

## BEST PRACTICE FOR EMBEDDING THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS IN ENGINEERING EDUCATION PROGRAMS

**Samuel Brüning Larsen<sup>1</sup>**

**Charlotte Flyger**

Technical University of Denmark  
Lyngby, Denmark

**Aida Olivia Pereira de Carvalho Guerra**

Aalborg University  
Aalborg, Denmark

**Jordi Segalas Coral**

Universitat Politècnica de Catalunya /Barcelona Tech  
Barcelona, Spain

This workshop proposal is submitted by the SEFI Working Group on Sustainability following a discussion on the topic at the working groups' meeting at the conference in Budapest in 2019.

### **Purpose and background**

The purpose of the workshop is to discuss the nature of 'best practice' for how to translate the United Nations' Sustainable Development Goals (SDGs) into educational practice. Today, many engineering education programs (EE programs) work with topics that are sustainability-related. For example, developing better city infrastructure, renewable energy technology, efficient public transportation, sustainable food ingredients, etc. The United Nations' SDGs make the concept of sustainability tangible and allow individual EE programs to both explore and select which SDGs their students and graduates work with during their education and careers. Using the SDGs, EE programs can find their particular role in ensuring an inhabitable planet for future generations. In addition, the SDGs enable increasing sustainability ambitions in EE programs, for example by including sustainability-related learning objectives into a program or by engaging deeper into those sustainability-related learning goals that naturally lie within the scope of a program's discipline.

### **Target audience**

The core target audience consists of three groups: (1) leaders of individual EE programs, (2) university department heads and deans of education, and (3) members of university committees at all levels, who are tasked with embedding sustainability in engineering education. Leaders of individual EE programs,

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<sup>1</sup> *Corresponding author*  
Samuel Brüning Larsen  
sbla@dtu.dk

department heads and deans of education all participate in EE program development, which includes formulating visions for the future. Once visions and future objectives are formulated, the next step is implementation. Implementation may happen 'through the line' or by establishing specifically tasked committees. Members of such committees are often faculty members, but may include staff positions, researchers, and practitioners as well.

### **Workshop learning outcomes**

The workshop brings wide-ranging experiences and practices to the surface. Workshop participants will get to know current practices for SDG-implementation in EE-programs, which they can bring back with them to their home universities. The workshop provides basis for networking and getting to know peers, who work with the same challenges.

In addition, participants will take part in shaping future practices for embedding sustainability as an integral component in EE programs. The participants of the workshop will contribute not only to the dialogue in the (online) room, but also to the wider discussion of sustainability in engineering education that takes place at home universities following the SEFI conference.

### **Key questions for the workshop**

During this workshop, we will discuss how EE programs and EE institutions can best work with the United Nations SDGs. The following three questions are key in these discussions:

- What constitutes 'success' for SDG-integration of in EE programs? What are the success criteria?
- How can instructors and EE program leaders embed the SDGs as component parts in EE programs? What are the enablers and requirements?
- How can EE institutions support and organize efforts of embedding the SDGs in EE programs? What are the enablers and requirements on an institutional level?

### **Workshop procedure**

The procedure detailed below will work well with both few or many participants. With more than four or five participants, we will conduct the body of activities in parallel groups, each with their own facilitator.

1. Facilitators welcome everyone to the workshop and introduce objectives and procedure. Duration: 5 minutes.
2. Workshop participants read two short examples of how SDGs are embedded in an EE program. One example focuses on embedding SDGs in individual EE programs while the other focuses on support and organization of institution-wide efforts of embedding SDGs in EE programs. Duration: 5 minutes.

3. Participants are asked to reflect on the two examples as well as their own experiences and practices. A few practices from participants are shared orally. Duration: 15-20 minutes.

4. From all included experiences and practices, participants are asked to identify (a) success criteria, (b) requirements, and (c) enablers of integration of SDGs in EE programs. Participants summarize their reflections in writing\*. Duration: 10-15 minutes.

5. Reflection notes are organized in subcategories by the facilitators. Duration: 10-15 minutes.

6. The facilitators summarize conclusions and learnings about best practices. Duration: 5-10 minutes.

\* Reflections are written down under the three headlines (a) success criteria, (b) requirements, (c) enablers, and (d) none of the above

### **The next step after the workshop**

The outcomes of the workshop can contribute to position papers and opinion pieces in engineering education journals and conferences. Some learnings may be particular to certain disciplines (e.g. software engineering or civil engineering only) while other learnings are transferable to all EE programs. The focus of the workshop is learnings that are transferable to wider groups of EE programs.