



## UK Climate Projections: Why Users Don't Always 'Need' What They 'Want'

Climate scenarios, based on computer model simulations, allow us to visualise how the earth's climate may change under different social and economic futures.

Government agencies, businesses and the third sector put these to use in designing, planning and implementing strategies to lessen exposure to climate risks and exploit opportunities. Getting decisions right relies on a robust evidence base. Such efforts can be weakened due to inherent uncertainties in building climate scenarios, however. Growing demands from users to make uncertainty explicit, supported by advances in climate science, have led to a move away from single projections to embrace more probabilistic ones.

ICAD research suggests that greater complexity favours some adaptors over others. Those without technical degrees, or the time to interrogate multiple options, are often left disadvantaged. Different users have different needs. What users want and what they actually need (or can do) are not always the same. Tailoring climate scenarios to fit user needs can make them more effective, inclusive, and better value-for-money. Beyond climate change, this Policy and Practice Note has relevance to many kinds of problems where future scenarios are used to make policy or management decisions.

### 1. Why do we use climate scenarios?

Climate projections can **support decision-making** in water, energy, healthcare, agriculture, transport, construction, environment and finance sectors, for many reasons:

**Motivations.** Visualising futures helps communicate the urgency of action. Due to the high likelihood that human activities have changed the earth's climate; the significant impact this will have on society and the natural environment; and inertia in the climate system, from greenhouse gas emissions, we are committed to future changes that **cannot be avoided**.

**Identify risks and rewards.** Extremes events like heatwaves, or floods, have to be managed through **interventions** that are proportionate, cost effective and timely. Climate projections can examine a range of outcomes so that decision makers minimise risks & maximise opportunities.

**Prioritise limited resources.** Whether that be finding the best way to protect flood-vulnerable communities or private investment to cope with changing energy demands. Testing out different strategies, before weighing up their **costs** and **benefits**, is made possible through the use of climate projections.

### 2. How can climate scenarios become problematic?

**Framing uncertainty** in climate projections is tricky. Probabilistic projections, as used in UKCP09, make some uncertainties explicit but multiple probabilities can also make them too complex to use. Uptake (or lack thereof) of climate scenarios, and the effect that has on decision-making, can cause problems:

Those without technical backgrounds, or working in sectors where the level of technical information needed is lower, can be **excluded** from using climate projections altogether.

Unable to examine the data in any depth, users turn to heavily digested summaries or punt for the **convenience** of consultants, all of which limit the wider communication of uncertainty to those who already in the know.

Lacking viable alternatives, users have little choice but to accept these scenarios. Rather than encourage decision-makers to take more **responsibility** for handling uncertainty they can have the reverse effect.

Conditioned to think through only a small number of options, multiple compelling climate projections can encounter resistance from decision-makers due to the **extra time, effort** and **paperwork** needed to justify spending.

Confusion over what users **want** and what they actually **need (or can do)** has made matters worse. Not only do different users have different needs but they also have different capacities to respond, or adapt, to technical advances. People unable to (fully) use such technical tools can be

further disadvantaged as inequalities develop between those in the know who can take steps to be more resilient and those less able who become more vulnerable.

### 3. Can climate projections and user perspectives be reconciled?

Government funding, and a desire to deliver the **'best' science**, instil trust in the climate projections but an inability to interrogate probabilistic projections can **reduce** their utility. If probabilistic projections are here to stay, they need to move away from a **'one-size-fits-all'** approach to embrace a more **'tailored'** one.

Users, from all walks of life, will need to be **engaged** during the **design** and **modelling process** to help frame how the climate projections can be used. Need to go beyond simply asking: what do users **want**, to find a new way to discover exactly what they **need (or can do)**.

## How can policymakers help households adapt to a changing climate?

- If people are to accept and widely use climate projections, they need to be involved early on and throughout the modelling process.
- Appreciate that the 'best' possible science is not always the most user-friendly. Distinguishing between what people say they 'want' and what they actually 'need' (or can do) is essential to ensuring these tools are suitable, effective, and value-for-money.
- Offering training, although helpful, favours those (in bigger organisations) with time to invest. Wherever possible, climate projections should be 'tailored' to reflect the differing technical backgrounds and information requirements of individual users.



**Further info:** Project ICAD, Informing Climate Adaptation Decisions, is a

European Research Council funded programme, which explores the different needs and experiences of those involved in producing and using climate information for UK adaptation decision-making. <http://www.icad.leeds.ac.uk/>

#### Open Access Article:

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