Special Issue: IEES Conference “Closed Cycles and the Circular Society – The Power of Ecological Engineering”

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From a civilizational perspective, resources are anything taken from the environment to satisfy human needs and desires. The precise meaning of this is constantly changing and expanding with technological development. Whilst water, soil, wood, or salt have been important resources for millennia, rare earths or lithium only became relevant since the onset of computers. Because of over-use, many resources, renewable and non-renewable, are becoming scarce: fossil fuels, water and nutrients such as phosphorus for example. At the same time, climate change is posing more challenges in all aspects of society.

Nature’s “strategy” for dealing with scarcity is reuse. Natural primeval forests are closed-loop systems in which almost all nutrients are recycled. The lush vegetation of these forests often flourishes on thin layer of humus that covers 30 m of almost nutrient-free soil. Compared to primeval forests, our society has an unsustainable flow-through system of resource use, and functions in “pioneer mode”. We take (or better: rob) from nature whatever we find around us. When resources in one location are exhausted, we move to another. Some of us want to go all the way to Mars. Exploiting resources is considered positive for the economy – a fatal attitude.

The vision of the International Ecological Engineering Society (IEES) is: sustainable solutions for today’s problems must be circular—modelled after and inspired by a deep understanding of natural material cycles, ecological functions, and principles. Designing such systems requires a broad, integrative way of thinking. Close cooperation between architects, planners, scientists, and engineers is needed. We must learn how to use existing resources frugally and how to transition to a new, co-habitation mode with nature. Ecological literacy and systems literacy are key competences in this process. But how do we bring it all together?

The Symposium 2020 “Closed Cycles and the Circular Society” (September 2–4, 2020) took place in Waedenswil, Switzerland. Its aim was to seek synergies, promote integrative, holistic thinking, address a broad, international audience of experts, and make “The Power of Ecological Engineering” tangible. Due to the Coronavirus pandemic, it took place online; 130 participants from 24 countries and almost all time zones participated. They found a rich and diverse program, with 6 keynotes, 4 panel discussions, 33 presentations and 27 tasks/case studies. Participants had ample space for discussion and exchange. The main organizers were the Zurich University of Applied Science ZHAW and IEES,

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The contents revolved around material cycles, circular and nature-based solutions and their implementation at different levels and scales. The present special issue with 13 contributions as well as two earlier concept papers on “Redefining Ecological Engineering” [1] and on “Ecological Engineering Education” [2] reflect the diversity in this field.

The most exciting result of the symposium for us organizers was the excellent quality of the content and the exchanges between participants. We don’t think this was only due to the quality of the auditorium, but also due to a social phenomenon. Presenters and participants were thirsty for input, after several months of the pandemic. All had to take part from their homes. Thus, cabinets, bookshelves, and plants piled up in the background.

The threshold for asking questions was lower than usual at symposia. The possibility of being able to watch the lectures again afterwards as a video was also appreciated.

We were able to show to an interested audience that online symposia can work very well. The “Family of Ecological Engineers” emerged strengthened and inspired from this experience.

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Co-presidents of the International Ecological Engineering Society - IEES

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