

Summary of key findings

Introduction

This is the sixth in a series of Eurobarometer surveys on biotechnology. The surveys have been conducted in 1991, 1993, 1996, 1999, 2002 and 2005. The survey is based on a representative sample of 25,000 respondents, approximately 1,000 in each EU Member State. Currently, issues such as stem cell research, the co-existence of GM, conventional and organic farming, the use of genetic information, and other innovations such as nanotechnology and pharmacogenetics are under discussion. Furthermore debates about broader issues such as the governance of science and citizen engagement continue. This survey stands as a contribution to informed public and policy debate.

Overview

The portrait of European citizens painted by the 2005 survey, in comparison to earlier surveys, shows them to be more optimistic about technology, more informed and more trusting of the biotechnology system. The European public is not risk-averse about technological innovations that are seen to promise tangible benefits.

While the majority are willing to delegate responsibility on new technologies to experts, making decisions on the basis on the scientific evidence, a substantial minority would like to see greater weight given to moral and ethical considerations in decision taking about science and technology and to the voices of the public.

There is widespread support for medical (red) and industrial (white) biotechnologies, but apparently significant opposition to agricultural (green) biotechnologies in all but a few countries. Europeans are interested in finding out about the risks and benefits associated with stem cell research, a utilitarian approach that informs their generally supportive view of this technology. The lesson for agri-food biotechnology is that unless new crops and products are seen to have consumer benefits, the public will continue to be sceptical.

Looking across public perceptions of a range of technologies, resistance to GM food is the exception rather than the rule. There is no evidence that opposition to GM food is a manifestation of a wider disenchantment with science and technology in general.

Optimism about the contribution of technology to society

Europeans are generally optimistic about the contribution of technology to our way of life. An index of optimism shows a high and stable level for computers and information technology and solar energy from 1991 to 2005. Over the same period the index for biotechnology declined steeply from 1991 to 1999. From 1999 to 2005 the trend reversed, and biotechnology is now back to the level of 1991. Optimism about nanotechnology has increased since 2002 – the ratio of optimists to pessimists is eight to one. Europeans have become less pessimistic about nuclear power, but the pessimists still outnumber the optimists, even in France.

Nanotechnology, pharmacogenetics and gene therapy

Europeans support the development of nanotechnology, pharmacogenetics and gene therapy. All three technologies are perceived as useful to society and morally acceptable. Neither nanotechnology nor pharmacogenetics are perceived to be risky. While gene therapy is seen as a risk for society, Europeans are prepared to discount this risk as they perceive the technology to be both useful and morally acceptable.

GM food

Overall, a majority of Europeans thinks that GM food should not be encouraged. GM food is seen by them as not being useful, as morally unacceptable and as a risk for society. Looking at a section of the European public – the ‘decided’ public (approximately 50 per cent) – who have a view on four key questions about GM food, 58 per cent oppose and 42 per cent support. Only in Spain, Portugal, Ireland, Italy, Malta, Czech Republic and Lithuania do the supporters outnumber the opponents.

Purchasing intentions for GM food

There are mixed opinions on the reported acceptability of buying GM food. The most persuasive reasons relate to health, the reduction of pesticide residues and environmental impacts. Whether GM food is approved by the relevant authorities or is cheaper are not convincing reasons.

Across the EU Member States the percentage of people rejecting five suggested reasons for buying GM food varies widely, from about 5 to 55 per cent. Countries with the highest percentage of rejecters are Austria, Greece, Hungary, Germany and Latvia and with the lowest percentage of rejecters are Malta, Czech Republic, Netherlands, Spain, Belgium and Portugal. Amongst the remaining non-rejecters, it is notable that the mean number of acceptable reasons is relatively high. It appears that once a threshold of minimal acceptability is reached, people are inclined to find a number of the reasons acceptable for buying GM foods.

Industrial (white) biotechnologies

Industrial applications of biotechnology in bio-fuels, bio-plastics and biopharming for pharmaceuticals are widely supported in Europe, with over 70 per cent of respondents supporting incentives to develop bio-fuels and plastics. More people than not say they would pay more for a vehicle that runs on bio-fuels and pay more for bio-plastics. Around six in ten approve of biopharming providing that it is tightly regulated and across the EU those approving of biopharming outnumber those who disapprove in all but Austria.

Stem cell research

Providing it is tightly regulated there is considerable support for embryonic stem cell research across Europe, and although people tend to be more supportive of non-embryonic sources of stem cells the difference is relatively small, 59 to 65 per cent respectively. Among the countries in which approval for embryonic stem cell research is highest are Belgium, Sweden, Denmark, Netherlands and Italy. In countries where approval is low – the Baltic States, Slovenia, Malta, Ireland and Portugal – around one in three say they don't know.

While the belief of a majority of Europeans is that the embryo is human immediately after conception, a belief that is related to views on stem cell research, it is not the decisive factor. Many who believe it also say they approve of stem cell research as long as it is tightly regulated. A broadly similar pattern is seen when looking at levels of commitment to religious practices. The survey shows that the dilemma between moral/ethical versus utilitarian arguments divides the European public. Of these two positions Europeans lean towards the utilitarian view; the possible benefits for health and the alleviation of diseases tend to outweigh possible moral objections.

What do people want to know about stem cell research?

When asked – if there was a referendum on stem cell research, what information would you like to hear about? – Europeans generally do not consider it important to be informed about scientific details, perhaps because they are content to leave these to the experts. What they want to know about are the societal consequences of stem cell research – the risks and benefits – and whether regulations and ethical oversight are sufficient.

