

Risk Assessment Methodologies and Adaptation Planning

Risk Assessment Methodologies

Before developing a climate change adaptation strategy or plan, it is first necessary to carry out a climate change risk assessment to determine what assets are vulnerable to climate change. This is an analysis of impacts and probabilities, to determine “what can happen?”, “how likely is an impact?” and “what are the consequences?”

To carry out a risk assessment, it is important to identify the scope. Risk assessments can be at any level - including the State level, organizational level, or asset level, depending on what is needed. Coordination and communication with the appropriate entities is important

To carry out a climate change risk assessment, an organisation can either choose to use its existing risk assessment methodology, use a climate change risk assessment methodology or tool developed by another organisation, or develop its own climate change risk assessment. There are several climate adaptation risk assessment methodologies available, but at a high level they follow the same three generic steps:

1) Find out how the climate will change.

- Define potential climate change variables and projections, and set baseline conditions (e.g., current stressors) before modelling or acquiring robust data on projected climate impacts.
- Decide which climate variables to assess. For example, sea level rise, changing precipitation, changing average or extreme temperatures.

2) Risk Identification

- Analyse how the climate changes identified can affect the organisation by assessing the potential effects, and how likely they are to occur.
- Identify and prioritise risks: evaluate the likelihood of occurrence, likelihood of consequences, severity of consequences and then establish a risk priority based on likelihood and severity. Additionally, the likelihood of a risk recurring during the lifetime of a particular asset should be considered.
 - *Note:* Identification and prioritization of risks should be done for short-, medium- and long-term timescales.
- Develop metrics to evaluate the magnitude of consequences. These may include capital and operating costs, as well as effects on society, health, economics, and the environment.
- Take into account risk control measures an organisation already has in place along with any uncertainties such as level of confidence with the projections, limited data or factors such as the lifetime of the infrastructure.
- It may be beneficial to include key stakeholders in the risk assessment and planning process

3) Review and repeat the assessment periodically

- Monitor risks regularly: review and revise the assessment as new information becomes available. This will enable the monitoring of progress of actual events versus predictions, and allow a periodic re-evaluation of climate change risks.

Adaptation Planning

After completing a climate change risk assessment and identifying risks that need to be addressed, the next stage is usually to develop a climate change strategy or plan, or combination thereof. This may include incorporating climate risk considerations into planning and organisational decision-making so as to better define the problem from a corporate or enterprise perspective.

Specific measures for adaptation planning may include considering climate projections when carrying out maintenance or development for other reasons. Adaptation planning can include specific strategies to build resilience against projected climate change impacts (e.g., including sea level rise as a factor in design for new infrastructure), training and building awareness on the impacts of climate change, and identifying financing strategies that may be required for resilience.

Sources and Additional Information:

2018 ICAO CAEP WG2 Task O7.0 Climate Adaptation Synthesis Analysis