



# UKCIP Adaptation Wizard

Extract from Climate adaptation: Risk, uncertainty & decision-making

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## 2. Decision-making with climate change uncertainty

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### 2.3 Climate sensitive decisions and maladaptation

#### 2.3.1 Types of adaptation decision

Experts such as the scientists on the Intergovernmental Panel on Climate Change recognise that climate change represents a significant risk to many activities, and emphasise the need to make decisions that will reduce any associated negative impacts.

So the task of policy-makers, planners and other decision-makers is to recognise those activities and decisions at risk from a changing climate, and to modify their decision making accordingly. In order to do so, they must (i) form a judgement as to those activities and decisions that are sensitive to climate variability and climate change, and (ii) determine the circumstances where climate will be the dominant or one of the more significant sources of risk determining a successful outcome. This judgement will be reached with reference to objectives and criteria established by or known to the decision-maker.

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[www.ukcip.org.uk/wordpress/wp-content/PDFs/Risk.pdf](http://www.ukcip.org.uk/wordpress/wp-content/PDFs/Risk.pdf)

In this report we distinguish three types of climate-sensitive decision:

- Climate adaptation decisions;
- Climate-influenced adaptation decisions; and
- Climate adaptation constraining decisions.

Climate-sensitive decisions are distinguished from decisions for which climate is not a material factor (climate independent decisions, see Figure 2.1).

Many climate sensitive decisions are directly driven by the need to reduce or otherwise manage known or anticipated climate risks. Climate and climate change are often an acknowledged part of the decision-maker's initial problem. We call these **climate adaptation decisions** (see Figure 2.1). Such decisions are particularly needed in areas where climate variability and climate extremes have historically been the subject of management. In essence, we know (from past experience) that activities in these areas, and associated decisions, are sensitive to climate variability. Therefore there is greater certainty that, dependent on the extent of future climate change, additional benefits or disbenefits will be a consequence. Examples include fluvial and coastal flood defence, extreme weather-related insurance, and the management of seasonal variability in water supply. Climate adaptation decisions will also be needed to reduce impacts consequent upon changes in average climate (e.g. average seasonal temperature, or yearly total rainfall). For example, the future choice of which crop to grow will largely be determined by the expectation that the climate will, on average, produce a satisfactory crop. However, the probability of success of any particular harvest will largely be determined by climate variability.

There are, however, many decisions which are not primarily about managing present climate variability or directly driven by a recognised need to adapt to future climate change, but whose outcomes may nevertheless be affected by climate change. In such cases decision-makers may not recognise that climate change forms a part of the decision problem. For example, climate may represent only one of many factors of varying importance in determining the outcome of the decision. Alternatively, an outcome may only be indirectly affected by variations in climate. In some cases the outcome of the decision may be affected by adaptation choices made by other decision-makers. We call these climate-influenced decisions. **Climate-influenced decisions** may or may not require adaptation, depending on the significance of the climate influence.

An example of an area of climate-influenced decision-making is the management of future water demand (Environment Agency, 2001a). Changing patterns of climate are likely to influence the demand for water by agriculture, heavy industry and private citizens. However, the demand for water by these groups will also be determined by changes in technology, changes in demand for particular products and services, and changing attitudes to water use. None of these aspects of water demand can be described with certainty, but they all pose risks to the effective management of the balance between water supply and demand. It is likely that many business and investment decisions will also be climate-influenced decisions, especially those related to infrastructure development and other long-term investments.

