



## Addressing CC Uncertainties in Project EIA

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**Abstract:** Climate variables – precipitation, wind, and temperature – often have important implications for the design of many types of projects, and these need to be explicitly addressed in their environmental impact assessments. However, there are significant uncertainties about the degree of future climate change and how it will manifest itself in terms of local conditions that can affect these projects. This presentation is based on two research projects for addressing this issue. First, it discusses the use of analytical approaches – scenario analysis, sensitivity analysis, and probabilistic analysis – for understanding the implications of the uncertainties about these climate change impacts. These methods can provide valuable information about potential impacts under various future climate change assumptions.

There are often many possible ways to adapt to these impacts. However, since there are many possible future climate change scenarios, practitioners are faced with many sets of uncertain estimates of potential future impacts. In addition, we have no empirical data on the likelihood of these futures. The issue then is how to make decisions about the type and level of adaptation to climate change given the significant uncertainties. There are various alternative criteria and approaches available for decision-making under uncertainties, including well-established criteria, such as minimizing the maximum regret. These allow for the incorporation, into the decision-making, both attitudes toward taking risks (i.e. degree of risk avoidance) and possible assumptions about the likelihood of future events. In addition, the use of real options, in which flexibility to adjust to changing circumstances is built into the design, is a very promising approach to responding to uncertainties about climate change, and can be evaluated against other methods of adaptation. The use of explicit and clear approach for decision-making under uncertainties provides both rigor and transparency to the decision-making process.

**Summary:** This presentation will discuss the methodology needed to understand the implications of uncertainties concerning the degree of future climate change on project design. It then analyzes the various criteria and approaches used to decide how and to what degree the project should be planned, when adapting to uncertain climate change.