

SUSTAINABILITY AND COMFORT

THE RE-ACTIVATION OF THE WORKING GROUP

AND NEXT ACTIONS

After one and half year of inactivity, the Working Group "Sustainability and Comfort" organized a web meeting in July 2020 with the aim to activate the debate between the TensiNet members on the sustainability and the life cycle approach of lightweight membrane architectures, on the possible comfort improvements. Potential topics and working areas have been proposed as a starting point for the discussion:

1. Life Cycle Design

- LCA-data (catching up from the beginning of the WG in 2012);
- Tools to be used in order to design and evaluate aspects of sustainability and efficiency for and during the design of membrane structures;
- Focus on end-of-life-scenarios, especially on re-use, re-manufacturing and recycling.

2. Comfort

- Outdoor comfort, status quo and future research demand;
- Looking into insulated membrane structures (including acoustic properties);
- Challenges for heat protection due to climate change: strategies for membrane materials and structures.

3. Material innovation and eco-efficiency

- Low-tech approaches for membrane structures to broaden application potential;
- Leaving fossil-based raw materials, towards bio-based membrane materials.

The first meeting has revealed really promising thanks to the huge participation and the collaborative intention of the old and many new WG members. The aim is to find concrete aspects to work on, sharing the intentions of industries, companies, designers and academics. The WG participants cover all the needed knowledge sectors, both the sustainability and eco-efficiency, both the outdoor and indoor comfort (thermal, acoustic, day lighting, etc.).

During the discussion some inputs raised up. The idea to organize all mentioned points in a mindmap has been a proposal; it means to try to cluster the individual statements and ideas.

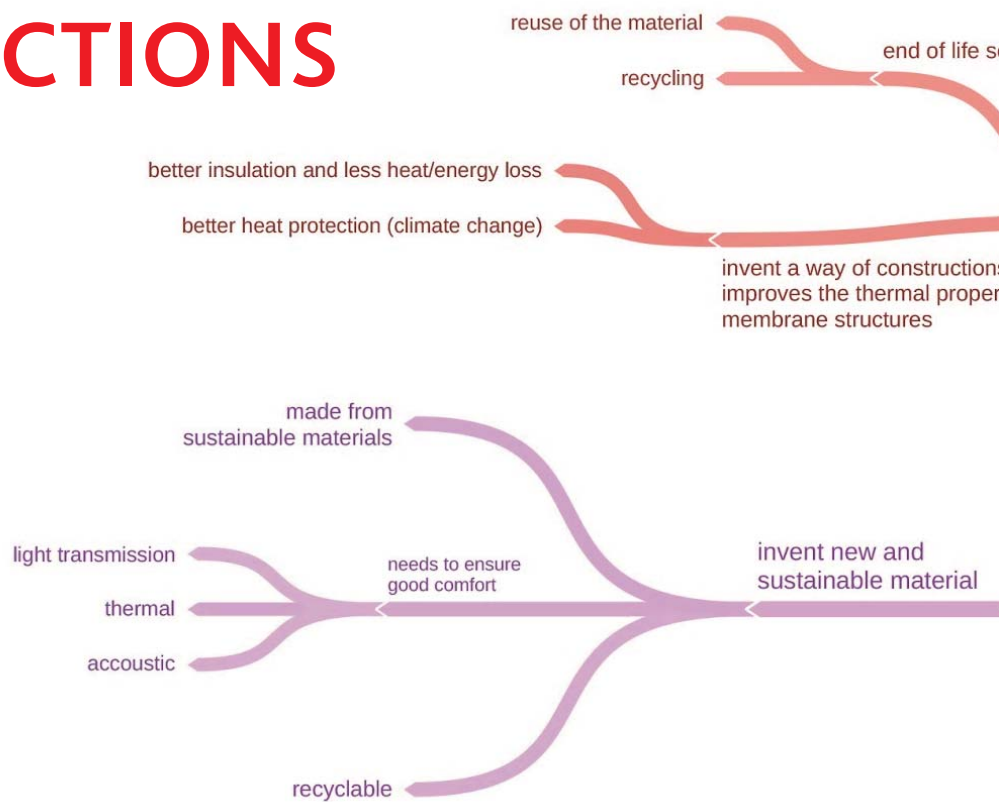


Figure 1: The mindmap of the topic related with the sustainability of Membrane Architecture (@ Lea Bath - Low and Bonar)

By this approach it will become more clear, for the next meetings, in which areas we as a TensiNet working group can take actions (Fig. 1). In particular the clusters "Provide information on sustainability of tensile architecture" and "Changing the frame conditions or regulations" will be topics to focus on.