Governance of science and technology

Given a choice between, firstly, decision making based on scientific evidence or on moral and ethical criteria, and secondly, decisions made on expert evidence or reflecting the views of the public, the majority of Europeans (six in ten) opt for the principle of scientific delegation (experts and scientific evidence). Nearly one in five opt for moral delegation (experts and moral reasoning), one in six moral deliberation (the public and moral reasoning) and one in ten scientific deliberation (the public and scientific evidence). Of the four principles of governance, scientific delegation is associated with higher levels of optimism about technology and support for nanotechnology and GM food. The principle of moral delegation is associated with lower levels of optimism and lower support for specific technologies. To build further confidence in science policy it would seem prudent to ensure that moral and ethical considerations and the public voice(s) are seen to inform discussions and decisions.

Trust in actors involved in biotechnology

The 2005 survey data do not support the claim that there is a crisis of trust in actors involved in biotechnology in Europe. Trust in university and industry scientists, and in industry itself show substantial improvements since 1999. The European Union is more trusted than respondents' national governments in the regulation of biotechnology and on the reporting of biotechnology, newspapers and magazines are trusted more than television.

Uses of genetic information

The European public is supportive, but not overwhelmingly supportive, of the use of genetic data for personal medical diagnosis and for gene banks for research into diseases. 58 per cent say they would allow their genetic data to be banked for research purposes, while 36 per cent say they would not. Forensic uses attract about the same level of support as medical research. Access to genetic information by government agencies and for commercial insurance is widely seen as unacceptable. Support for

genetic data banks cannot be taken for granted. While 70 per cent or more are in support in Sweden, Finland, Denmark, and Netherlands – perhaps evidencing the communitarian ethic – support is only around 40 per cent in Germany, Greece and Austria and the public in some other countries is evenly divided on the issue.

Modes of engagement in science and technology

Europeans are more knowledgeable about biotechnology and genetics than in 2002. A majority say they are 'often' or 'sometimes' 'interested in science and technology' and 'keep up to date on what is going on in science and technology'. 71 per cent of the European public 'definitely would' or 'probably would' read articles or watch TV programmes on biotechnology, 33 per cent would take part in public discussions or hearings.

Four modes of engagement with biotechnology are identified – the 'active' (10 per cent), 'attentive' (15 per cent), 'spectator' (35 per cent) and 'unengaged' (40 per cent) European. The 'active' European has heard and talked about biotechnology, has searched the internet for information about it and has probably attended a public meeting concerning biotechnology; for the 'unengaged' European, the issue is not on the radar screen. Compared to the other two modes of engagement the 'attentive' and 'active' Europeans are more optimistic about the contribution of technology to society and more supportive of technologies. A feature that distinguishes the 'active' from the 'attentive' European is that the former is more sensitive to risk.

Young people and science

Is the younger generation of Europeans turning against science and technology? The snapshot from the Eurobarometer would suggest not. The age group from 15-25 is no less optimistic about technological innovation, no less willing to support nanotechnology, gene therapy, pharmacogenetics and GM food, and just as interested in science and technology as are older people. On all these opinions about science and technology it is the over 65s that are either more critical or not prepared to express an opinion.

Younger people are more likely to say they would buy GM food and less likely to hold menacing images of GM food than older people. However, younger people are less engaged in politics, and less likely to worry about the links between diet and health. This is not good news for the emerging problem of obesity.

Women and science

The findings from the Eurobarometer suggest that we must be cautious about generalisations on gender differences. On five of the eight technologies, women are almost as optimistic as men that these technologies will improve our way of life. While men are generally more knowledgeable about biology and genetics, women out-score men on questions around pregnancy – an issue of direct concern to them. On approval for nanotechnology, gene therapy and pharmacogenetics differences between women and men are not pronounced and amongst the more educated women the gender difference is much smaller. Women with higher education are less likely to show an 'attentive' or an 'active' interest in biotechnology. Is this more likely to be a consequence

of the traditional division of labour in European households rather than a lack of interest among women?

Science Culture in the New Member States

Have the ten new Member States changed the scientific culture of the European Union? The answer is 'probably not'. Collectively the ten new countries are just about as heterogeneous as are the old EU15 countries, judged by this set of indicators of science culture. As many of the ten are in the industrial stage of development, they share some common features that were also seen in other 'new entrants' to the EU in the past. As such, the New EU10 are somewhat different to the EU15 countries in 2005. First, by comparison to EU15, science has not achieved much penetration in public awareness in the New Accession States. Second, the publics in these countries are relatively more optimistic about the contribution of technology to society, and are just as supportive of medical, industrial and agricultural biotechnologies. They also have greater trust in actors and institutions involved in science and technology. But, as has been seen in other EU Member States, such views can be subject to dramatic changes.

Transatlantic comparisons

It is invalid to claim that European public opinion is a constraint to technological innovation and contributes to the technological gap between the US and Europe. With the exception of nuclear energy, Europeans are more or less as optimistic as people in the US and Canada about computers and IT, biotechnology and nanotechnology. One exception is GM food for which Europeans and Canadians have rather similar views, while people in the US see it as much more beneficial and less risky. Europe's position is strikingly different on nanotechnology. In comparison to people in the US and Canada, Europeans see nanotechnology as more useful and have greater confidence in regulation.