LIFE-C Project

Lidia Lombardi

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LIFE-C project
Spreading Life Cycle Thinking in higher education

Lidia Lombardi
Niccolò Cusano University

Co-funded by the European Union

Chania 2023 - 10th International Conference on Sustainable Solid Waste Management
Contents

1. Erasmus+ Program
2. Life-C Project
3. State of advancement of the project
4. Future actions
Since its launch in 1987, the programme has expanded to cover all areas of education and training:

- School education;
- Vocational education (VET);
- Higher education;
- Adult education;
- Youth cooperation;
- Sport.

**ERASMUS+ Program**

**Key Actions**

- Key Action 1: Learning Mobility of Individuals
- Key Action 2: Cooperation among organizations and institutions
- Key Action 3: Support to policy development and cooperation
- Jean Monett Actions
The Erasmus+ Program

ERASMUS+ Program
(KA220-HED - Cooperation partnerships in higher education)

Cooperation partnerships in the Higher Education sector are international projects aimed at developing, transferring and implementing innovative practices and implementing joint initiatives promoting cooperation, peer learning and exchange of experiences at the European level.

The effect of this type of project should be primarily the modernization of the educational offer of the university, its better adaptation to the needs of society and the economy, and the improvement of the quality of education.

Results should be reusable, transferable, scalable and, if possible, have a strong interdisciplinary dimension. Selected projects will be expected to share the results of their activities at local, regional, national and transnational level.

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Motivation for the LIFE-C project

The need to increase Life Cycle Thinking and LCA awareness in modern societies.

• Providing methods for qualitative and quantitative analysis of the environmental and social impacts of human activities – materializing sustainability, making it tangible.
• Introduction of youth, students (and adults!) of both technical and non-technical faculties with a general idea of LCT – education of future staff to seek and implement e.g., Climate & Energy EU goals.
• Increasing competitiveness of future employees in the job market for the smart industry.
Promoting life cycle thinking in higher education LIFE-C Erasmus+

The aim of the project is to developing a modular LCA / LCC / S-LCA course for higher education along with a complete set of teaching materials to be implemented at involved Universities.

- **Silesian University of Technology, Gliwice, Poland**
- **University Niccolò Cusano, Rome, Italy**
- **Lappeenranta University of Technology, Finland**
- **National Technical University of Athens, Greece**
- **ValueDo s.r.l., Florence, Italy**

The duration of the project is 01/09/2022 - 31/08/2025

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Promoting life cycle thinking in higher education LIFE-C Erasmus+

The main expectations from the LIFE-C project are:

• Academic networking and establishing an international cooperation baseline for future projects.
• Promoting Life Cycle Thinking in both academia and among the general public.
• Releasing an innovative and universal course on an e-learning platform and a handbook with complete guidelines and materials to implement and adjust the modular LIFE-C course for any HEI interested.
Promoting life cycle thinking in higher education LIFE-C Erasmus+

WP1 – Project management, quality assurance and evaluation

WP2 - Survey
- Defining the needs and state-of-the-art of the LCA teaching sector, to provide the solutions and answers for recognized educational gaps.
- Oct. 2022 - May 2023

WP3 - Preparation
- Preparing a complete set of teaching materials and educational/coaching methodologies for students and teachers to implement and deliver the Life-C course in their Universities.
- Jun. 2023 – May 2024

WP4 – Delivery & Evaluation
- Delivery of the Life-C course for the interested students, collecting the evaluation and recognizing acquired ECTS.
- Jun 2024 – Jul. 2025

WP5 – Dissemination & Exploitation
- Dissemination and exploitation – promoting the Life Cycle Thinking in HE and building the social media presence of the Life C project during conferences, newsletters, profiles, and webinars.

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WP2: Defining the needs and state-of-the-art of the LCA teaching sector

WP2 - description and aims

WP2 is aimed at defining the needs of the students and the design principles for the LCA course.

- identify in details the set of knowledge, skills and competencies that the students need in order to apply and spread the life cycle thinking in their future sectors of employment, to significantly contribute to improve the environmental sustainability on all those sectors;
- identify the principles on which to build the LCA course (in WP3): topics, learning outcomes, duration, etc... educational learning outcomes according to the hierarchical levels of the Bloom’s taxonomy: understand, apply, analyse, evaluate, create.
- defining final syllabus: detailed architecture and contents
- defining the training needs of students on the basis of their background (interdisciplinary student equality)
- supporting LCA teaching in the use of LCA devoted IT applications, by making available an IT tool for the selection of the most appropriate IT applications for the specific teaching/learning need

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WP2: Defining the needs and state-of-the-art of the LCA teaching sector

WP2 - Specific Actions

- **A1** - State-of-the-art of the teaching/learning in the LCA sector (Sep-Oct-Nov 22)
- **A2** - Questionnaires with targets groups / defining needs for students with different backgrounds (Nov-Dec 22-Jan 23)
- **A3** - Defining course content (Feb-Mar 23)
- **A4** - Analysis of digital tools available for LCA (Apr-May 23 ➔ online Jun 23)

<table>
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<tr>
<th>WP2 - Survey and Need Analysis</th>
<th>set-22</th>
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<th>nov-22</th>
<th>dic-22</th>
<th>gen-23</th>
<th>feb-23</th>
<th>mar-23</th>
<th>apr-23</th>
<th>mag-23</th>
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</table>

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### A1 - “State-of-the-art of the teaching/learning in the LCA sector”