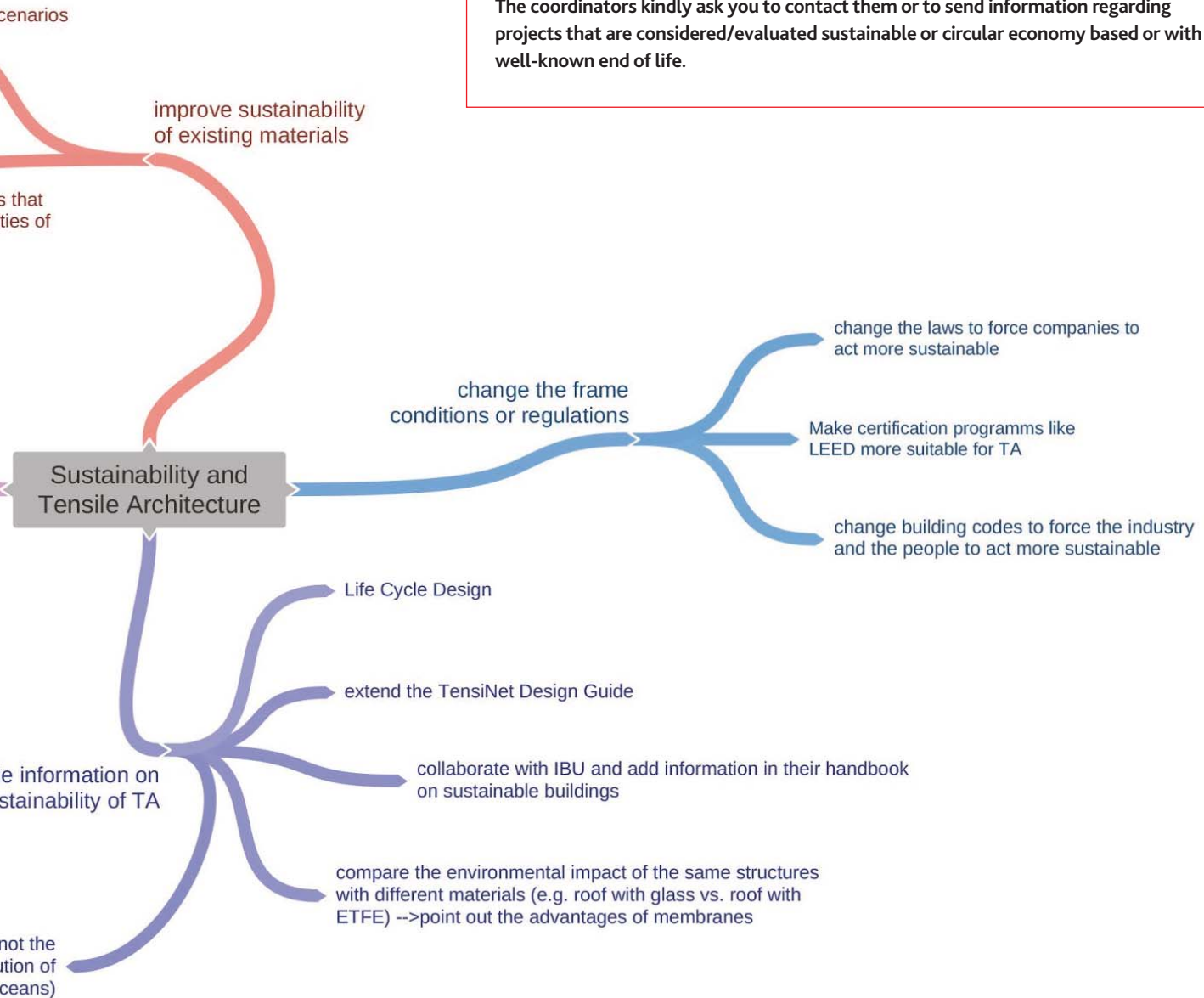
The other two clusters, defined during the web meeting, "Improve sustainability of existing materials" and "Invent new and sustainable materials" are really important, although less suitable to work on directly in

the TensiNet parterre: they need further actions and TensiNet could define some guidelines for industries and companies, and individual members (e.g. material manufacturers, universities or research Institutes) have to search on. For the two first topics probably the TensiNet working group could analyse the need for more sustainable products and the corresponding expectations (e.g. prices, service life) from the market and address this to the industry. Or we could discuss about topics for research to focus on re-use, re-manufacturing, recycling, new materials etc.

CALL FOR ALL THE TENSINET MEMBERS

A first concrete action, focused to the end of life scenarios of membrane architecture, is proposed to all the TensiNet members, the request is to collaborate to complete the TensiNet Database, adding the date of dismantling/replacement of the membrane and information on the end of life of the dismantled textiles/foils (to the disposal in a landfill, re-used, re-manufactured, recycled,...), considering the project's specifications (context lifespan, material, possibility to reuse or recycle).

The coordinators kindly ask you to contact them or to send information regarding projects that are considered/evaluated sustainable or circular economy based or with a well-known end of life.



The mindmap in the figure 1, edited and elaborated after the meeting by Lea Bath - Low and Bonar, who we thank, aims to be completed and refined by adding more details and especially grading the priorities of TensiNet actions, finding out much more ideas and concrete actions, drawing connections between topics and finding parallels. The starting point to organize the discussion of the second meeting in September.

An additional aim of the TensiNet WG S&C for the future is also to provide a living list of all available certifications, e.g. showing the materials for which there is an EPD, listing

effective ways of recycling, etc. to support the industries and companies and going as well towards legislative actions.

Other proposals dealt with finding partners within this TensiNet group, aiming to apply for a common research project in this field. It will be discussed in the next meeting.

The WG is defining the next web meeting on the second half of September 2020, if you are interested to take part, do not hesitate to contact carol.monticelli@polimi.it and jan.cremers@hft-stuttgart.de.

Last but not the least, for the next conference MEMBRANES 2021 (13-15 September, Munich, <https://congress.cimne.com/membranes2021>) an Invited Session on the topic "The end-of-life scenarios of tensile surface structures - circular use?" will be co-organized by Carol Monticelli and Marijke Mollaert. We kindly ask you to contribute!

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