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## 42. Science and technology governance and public acceptance

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### **Introduction: the debate about public acceptance of science and technology governance**

A relevant part of the current debates about public acceptance of science and technology centers on the social acceptability of science and technology *governance* (including decision making, regulation and risk management) (Irwin & Wynne, 1996; European Commission, 2007). In this contribution we will argue, based on survey data, that the relationship between, on the one hand, public and stakeholder acceptance of governance and, on the other, the level of public education, as well as current improvements in science and technology management is still unclear.

We present recent survey data on the public perception of science and technology governance, particularly on the perception of the importance of scientific knowledge and values, precautionary regulation, as well as the role of experts in decision making. The survey's data are particularly relevant due to the relatively limited availability of data specifically about public attitudes towards regulation and decision making (instead of particular scientific-technological applications or overall science and technology).



### **The relationship between education and acceptance**

Many of the current proposals to improve general public acceptance of science and technology, as well as specific technological applications (for instance, biotechnology) center on the idea that there exists a general lack of scientific culture. Consequently, public understanding of science and technology and general as well as specialized scientific-technological education are understood to be in the need of being fostered. Still following this argument, it is often taken for granted that an increased level of knowledge and understanding among citizens with respect to science and technology would also improve public acceptance of governance and regulatory processes. This argument about the relationship between education and acceptance can be linked to the "deficit model", the notion that public criticism of decision making is the result of a lack of specialized scientific-technological knowledge (Irwin & Wynne, 1996; Millar & Wynne, 1988).

### **The survey**

We will recur here to a recent survey that allows us to question the argument with respect to the supposed link between level of education and attitudes towards science and technology governance. The study of public perception (Fecyt, 2008) was carried out in Spain in 2008. A total of 7400 persons were personally interviewed on 29 questions related, among others, to policy, governance and public funding of science and technology, scientific culture, as well

as science and technology education. The wording of the six questions most relevant to our discussion, as well as the respective percentages of the responses are shown in table 1.

*Table 1: Responses to questions about science and technology governance (Fecyt, 2008)*

(Percentages of agreement/disagreement with the following statements)	Complete or partial agreement	Neither agreement nor disagreement	Complete or partial disagreement	Don't know
Decisions on science and technology are best left with the experts	67.9	18.0	6.4	7.8
The citizens should assume a more important role in decisions on science and technology	35.7	30.4	24.0	9.9
Scientific knowledge is the best basis for drawing up laws and regulations	37.1	28.7	18.3	16.0
In drawing up laws and regulations, values and attitudes are as important as scientific knowledge	47.8	26.5	11.5	14.1
If it has not been proven scientifically that new technologies can cause severe harm to humans or the environment, it is erroneous to impose restrictions on these technologies	39.1	25.5	23.7	11.8
While the consequences of a new technology are not well known, action should be guided by caution, and the technology's use should be controlled to protect health and the environment	64.7	19.2	7.4	8.6



The response data summarized in Table 1 show that Spanish citizens tend to trust the experts, while being split on the issue of citizen participation in decision making. On the question of the relevance of scientific knowledge and values in policy making respondents are also divided. When it comes to the question of precaution, there is a clear bias towards precautionary decision making.

What makes those data highly relevant to our discussion is that the responses are practically independent of the level of formal education received by the interviewees. Independent of the five levels of formal education under which survey participants were classified (unfinished primary education, primary education completed, secondary education/first level completed, secondary education/second level completed, or university education), the responses to the above six questions do not vary in a statistically relevant way (as a Chi-Square analysis confirms). Any such variations are too small to be of relevance, even in the case of

the first statement relative to expert decision making in which a very(!) slight trend could be observed: with an increase in the level of formal education, there is somewhat less support for expert-based decision making.

To sum up, not only are attitudes towards governance and policy independent of the education received. Even more, the data indicate that any change in the level of scientific-technical education are unlikely to have an important influence on the way people think about science and technology governance.

### The implications for policy reform

Data such as these we have presented above question the notion that an increase in scientific culture would necessarily lead to higher levels of acceptance of governance and policy making. But there exist other data that raise even broader questions about the possibility of easy policy reform with the objective of increasing acceptance. Such data are related particularly to public participation and information in science and technology governance (Barnett, Cooper and Senior, 2007; Poortinga and Pidgeon, 2005; Luján & Todt, 2012). The results indicate that neither the introduction of participatory decision making, nor increased scientific-technological education and fostering of scientific culture, nor the adoption of new regulatory frames (like the precautionary principle) are likely to significantly improve social acceptance of science and technology governance.

Policy reform may transform the focus of public debates on policy and governance, but does not necessarily lead to closure. In consequence, more research is needed on the complex relationship between information, participation, trust and acceptance, as well as their respective roles in decision making and regulation of science and technology.



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