<table>
<thead>
<tr>
<th>Country</th>
<th>Denmark</th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Germany</th>
<th>Switzerland</th>
<th>Portugal</th>
<th>Italy</th>
<th>Spain</th>
<th>Norway</th>
<th>Poland</th>
<th>Turkey</th>
<th>Sweden</th>
<th>Romania</th>
</tr>
</thead>
</table>

#### Teaching material
- Not publicly available
  - Almost all report “lecture” in the “Theory”….  
  - Practice/Assignment are overlapping, some examples:
    - Case study in project teams in collaboration with external company  
    - In class mandatory group assignments and exercises, individual tests  
    - Group work, group assignments  
    - Exercises  
    - A project on Life cycle assessment is analyzed by the student in group  
    - Presentations on selected topics by the students  
    - Presentation and discussion of the LCA project proposal and results  
    - Specialized software demonstration  
    - Team/Group Work  
    - Brain Storming…..

## Contents
- 17 syllabuses report module/class mainly devoted to LCA  
- 9 syllabuses report module/class where LCA is introduced at some stage (but it is not the main subject)
A2 - “Questionnaires with targets groups / defining needs for students with different backgrounds”

Is environmental sustainability introduced into your study programme in any course?

<table>
<thead>
<tr>
<th></th>
<th>ENVIRONMENT COURSE</th>
<th>NON ENVIRONMENT COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>53%</td>
<td>31%</td>
</tr>
<tr>
<td>No</td>
<td>47%</td>
<td>69%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ENGINEERING</th>
<th>ECONOMICS</th>
<th>OTHER FACULTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>50%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>No</td>
<td>50%</td>
<td>72%</td>
<td>72%</td>
</tr>
</tbody>
</table>

Do you think that companies will search for environmental sustainability skills?

<table>
<thead>
<tr>
<th></th>
<th>BSC</th>
<th>MSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36%</td>
<td>43%</td>
</tr>
<tr>
<td>No</td>
<td>64%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Did you hear about LCA in some of your course?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Partially</th>
<th>I don’t know</th>
<th>Partially yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10%</td>
<td>12%</td>
<td>19%</td>
<td>32%</td>
<td>27%</td>
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<tr>
<td>2</td>
<td>22%</td>
<td>59%</td>
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<td>5</td>
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Students > 400

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Do you think company will search LCA skills?

![Bar chart showing responses to the question: Do you think company will search for LCA skills?]

**Companies > 30**

Please, add any comment or suggestion related to LCA (optional)

- We are growing in this field and we think LCA will become mandatory for every product. If only 0.5% of the engineering job will be LCA, we will need about 25 Experts (100% LCA) just for our company.

- LCA field is growing and needs experts! But it also needs more generic understanding of the process by non-LCA experts to be able to understand the results and communicate them.
WP2: Presentation and validation of the syllabus – A3

We need to define:

- Contents
- Pedagogical approaches
- Technologies we want to use

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### WP2: Presentation and validation of the syllabus – A3

#### Contents

<table>
<thead>
<tr>
<th>Future/envisioned professional profiles of students</th>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future/envisioned professional profiles of students</td>
<td>Engineers and managers who can relate to LCA utilisation, commission LCA studies and take decisions/ actions from LCA results</td>
<td>Engineers and managers able to conduct and interpret LCA studies</td>
<td>Engineers and managers who can relate to Social LCA/LCC utilisation, commission Social LCA/LCC studies and take decisions/ actions from Social LCA/LCC results</td>
</tr>
</tbody>
</table>

- **Practical exercises**
- **Assignments**

- **Company challenges**
- **Study cases**

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Thank you for your attention!

Please visit our webpage: www.life-c.eu

And sign up for our Newsletter to get the newest updates on the LIFE-C project!

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In addition to complying with the formal criteria and horizontal and specific sector priorities (summarized in the following slides), the call encourages the applicants to consider other transversal aspects when designing the project for the Cooperation Partnerships: 1) environmental sustainability, 2) inclusion and diversity, 3) digital dimension. These elements, which coincide with the horizontal priorities of the call, contribute to increasing the impact and qualitative implementation of the project throughout its different phases.

For projects in the field of education, training and youth managed by the Erasmus+ National Agencies at decentralised level, National Agencies may, among the priorities summarized below, give more consideration to those that are particularly relevant in their national context (called "European priorities in the national context").
The Erasmus+ Program

ERASMUS+ Program
(KA220-HED - Cooperation partnerships in higher education)

The primary objectives of Cooperation Partnerships are:

- Increasing quality in the work, activities, and practices of organizations and institutions involved, opening up to new actors, not naturally included within one sector;
- Building capacity of organizations to work transnationally and across sectors;
- Addressing common needs and priorities in the fields of education, training, youth and sport;
- Enabling transformation and change (at individual, organizational or sectoral level), leading to improvements and new approaches, in proportion to the context of each organization.
**Horizontal Priorities**

<table>
<thead>
<tr>
<th>Inclusion and diversity</th>
<th>Addressing digital transformation through development of digital readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment and fight against climate change (environmental sustainability)</td>
<td>Common values, civic engagement and participation</td>
</tr>
</tbody>
</table>

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Promoting inter-connected higher education systems

Stimulating innovative learning and teaching practices to tackle societal challenges

Developing STEM/STEAM in higher education, in particular women participation in STEM

Rewarding excellence in learning, teaching and skills development

Building inclusive higher education systems

Supporting innovation and entrepreneurial skills of students

Supporting digital and green capabilities of the higher education sector

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