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Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

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When deciding amongst a suite of various climate change adaptation options, decision makers have to balance uncertainties in potential physical impacts, economic judgements, and political priorities. The impact assessment identifies areas of concern and quantifies potential damages from extreme events. From here, a decision support matrix is developed to clarify the decision making process, highlight key uncertainties, and identify critical assumptions. A decision support matrix also allows decision makers to examine how different a priori stakeholder values can impact the adaptation decision. The decision support matrix is built up by adding more complexity through multiple adaptation options, multiple risks, and multiple impact variables. The goal is to show where complexities enter into the decision tool, and then present ideas on how best to address these complexities under the context of adaptation planning. This process is highlighted using an example of increased flood risk from extreme flooding events in the city of Aarhus.