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Creating a strategy portfolio for climate change mitigation – A study of behavioral effects

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Abstract:. This talk discusses ambiquity in a participatory decision making process where the ambiquity originates from differences in the decision making behaviour and possible cognitive biases of the participants . In environmental management problems we often need to find a set of actions, i.e. a portfolio, in order to meet the diverse goals of the stakeholders in an acceptable way. Without modelling support It can be very challenging to understand how different actions can complement each other. Yet in practice, it is common that the portfolios are generated in a step-by-step manner without using modeling support. Such processes can easily lead to ambiquity in the form of suboptimal results and path dependence. The outcome of the process can depend on the order in which different actions are considered and added into the portfolio. The drivers of this phenomenon can be, e.g. biases and cognitive limitations. Behavioral research on environmental portfolio problems is very limited but important as there can be unanticipated risks related to the systemic nature of the problems. We report results from an experiment using an interactive decision tool in the generation of a portfolio of measures related to climate change mitigation. The case is based on the Climate wedges game originally developed in the Princeton University . In our experiment, the subjects follow two procedures in creating their preferred portfolio of emission reduction strategies. In one procedure, the subjects initially have an empty basket and they need to add strategies into it. In another procedure, the subjects initially have all candidate strategies in their basket and they need to remove strategies from it. We analyze the subjects' behaviour along the two procedures followed and the resulting ambiquity in the outcomes .

Keywords*: Behavioural effects; ambiquity in decision making; portfolio modelling; climate mitigation*