



IMPROVING THE APPLICATION AND USE OF CLIMATE INFORMATION

THREE LESSONS FROM BEHAVIORAL PSYCHOLOGY

Every day, policy makers and managers face the challenge of making decisions in the context of uncertain information. Decision makers consider probabilities and alternative scenarios when deciding to build new infrastructure, managing energy supplies, and investing in new technologies and markets. Information derived from climate science adds another element of complexity and uncertainty to the decision-making process, and its use presents an unresolved challenge. A further challenge for climate information is that it is often presented in a technical and scientific manner. While approaches are evolving to present this information so that it is easier for a nontechnical audience to understand and act upon, much work remains to improve the uptake of climate information for effective decision making.



Source: Fintrac Inc.

This brief highlights findings from a study that investigated how people make decisions that include uncertain climate information and attempts to articulate their application in a rapidly changing policy context. By applying behavioral psychology principles, the study explored effective means to present uncertain climate information in a way that leads to better uptake and therefore better-informed decisions. Findings were collected via desktop analysis of available literature, a workshop, and online experimental surveys targeting policy makers and practitioners in the health and water sectors.

The three key lessons drawn from the study explain how people may make decisions when confronted with uncertain climate information. These are discussed below along with programmatic implications stemming from each key lesson.

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[INSIGHTS FOR ACTION]

Increasing the willingness of decision makers to take action on uncertain climate information may lie in changing the **way messages are framed**. For example, choosing to frame a climate change message as a loss versus a gain could determine whether an action is taken or not taken. The three key lessons that follow explain elements of and approaches to framing climate messages to improve their effectiveness.



DECISIONS ARE MADE ACCORDING TO DECISION MAKERS' CONTEXT AND EXPERIENCE, OFTEN FOLLOWING ESTABLISHED GUIDING PRINCIPLES, RULES, OR CONVENTIONS

Climate information needs to be crafted and tailored to appeal to the decision maker's sector-driven mental models which define how they approach and solve problems.

Climate information needs to be reframed so that it is tailored to the emotional experiences of the target audience.

[LESSON 1] DECISIONS ARE MADE ACCORDING TO DECISION MAKERS' CONTEXT AND EXPERIENCE, OFTEN FOLLOWING ESTABLISHED GUIDING PRINCIPLES, RULES, OR CONVENTIONS

In complex decision-making environments, people make decisions using **simple guiding principles, rules, or conventions**, rather than taking into consideration climate data. For instance, in the health field, a firmly established principle is “prevention is better than cure or treatment.” In this example, health sector policy makers explicitly recognize the uncertainty about some health data and its implications for effective treatment, opting to take actions that they hope will avert negative outcomes like higher infection rates from a specific disease.

Policy makers and practitioners across all disciplines use similar strategies, relying on their known, “tried-and-tested” strategies, often tied to their sectoral experience, to guide decision making, allowing them to make judgments quickly and efficiently. These “tried-and-tested” strategies may represent a form of status quo bias, the tendency of people to not deviate from the default option or reverse their earlier decisions.

With respect to decisions about climate action, these strategies appear to override climate data considerations when the two are in conflict. For example, decision makers in some technical areas, such as those involved in water management, prefer to defer their decisions rather than act on uncertain information. This “defer-until-later” approach is an example of a strategy that may be less effective when confronting and responding to climate change risks than approaches used in other sectors, such as health, where a working paradigm of “prevention is better than cure” often elicits actions even in the face of uncertainty.

People's decisions are guided by their own experiences and knowledge of the "real world" to explain and justify their decisions. For example, health specialists confronted with new climate information relevant to malaria prevalence and transmission may fall back on their familiar, past experiences, leading them to mentally retrieve examples of past malaria outbreaks, and thereby affecting their decision making regarding how climate projections will impact malaria transmission.

The explanation for this behavior is linked to the two processing systems used by the brain to guide decision making – **experiential and analytical**. Of the two, the experiential system dominates information consideration and decision making. Experiential processing is intuitive, automatic, emotional, and fast. Analytical processing is deliberate, effortful, rational, and slow. As such, climate information that is tailored to the emotional experiences of an audience is likely to have more impact than purely analytical information. However, climate change is studied in statistical terms – by analyzing long-term changes in temperature and precipitation patterns – so it is generally communicated in relatively abstract and analytical language, and therein lies the challenge.

