

What if we could design better technologies through dialogue?

While we often worry about the acceptance of technology in the face of real and potential public opposition, there are frequently gaps between how regulators, developers and experts conceptualise acceptance and opposition. Here, we examine some prominent conceptualisations and suggest that, rather than responding to public opposition with information campaigns designed to transform citizens into acceptors, strategies for managing public acceptability should include meaningful dialogues that aim to create better technologies, which are not only acceptable to citizens, but can even be actively supported by them.

Taking a simple market perspective, the acceptance of technologies can be measured in sales. Products that are not accepted will simply not survive, while others will have to be modified to react to changing market conditions. This process can be observed live in the mobile phone market, with brands and products entering and leaving the market, sometimes in surprising and dramatic ways.

Frequently, however, technology acceptance goes beyond individual consumer choices. Energy infrastructures, such as power stations or windfarms, can face opposition from citizens that object to the impact of a specific installation on the local environment, economy, sense of place and a wide range of other factors. Opposition may also be more global, on the basis of climate change impacts or even fundamental ethical objections to the use of a given technology by **anyone**, as observed in the case of stem cell research and genetic modification. In each of these cases, the issue of acceptance cannot be measured with reference to individual consumer choices, and markets do not offer explanations for or responses to opposition.



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Potential impacts and developments

People that oppose new and emerging technologies are sometimes characterised as '[luddites](#)', dogmatically opposed to any kind of technology development. Others are sometimes characterised as 'NIMBYs' (derived from 'not in my back yard'), who appreciate the benefits of technologies but selfishly object to developments in their local area. These characterisations are often found in popular discourse and, while they do provide a model for understanding opposition, they do not open many avenues for resolving disagreements. A third characterisation suggests that opponents have misunderstood the technology or hold irrational fears of its potential impacts. This is known as the 'knowledge deficit model' and it is frequently found in strategies for managing the introduction of new technologies into society. Unlike luddite or NIMBY conceptualisations, the deficit model does indicate a practical means of responding to opposition and fostering public acceptance by informing citizens about the technology, particularly how it works and what benefits it can bring.

For regulators and other stakeholders that are eager to reap the promised social, environmental or economic benefits of technology development, it can be tempting and intuitive to adopt one of these three characterisations. The deficit model is particularly attractive when opposition is expected but there is little

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appetite to change the development path. This is well illustrated in strategies for responding to potential public opposition to [civil drones](#), which aimed to achieve acceptance through 'coordinated actions' to inform citizens about drones and their benefits while downplaying the well-known military applications of the technology, which formed part of the strategic motivation for promoting civil drones in the first place. Later [research](#) found that citizens' informed perspectives on drones were more complex than these strategies assumed.

Indeed, studies of public opposition to technology from energy infrastructure to genetically modified crops have repeatedly highlighted the inaccuracy and ineffectiveness of the luddite, NIMBY and knowledge deficit conceptualisations. They tend to misrepresent the often nuanced and sensitive concerns of citizens with simplistic or even pejorative caricatures of opposition. As a result, instead of opening paths to mutual understanding, dialogue and resolution, they are more likely to escalate tensions and lead to entrenched positions. Concepts such as '[beyond NIMBYism](#)', '[responsible research and innovation](#)' and [Science with and for Society](#) have provided practical measures for understanding and responding to opposition. These tend to focus on establishing meaningful dialogues among the full range of actors involved, particularly developers and citizens, from the earliest stages of development.

Genuine public acceptance is contingent upon a sound understanding of the technology, including the full range of expected impacts of its development, whether positive or negative, direct or indirect. Information campaigns can backfire when they are imbalanced or incomplete, or the source is insufficiently trusted. Successful strategies for responding to opposition can only be devised once their real reasons are understood. As such, meaningful dialogues should involve listening to and seriously considering the views of citizens, while avoiding assumptions and caricatures about their motives and concerns. These dialogues – which [most Europeans believe](#) should take place – should be established early so that their insights can improve the design and implementation of technologies during the crucial formative stages of development, and should continue as developers and citizens develop the mutual understanding and trust that is required to respond to opposition and generate support.

Meaningful dialogues can transform citizens' role from that of passive opponent or passive acceptor, who has to accommodate new perspectives or technologies, into that of an informed, active agent, who is (co-)responsible, along with developers, regulators and other actors, for the development of better technologies that are more acceptable to all actors. Indeed, in this light, meaningful early-stage dialogues should not only be seen as a response to real or potential public opposition, but as a proactive tool that is routinely deployed to generate active public support for better technologies.

Anticipatory policy-making

The European Commission's [Eurobarometer](#) programme provides detailed quantitative and qualitative studies of pan-European public perspectives on a wide range of topics – including science, technology and other issues that are relevant in the context of new developments – and can provide useful background information for new initiatives. The [Interinstitutional Agreement on Better Law-Making](#) calls for open and transparent stakeholder consultations, which allow for the widest possible participation, particularly of SMEs and end-users. Indeed, public consultation should play a key role in the [ex-ante impact assessments](#) undertaken by the Commission before new legislation is proposed, including all relevant actors at all stages of the assessment.

A recent [STOA study](#) outlined four policy options for strengthening public engagement at all stages of the policy process. While these options were proposed with reference to low-carbon energy technologies, they remain relevant for a wider range of controversial technologies, from drones to artificial intelligence:

1. Engage people in ways that support meaningful dialogue at all levels and scales of development;
2. Understand and accept that outcomes of public engagement can and should have a tangible impact on development plans;
3. Recognise the important role of public trust in developers and regulators;
4. Go beyond engagement as a tool for overcoming opposition, and use it to gather active public support and to develop better technologies.

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