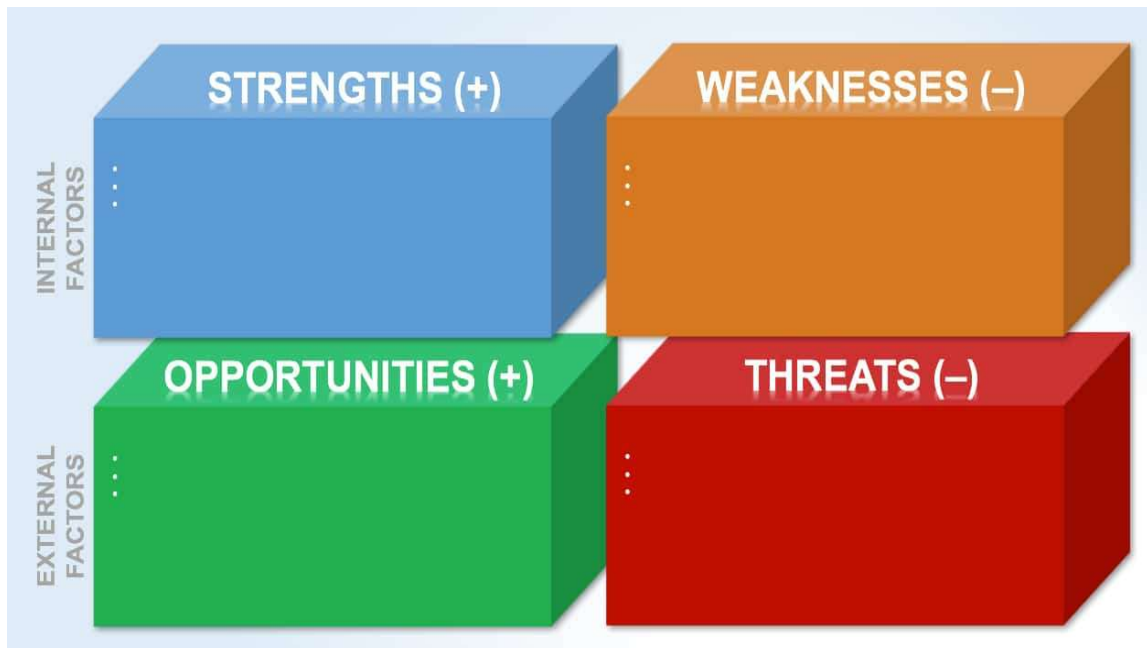| IO/Activity	LEADER	PI
		1.6. The blueprint has recommendations for the new innovative curriculum be compatible with ECTS, ECVET and EQAVET systems; **1.7.** Partners are satisfied by the time of the Final Output quality check (all positive feedback); **1.8.** All partners evaluate the IO leadership in a positive way[2].
IO2	**IYTE**	**2.1.** A list of SD/CE concepts is produced by the academic partners and incorporated to existent courses of Civil Engineering Curricula, for each of the previous selected thematics; **2.2.** The New Innovative Civil Engineering Curriculum has contributions from academic and non-academic partners and is peer-validated by the national focus groups; **2.3.** The New Innovative Civil Engineering Curriculum is tested during the Pilot Training Academies; **2.4.** The New Innovative Civil Engineering Curriculum is made available in the VLE platform, on modular basis, on time; **2.5.** Partners are satisfied by the time of the Output quality check (all positive feedback); **2.6.** All partners evaluate the IO leadership in a positive way[2].
IO4	**YU**	**4.1.** The VLE Platform has contributions from academic and industry partners; **4.2.** The VLE platform is designed to support self-paced and facilitated/ instructor-led learning features; **4.3.** The course to introduce the basic material cycles in the nature and the basic concepts of the SD/CE covers, at least, 14 weeks of self-study; **4.4.** The specialized modules in the selected thematic areas are designed with a minimum of 3 to 6 hours of directed instruction; **4.5.** The content material is delivered using different media elements such as text, graphic, audio and videos; **4.6.** The VLE platform is tested as a beta-version before its launching; **4.7.** The VLE platform is tested during C3 and C4 academies; **4.8.** The VLE platform users' feedback is used for its continuous improvement, during the project lifecycle; **4.9.** A quality framework is developed to evaluate the VLE platform and training materials, considering social presence, interaction, cognitive strategies, collaborative learning and learner centeredness dimensions; **4.10.** Partners are satisfied by the time of the Output quality check (all positive feedback); **4.11.** All partners evaluate the IO leadership in a positive way[2].