Programming Implications

Given the status quo bias and tendency to rely on "tried-and-tested" strategies, ***climate information needs to be crafted and tailored to appeal to decision makers' sector-driven mental models, which define how they approach and solve problems.*** Understanding the status quo bias and existing principles for action by decision makers is a key first step to successfully encouraging the use of climate information in the decision-making process. For individuals in the health sector, framing actions that consider climate information as proactive measures to prevent medium- or long-term negative impacts can be effective by appealing to the preexisting rule of thumb that "prevention is better than cure."

A limitation exists where the status quo and context for decision making do not align well with the actions required to address climate change risks. For example, the reliance of practitioners and decision makers on the "prevention is better than cure" frame that emerged in both the health and WASH sectors could be interpreted as an example of status quo bias at work. Nevertheless, such a bias may not apply across all sectors, increasing the need for sustained transdisciplinary approaches to facilitate the integration of climate information into decision making (see Lesson 3).

Climate information needs to be reframed so that it is tailored to the emotional experiences of the target audience. One way to do so is by translating climate information into stories, images, scenarios, infographics and similar message formats. This makes the traditionally analytical information more intuitive, accessible, emotional, and faster to process, thus appealing to the human brain's experiential processing system in addition to the analytical processing system.

[LESSON 2] POTENTIAL NEGATIVE OUTCOMES AND IMPACT-BASED INFORMATION INFLUENCE DECISION MAKERS MORE THAN INFORMATION ABOUT CLIMATE UNCERTAINTY

Psychology studies show that an emphasis on **negative outcomes** influences decision making more than focusing on positive outcomes. Similarly, emphasizing **impacts** over changing climate variables or climate uncertainty is more effective to elicit a response.

In general, negative information is more likely to capture people's attention, receive more thorough and conscious processing, and contribute more strongly to forming impressions.

Regardless of whether an outcome is framed positively (i.e., focusing on the benefits of taking action on climate change) or negatively (i.e., focusing on the losses from not taking action on climate change), and of the actual climate probability provided, people will tend to focus on the potential negative outcomes of the scenario provided. This tendency to focus on negative information is closely linked to theories of loss aversion, which predict that losses motivate behaviors more than equal gains. Indeed, the analysis showed that respondents were more swayed by the possibility that a negative outcome **might** occur at all than by the frame in which the scenario was couched. As such, decisions may be influenced by the “negativity bias,” where an individual gives greater value to negative information than to positive information.

Negativity bias may also explain why a large emphasis is placed on changing *impacts* as opposed to changing *climate variables* (such as rainfall and temperature). This supports the argument that people are generally more responsive to changes in the parameter influenced by climate change such as rainfall or temperature over the change in climate itself. Understandably, people feel that impacts are more tangible, concrete, and measurable, while the change in climate itself can feel abstract. A concrete impact is easier for people to digest, process, and remember. This in turn makes the impact a more significant variable in decision making. Illustrating this point, the survey conducted for this study shows that regardless of a high or low chance that malaria prevalence might increase (as a result of an increase in temperature), and regardless of the “lives lost” or “lives saved” framing, respondents appeared to focus on the fact that malaria *could* increase, focusing on the negative impact itself.

Similarly, people tend to place little emphasis on the level of uncertainty in climate data, particularly when it is placed in the context of an impact message.



POTENTIAL NEGATIVE OUTCOMES AND IMPACT-BASED INFORMATION INFLUENCE DECISION MAKERS MORE THAN INFORMATION ABOUT CLIMATE UNCERTAINTY

Given the negativity bias and the value of emphasizing impacts, most effective messages for changing behavior should stress the negative consequences of the current behavior coupled with recommendations to avoid the negative consequences.

People’s preexisting beliefs, perceptions, and knowledge appear to play a greater role in influencing their decision making than do climate information or its inherent uncertainty. In fact, people tend to read or “use” climate probability information in ways that justify their desired course of action – rather than “objectively” evaluating this probability information. For example, survey respondents stated that they interpreted that even a low probability of 35 percent was a high probability of occurrence (e.g., a 35 percent probability that the summer season will be associated with extended and severe heat waves). This shows that while climate information should be recognized as an

important source of information in decision-making processes, it is not necessarily the dominant factor when policy makers make decisions related to climate change. In the survey, when a climate probability was introduced, respondents did not appear to notice it or to be influenced by whether it was objectively high or low. They rather “read” it in a way that was consistent with their chosen course of action.

Programming Implications

Given the negativity bias and the value of emphasizing impacts, most effective messages for changing behavior should stress the negative consequences of the current behavior coupled with recommendations to avoid the negative consequences. Policy makers will understand, remember, and subsequently integrate climate information into decision making when a clear link exists between the climate driver and its predicted impact, particularly when that impact is negative.

