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The Global Goals for Sustainable Development in Engineering Education

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ABSTRACT

Keywords – SDGs, projects, role of engineering, purpose, motivation

History is full of examples of how engineers for good and bad have invented and implemented technologies, with consequence far beyond their imaginations. Think for instance on the development of the combustion engine which enabled a revolution in transport and individual mobility but at the same time contributed to CO₂ emissions and thus global warming. Or digital technologies that through the internet and social media have created platforms for information sharing and identity building in a globalized world but at same time creates more polarized and post factual societies.

A recent study by across 11 countries conducted among 10,341 respondents finds that engineering indeed played a vital role in creating our past and will continue to play a critical role in shaping our future. While this finding mirrors the common understanding of engineering, the study points to a need to change the role of engineering from “inspire new innovations” to “solving the world’s problems”. (QEPrize 2015)

United Nations recently conceptualized crucial world’s problems in the form of Sustainable Development Goals (SDGs) as illustrated in the following figure. The SDGs are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. (United Nations 2015). Today the goals are adopted by all 193 UN member states and explicitly addressed by more than 9,000 companies in 170 countries representing nearly every sector and size (Global Compact 2017). Despite its current widespread diffusion, continues support for the SDGs through science and education is of outmost importance in the actual realization of the goals by 2030 (UN-SG-SAB 2014).



This workshop targets the role of engineers as persons who solve societal challenges. It will facilitate a discussion and will share some approaches to address the following question: “*How could we embed SDGs in engineering education?*”

We do this through a workshop facilitated as a knowledge café where the participants collectively explore how could we embed SDGs in engineering education, through several educational practices across the learning journey of engineers. A ‘Knowledge Café’ “aims to provide an open and creative conversation on a topic of mutual interest to surface their collective knowledge, share ideas and insights, and gain a deeper understanding of the subject and the issues involved.” (Wikipedia). Participants of a ‘Knowledge Café’ rotate in small groups across different ‘stations’, in each station the group will discuss a different aspect of the problem, in our case, how to embed SDGs in engineering education. Specifically we will explore practices to connect the SDGs to core educational activities: courses, extra curriculum projects, individual major pieces of work like master and bachelor thesis, the overall learning environment of the university. Following the collective discussion and wrap of the workshop, the authors present their experiences working with SDGs in teaching project management to engineering students.

Our findings from educating more than 500+ students is that the SDGs represent an outstanding tool to convey the importance of engineering and to create a sense of purpose that represent a key driver for motivation. It further it enables collaboration between various disciplines and stimulates personal reflections on “what legacy do I want to leave?” and “what projects should I engage in?”

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