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[2] Evaluation of each IO or activity is undertaken by means of a 4 points rating scale (from "strongly disagree", rated as 1, to "strongly agree", rated 4). A positive evaluation is one whose rating is equal or higher to 3.

IO/Activity	LEADER	PI
IO5	**AUTh**	**5.1.** Minimum of 10 interviews, in total, with university management representatives are made, by the academic partners, to feed the Policy Recommendations and Governance Settings Guide; **5.2.** Minimum of 10 interviews, in total, with policymakers' representatives are made, by the industry partners, to feed the Policy Recommendations and Governance Settings Guide; **5.3.** A Policy Recommendations and Governance Settings Guide is developed including inputs about systemic transformation of universities, content adaptation, co-creation and digital transformation; **5.4.** Four specialized policy briefings, one per helix, are produced; **5.5.** One recommendation paper is produced addressing three transformation processes: a) recommendations for interpretation, b) recommendations for decision, and c) recommendations for action. **5.6.** Guidelines for other universities (IO5) is made available through the project website and VLE platform by the end of the project; **5.7.** Partners are satisfied by the time of the Output quality check (all positive feedback); **5.8.** All partners evaluate the IO leadership in a positive way[2].
Project Management	**YU**	**6.1.** Five transnational project meetings (TPMs) are organised, provided that travelling is allowed under the new COVID-19 restrictions. Alternatively, TPMs can be replaced by online meetings, if necessary; **6.2.** All partner organisations attend all TPMs (online or virtual); **6.3.** Ate least, two "catch-up" virtual project meetings are organised during the project lifetime; **6.4.** TPM meeting agenda sent to all partners at least 3 weeks before the meeting; **6.5.** Virtual project meetings sent to all partners at least 1 weeks before the meeting; **6.6.** Meeting minutes sent to all partners within 2 weeks after the meeting; **6.7.** To-do lists updated every 3 months; **6.8.** All partners evaluate the project meetings in a positive way[2]; **6.9.** All partners evaluate the management model in a positive way[2]; **6.10.** Positive feedback from the NA to the interim report of the project; **6.11.** Minimum 85% positive feedback from partners concerning Project Coordination & Management (management, communication, coordination capabilities); **6.12.** Minimum 85% positive feedback from partners concerning internal communication process (platforms, shared drive, etc.); **6.13.** Minimum 85% positive feedback from partners concerning project's Financial Management; **6.14.** Financial reports sent by partners to the coordinator according to the schedule.

IO/Activity	LEADER	PI
Dissemination and Exploitation	**YU**	**7.1.** The project website is created within the first six months of the project; **7.2.** With the exception of C1, all scheduled training activities will be organised by the leading partner in combination with the corresponding national multiplier event predicted for the same period: E2/C2 in Portugal, by ISQ; E3/C3 Greece, by AUTh; E4/C4 Turkey, by IYTE; **7.3.** Minimum of 30 participants in national multiplier events; **7.4.** Minimum of 50 participants in the Final Conference; **7.5.** At least, 2 project e-newsletters are released, per year, by the partnership during the project lifetime; **7.6.** Minimum of three social media channels, for dissemination purposes, are identified and used during the project lifetime (Facebook, LinkedIn, Twitter and other(s)); **7.7.** At least, two conference papers are published in internal academic conferences, during the project lifetime; **7.8.** At least, one journal paper is published in international academic journals during the project lifetime; **7.9.** Dissemination plan and reports delivered on time by all partners.
Quality and Evaluation	**ISQ**	**8.1.** Quality and Evaluation Handbook with inputs from all partners; **8.2.** All partners answer to the evaluation tool for the project meetings; **8.3.** All partners answer to the evaluation tool for the project annual assessment focused on 3P model; **8.4.** All partners use the evaluation tool for the Multiplier Events (E2-E5); **8.5.** All partners compile and deliver the National Multiplier Event Reports, on time; **8.6.** All partners use the evaluation tool for the Training Activities Events (C1-C4); **8.7.** All partners compile and deliver the Training Activities Events Reports, on time; **8.8.** Interim Evaluation report delivered on time; **8.9.** Final evaluation report delivered on time.

SWOT ANALYSIS

Through the SWOT analysis, all SUSTAIN-CE partners have the opportunity to contribute by giving their perception of the internal and external project dynamics. This analysis allows the evaluation of the Strengths (characteristics of the project that give it an advantage over others), Weaknesses (characteristics that place the team at a disadvantage relative to others), Opportunities (elements that the project could exploit to its advantage), and Threats (elements in the environment that could cause trouble for the project) involved in the project.

Source: https://www.smartsheet.com/14-free-swot-analysis-templates