European Commission

Science for Environment Policy

‘Cooling-off effect’ causes public perception of novel environmental technology to improve over time

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Researchers have published a paper providing evidence that a ‘cooling-off effect’ can lead to increased public acceptance of new environmental technologies over time. The scientists analysed survey results from over 1 000 respondents in Germany, using solar radiation management (SRM), a controversial climate-engineering technique, as a test case. They found that, following a cooling-off period of either one month, 12 months, or 18 months, acceptance of SRM increased significantly — and that the longer the cooling-off period, the larger the increase. These findings have far-reaching implications, both for the deployment of SRM and for climate policymakers seeking to more accurately measure the public acceptability of novel interventions.

The public perception of a new environmental technology plays an important role in the development of relevant policy. If a novel technique is not acceptable to the general public, it is unlikely to be widely deployed. Acceptance is often measured using one-shot public-perception surveys, in which respondents are asked to state their acceptance at a single point in time. However, there is evidence from fields outside environmental technology that public opposition is liable to change over time, often declining as negative emotions ‘cool off’. If the same can be said for environmental technologies, it is possible that one-shot surveys are over- or underestimating levels of acceptance, depending on when they are administered.

To investigate this, the scientists decided to use SRM as a test case. SRM seeks to counteract global warming by injecting sulphate aerosols into the stratosphere. Among scientists, the technique is controversial; while potentially highly effective at reducing global warming, it comes with unknown risks. Among the general public, knowledge of SRM remains relatively scant, and, when information is provided, available evidence indicates opposition is strong. However, in all the surveys conducted to date, respondents have been asked to state their acceptance level immediately after hearing about SRM for the first time. If evidence could be found that a cooling-off effect increases acceptance over time, it could have significant implications for this technology’s future deployment.

In order to better understand whether and how public perception of SRM is influenced over time, the scientists analysed panel survey data from over 1 000 respondents in Germany. After initially being provided with information about SRM in the form of a video, respondents were asked to fill in a survey gauging their response to, and acceptance of, the new technology. They were then asked to fill in the survey again after a cooling-off period of either one month, 12 months, or 18 months.

Overall, the results provide evidence for the existence of a cooling-off effect, with public acceptance of SRM being found to increase over time, with the increase becoming larger as the cooling-off period became longer. Among respondents with a one-month cooling-off period, 26% stated a higher level of support for SRM in the second survey. This rose to 38% among those with a 12-month cooling-off period, and 45% among those with an 18-month cooling-off period.

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Source: Braun, C., Rehdanz, K. and Schmidt, U. (2017). Exploring public perception of environmental technology over time. *Journal of Environmental Planning and Management*. DOI: 10.1080/09640568.2017.1291414.

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Notably, the researchers found that informing the general public about SRM for the first time led to strong emotions, and that changes in both negative and positive emotions over time led to increased levels of acceptance, with changes to the latter eliciting the greater effect. The scientists also identified several traits that appear to influence individual vulnerability to the cooling-off effect: groups associated with smaller changes in acceptance over time included people who scored higher for reflectivity and patience; men; and individuals with higher levels of education. The initial level of positive/negative emotions towards SRM also affected the rate of acceptance. In addition, the acceptance of more reflective respondents was less likely to increase than that of less reflective respondents.

These findings suggest that initial public opposition towards SRM — and, most likely, other novel environmental technologies — is not necessarily permanent. Moving forward, the researchers recommend garnering public perceptions over a longer time period in order to obtain a more accurate picture of acceptance, rather than relying solely on one-shot surveys. However, it is important to note that these findings may not be applicable to technologies for which public opposition has already stabilised. For example, it is unlikely that a cooling-off effect would still be shaping the public perception of genetic crop modification, since this technology is a long-standing subject of public discussion.