The power that presenting impact information has on decision making argues strongly for integrating and describing detailed impact information in any scenarios presented, regardless of the narrative and/or visual form used to present these scenarios (e.g., infographics). A well-articulated link between the climate driver and the impact is also required so that decision makers understand this causal relationship and can recommend appropriate actions. Ultimately, since the impacts are what drive decisions, use of supporting climate data should be limited.

Because findings show that people often take climate information into account when it allows them to justify decisions made on other grounds rather than to “objectively” use the climate data in decision making, integrating other meaningful factors for decision makers makes a difference more than the way climate information is presented.

[LESSON 3] GROUNDING MESSAGES IN THE PRESENT AND FOCUSING ON CONCRETE ACTIONS MAY INCREASE THE PROPENSITY FOR TAKING ACTION

Because climate change information in many cases is presented as a long-term and uncertain risk, as opposed to a present risk, action is influenced accordingly. Behavioral psychology describes this as **probability and delay discounting**. Essentially, this theory holds that individuals prefer a small reward sooner over a large reward later. Delay discounting refers to the decrease in the value of a loss the further that loss is in the future. As impacts become more distant, levels of concern decrease, influencing (e.g., reducing) the propensity to act. Since climate change tends to focus on the medium-term and distant future (e.g., 50 to 100 years in the future), many people view the issue as psychologically distant, which inhibits action. Translating this to climate change communications: uncertain and distant consequences are less relevant in influencing decisions than relatively certain and immediate consequences. Simply put, the decision to act is less urgent as the negative consequence of inaction becomes more remote.

Probability discounting refers to the decrease in the value of a loss (or reward) as it relates to its likelihood. This implies that people have a strong preference for certainty over uncertainty. They would rather get an assured, smaller win than take the chance to win more but also risk getting nothing. Given the uncertainty associated with climate information, this can explain why decision makers may be reluctant to implement adaptation measures where the costs exceed the benefits in the present (with the full benefits only accruing in the future, *if at all*).



GROUNDING MESSAGES IN THE PRESENT AND FOCUSING ON CONCRETE ACTIONS MAY INCREASE THE PROPENSITY FOR TAKING ACTION

Associate future consequences and rewards with issues that resonate on a personal level and make future challenges and decisions feel more real.

Translate climate information into stories, images, scenarios and infographics, using present tense and emotive language all can help bring the message closer to home.

Programming Implications

Communication of climate information poses a challenge because the timescales, magnitudes, and consequences associated with that information are uncertain. Probability and delay discounting explain how the uncertainty

and distant nature of climate change consequences can lead policy makers to place less weight on climate change adaptation efforts in their decision making.

Framing climate change in terms of societal risks or costs today could increase its relevance for practitioners or policy makers who must make decisions. One way to reduce the influence of delay discounting and motivate action is by associating future consequences and rewards with issues that resonate with decision makers on a personal level, such as guaranteeing a cleaner future for “our” children, describing issues (e.g., clean air) and people (e.g., children) that make the future challenges and decisions feel more real. **This approach of bringing things “closer to home” for people encourages action.**

Another way to encourage action is by using the **present tense** when framing an issue so that the challenges and impacts are grounded in the present rather than seen as future and distant possibilities. Particularly when a short-term risk is known, the near-term consequence should be emphasized over medium- or long-term threats, since this is proven to more effectively motivate action.

Building on Lessons 1 and 2, translating climate information into stories, images, scenarios, and infographics, and using present tense and emotive language can all help bring the message closer to home. Further, providing a tangible and constructive path forward ultimately helps decision makers feel a sense of efficacy, leading to greater support for action.

SUGGESTED ADDITIONAL READINGS

- [Hallegatte, S. \(2009\). Strategies to adapt to an uncertain climate change.](#)
- [Jones, C., Hine, D.W. and Marks, A.D. \(2017\). The future is now: reducing psychological distance to increase public engagement with climate change.](#)
- [Marx, S.M., Weber, E.U., Orlove, B.S., et al. \(2007\). Communication and mental processes: Experiential and analytic processing of uncertain climate information.](#)
- [Shome, D., and Marx, S. \(2009\). The psychology of climate change communication: a guide for scientists, journalists, educators, political aides, and the interested public.](#)
- [Spence, A., and Pidgeon, N. \(2010\). Framing and communicating climate change: The effects of distance and outcome frame manipulations.](#)
- [Spence, A., Poortinga, W., and Pidgeon, N.F. \(2012\). The psychological distance of climate change.](#)