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Exploring applications of GMB to support decarbonising the transport sector

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Extended Abstract— Global greenhouse gas (GHG) emissions continue to rise rapidly despite the urgency and the high-level commitment to address climate change. The stagnation is highly apparent in the transport sector, in which more than 95% of the energy consumed by the sector is from fossil fuels. Past studies have elucidated how interactive simulation and participatory approach can be effective in engaging communities and inspiring climate actions. We set up three workshops to explore how Group Model Building (GMB) can support the decarbonisation of the transport sector. We compared how the provision of a preliminary Causal Loop Diagram (CLD) and a computerised collaborative tool (IC-T) affected the group work and assessed the effects of the GMB using CCIC (communication quality, consensus forming, insights, and commitment) questionnaire.

In this study, we explored in an experimental setting how the GMB technique can contribute to the kind of shared understanding and enhanced cooperation needed to motivate transformative change toward the decarbonisation of transport in the future. Additionally, we aimed to identify possible improvements to the GMB process. To this end, we used three workshops to test different GMB configurations in preparation for sessions with real-life stakeholders. These configurations addressed the following questions; 1) how providing a preliminary CLD may affect a group's performance and 2) how a collaborative tool that enables participants to brainstorm and cluster ideas together interactively can enhance the GMB process.

The collaborative tool or IC-T (Interactive Communication Tool) is a Linux-based application, developed by Dylan De la Porte of GTL. It enables participants to input their ideas into the shared working space visible to the group members in a post-in manner. The inputs can be made via several keyboards and mice. IC-T also allows ideas to be clustered and linked straightaway. The tool is thought to enhance efficiency and effectiveness in the entity elicitation and clustering processes.

The results indicate that GMB is a useful tool to support the decarbonisation of the transport sector. It supported group communication and enhanced the levels of consensus and commitment toward the outcomes of our workshops. We found that the collaborative tool in IC-T improved the GMB process and, contrary to previous experience, the results showed that providing a preliminary CLD to the participants might lower the benefit of GMB. The exercises also highlighted possible improvements to the process that should be considered in real-life implementation. In this paper, we reflect on the application of the GMB, the setups of these pilot workshops and discuss the outcomes and future works.

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