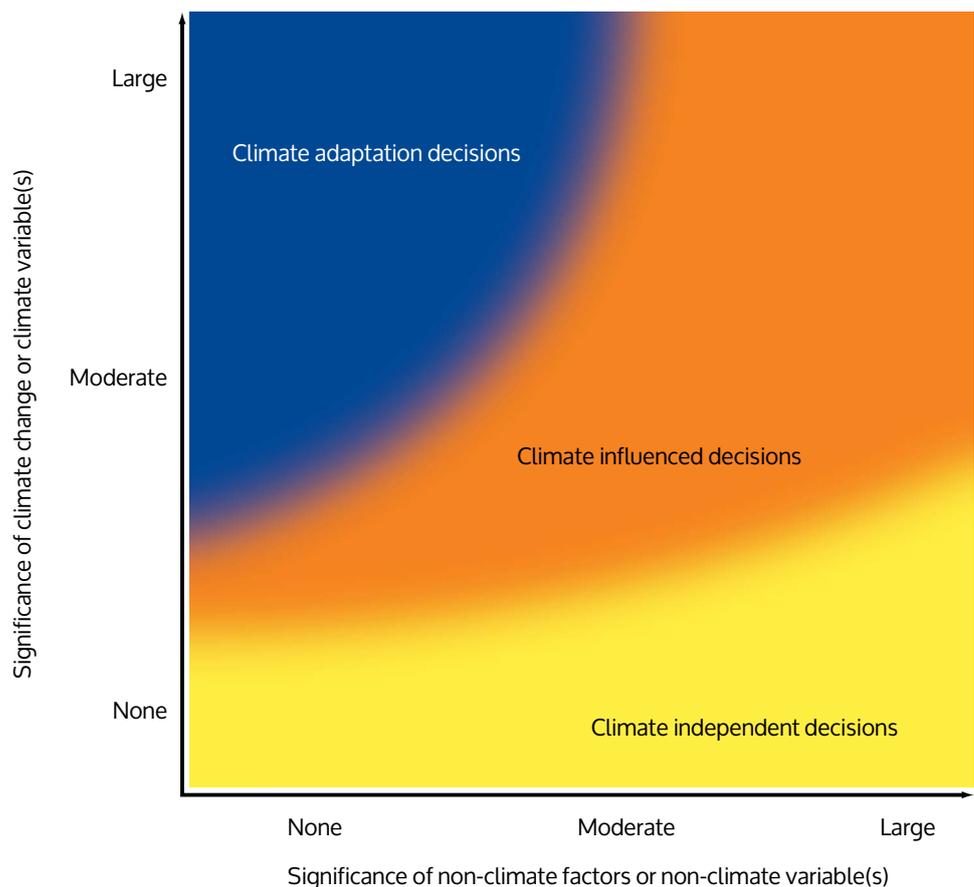
There is not a clear distinction between climate adaptation and climate-influenced decisions. For climate adaptation decisions, climate change is likely to be one of a small number of important factors in determining the appropriate decisions. For climate-influenced decisions, climate change will represent one of a larger number of factors of varying importance, and varying degrees of uncertainty.

A third type of decision we term climate adaptation constraining. **Climate adaptation constraining** decisions lead to actions that limit or constrain the ability of other decision-makers

to manage, reduce or otherwise adapt to the consequences of climate change. Such outcomes are called climate maladaptations (IPCC, 2001b). Climate adaptation constraining decisions may be implemented in order to achieve perfectly proper and well-intentioned objectives. However, they have negative consequences for others in terms of the future level of climate risk and its effective management.

In order to avoid climate adaptation constraining decisions, decision-makers need to consider the impact that their decisions may have on the ability of their successors, or the ability of other decision-makers with other areas of responsibility, to adapt to future climate change. Hence, climate adaptation constraining decisions include the consequences of decisions taken today that restrict the freedom of future decision-makers to manage future climate risks. Climate adaptation constraining decisions can be characterised as examples of unsustainable development or a lack of 'joined-up governance'.

The risk associated with adaptation constraining decisions emphasises the need for decision-makers to review the basis by which others make decisions, and understand the consequences of those decisions for their own ability, within their area of responsibility, to adapt to climate change. The avoidance of maladaptation resulting from adaptation-constraining decisions can be made an objective of a precautionary decision-making policy or process (see Section 2.5.2).



**Figure 2.1: The relationship between the significant climate and non-climate risk factors, and the definition of climate adaptation and climate-influenced decision types. The boundaries are not precisely defined. Many decisions are not and will not be influenced by climate (climate independent decisions).**

Examples of adaptation constraining decisions include the construction of long-lived assets, such as housing developments, in areas vulnerable to increased risk of fluvial and coastal flooding (IPCC, 2001b). Such developments can reduce the options available to flood risk managers to implement flood protection measures within a flood risk area both now and in the future, perhaps when the climatic hazard has become greater and more certain. They may also require specific present and future flood protection measures as a consequence of their location, thereby reducing resources available for existing developments in need of flood mitigation measures. The UK's planning policy guidance for construction and development in areas at risk of flooding is a practical example of a **precautionary approach** aimed at avoiding maladaptation (DTLR, 2001b).

## References

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DTLR, 2001b. Development and flood risk. Planning and policy guidance note 25. HM Stationery Office, London.

Environment Agency, 2001a. Water resources for the future: A strategy for England and Wales. Environment Agency, Bristol, UK.

IPCC, 2001b. Climate change 2001: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change. McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J. & White, K.S. (Eds). Cambridge, UK.