

Impacts of Climate Change on Urban Infrastructure & the Built Environment



A Toolbox

Tool 2.5.4: Water Supply and Demand Tools – Linkages to Risk Assessment, Adaptation Options and Decision Tools

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1. Introduction

The Tools in Bin 2.5 of this Toolbox provide general information and issues, and two worked examples that can be used to better understand the potential impact of climate change on potable water supply and demand. These tools should be used together with an appreciation and understanding that urban water supply and demand is also significantly impacted by population growth and urbanization. A critical question is what to do with this information?

Assessments of the potential impacts on infrastructure performance and capacity, such as the examples described in [Tool 2.5.2] and [Tool 2.5.3] can be used as input into a risk assessment. Following on from a risk assessment, work can be done on assessing adaptation options to reduce the risk. This assessment should, if possible, include some form of cost-benefit analysis. The Tools highlighted in the next section demonstrate some of these risk assessment, adaptation options and cost-benefit methodologies.

2. Linkages to Other Assessment Tools

Table 2.1 outlines the Tools in this Toolbox that can be used to build on an assessment of impacts on potable water supply and demand under climate change. In particular, the Tools shown here demonstrate various approaches to risk assessment, identifying adaptation options, and analysing costs and benefits. It is recognised that other approaches are available which can be used to perform functions similar to those described here.

Table 2.1: Linkage Tools associated with risk assessment, adaptation options and cost-benefit

Tool Name	Tool Reference	Purpose of the Tool
Climate change risk assessment good practice	[Tool 3.1]	Provides guidance on quantifying climate change risks, the treatment of uncertainty and how to make judgements about the tolerability of risk, to support decisions about the levels of protection that would be considered sufficient and appropriate.
Subjective quantified risk assessment tool	[Tool 3.5]	Provides order-of-magnitude estimates of the consequences and risks of defined events which may be used in preliminary evaluations of high-level strategic options for adapting to climate change, amongst other things.
Overview of an option screening tool	[Tool 4.2]	The Options Screening Tool is specifically designed to assist in the identification of plausible risk reduction measures, and the short-listing of these prior to a more formal assessment of options. Options can also be screened against sustainability and other guiding principles when faced with an uncertain future.
Rapid cost/benefit evaluation of impacts and adaptation options	[Tool 4.3]	The rCBE tool is specifically designed to allow prioritisation of actions to prevent or reduce the impact of a hazard (in this case, flooding) based on the level of risk these types of event present, taking account of climate change.
Policy-based (top down) decision making	[Tool 4.6]	Often resource consents are sought in areas prone to flooding. The Top-down Decision Tool will need to be applied in such circumstances. If there are many applications, leading to concern about cumulative effects, or adequacy of plan policy or other provisions, this may also lead to application of the Policy and Plan Audit Tool [Tool 1.5]