
Editorial

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Abstract: The current global debate on the risks and benefits of agricultural biotechnology is often portrayed in the mass media as one of the battlefields of globalisation in which public interest groups fight against the powerful agribusiness industry and its associates in science and government. Yet, this interpretation of the global debate often makes no distinctions between the interests in developed and developing countries, scientific facts and mere speculation, public and private research, or the different biotechnology tools used in different countries. Nor does such a metaphorical portrayal make use of the knowledge available in the social sciences regarding the interests and perceptions involved in the global biotechnology debate. The objective of this special issue is to make such essential distinctions, provide empirical and theoretical research, and present well-informed policy viewpoints from different developing countries. It shall highlight the grey shades of agricultural biotechnology, the potential socioeconomic and environmental risks, as well as the opportunities of this rapidly evolving technology for development.

Keywords: developing countries; agricultural biotechnology; genetically modified organisms; UNCTAD; public perception; political interests; Cartagena protocol; technology transfer.

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An appeal for a more global and interdisciplinary view of agricultural biotechnology

The collection of papers presented in this special issue is largely based on contributions to the seventh annual conference of the International Consortium of Agricultural Biotechnology Research (ICABR) in Ravello, Italy from July 1–6, 2003, and a workshop organised by ETH's Center for Comparative and International Studies on 'Agricultural biotechnology in developing countries: perception, politics and policies' held on March 12, 2004 in Zurich, Switzerland.

Both events had the shared purpose of examining the advances of agricultural biotechnology from a public policy perspective. Such a perspective mainly deals with the perceptions and conflict of interests in politics, the regulatory policies adopted in different countries, and the positive and negative impacts resulting from the adoption of transgenic and other biotech crops in different regions of the world. Based on existing knowledge of the risks and benefits of agricultural biotechnology and experiences with different regulatory regimes, new public policy instruments were discussed that would help minimise the risks and maximise the benefits of agricultural biotechnology in different parts of the world.

Some of the most relevant contributions presented in these conferences, had been selected for this special issue. The collection was complemented with additional social science research articles and policy viewpoints from several important developing countries, mainly on regulatory issues. This mix of contributions also responds to the increasing demand from policy and business decision makers for a broader view of the global impact of agricultural biotechnology that does not just deal with one particular crop, risk, technology, country or controversy but, includes theoretical and empirical research related to agricultural biotechnology from different disciplines and different regions.

The issue puts special emphasis on developing countries and a broad definition of agricultural biotechnology in order to counterbalance the strong current media focus on the transatlantic trade dispute over genetically modified foods. This transatlantic bias tends to reduce the global debate over the risks and benefits of agricultural biotechnology to a polarised meta-controversy for, or against the use of gene technology in agriculture, involuntary risks imposed by technological change, US-driven technological innovation, or commercial interests in agriculture. These general views do not allow for case-by-case or country-by-country differentiation, and they also show how strong the global debate on agricultural biotechnology is framed by the perceptions, values and interests of affluent societies.

The growing importance of developing countries

The absence of voices from the developing world stands in stark contrast to the fact that the area of growth has increased more rapidly in developing countries namely from a mere 3.3 million hectares in 1997 to 20.4 million hectares in 2003. That means 30% of the global transgenic crop area of 67.7 million hectares is now cultivated in developing countries. Fourteen developing countries are currently growing GM crops. China and South Africa had the highest year-on-year increase with a 33% growth rate (James, 2004). Yet, Sub-Saharan Africa (South Africa excluded), which is producing agricultural goods primarily for the European market and is highly dependent on European aid, has not approved any transgenic varieties for commercial purposes. Its people do not benefit from the existing biotechnology applications in any significant way.

A recent report on the impact of new biotechnologies on development, prepared by the United Nations Conference on Trade and Development (UNCTAD, 2003), argues that the ambitious UN Millennium Development Goals may only be met if access to life-saving and crop improvement technologies can be ensured for those who desperately need it. Yet, this need for access to technology and the overall possible benefits of agricultural biotechnology to human health and the environment are not discussed in the

global debate on agricultural biotechnology. This is mainly because it is dominated by powerful political actors who are either in favour of or are against genetic engineering (and often, by extension, agricultural biotechnology in general) basing their support contingent only upon trade interest and public opinion (UNCTAD, 2003).

The Cartagena Protocol on Biosafety, a supplementary agreement to the Convention on Biological Diversity (CBD), was ratified by 88 states in March 2004. Although it was widely criticised for being shaped by the politically influential players from the developed world that oppose the use of agricultural biotechnology, many developing countries have decided to ratify the Protocol in consideration of widespread concerns about national sovereignty and biological diversity. The ratification of the Protocol also allows them to get additional access to funds offered by the Global Environmental Facility (GEF). The GEF supports developing countries in their efforts to implement the provisions of the Protocol. It includes capacity-building courses in biosafety risk assessment and assistance in the design and implementation of regulations that address the possible risks associated with transgenic crops. Even though such a framework helps creating the conditions for the safe use of agricultural biotechnology, a major objection is the preventive approach used in biosafety risk assessment, which is likely to generate a regulatory bureaucracy instead of engendering more skilled and well-trained scientists in developing countries; this again, may prevent the use of modern biotechnology for solving health, environment and agricultural productivity problems in these countries. The use of the Precautionary Principle (PP) in biosafety risk assessment and management, as endorsed by the Protocol and widely applied in its extreme version by many European countries, has become an essential tool of power politics; its supporters pretend to protect potential innocent victims (consumers, the poor and the environment) from possible harm resulting from the introduction of a new technology. But, in effect, they often support the powerful economic interest groups that resist technological change because they fear trade competition and loss of political and economic clout. Moreover, the PP is likely to make access to new biotechnologies more difficult for developing countries, because the important actors involved in technology transfer may not be willing to spend more money for lawyers and paperwork than for the training of local researchers. The risk of being saddled with preventive and highly bureaucratic biosafety regulations currently scares many leaders in developing countries, because such regulations are often impossible to implement and therefore may create even more regulatory uncertainty. In addition, they endanger the viability of young and vulnerable biotech industries in the developing world. A major point of criticism in the recent UNCTAD report (2003) was that, 'the emphasis on biosafety has been driven by the belief that laws must be in place before the scientific base is developed. Countries are categorised into those with and those without regulations, those with draft legislation and those without legislation, rather than the level of technical know-how required to implement and guide the development of these regulations'.

Many of the more advanced developing countries have therefore, become impatient with the decade-long debate on the possible long-term risks of agricultural biotechnology and are pushing for a more 'hands-on' approach. Research institutes in these countries have taken advantage of the decreasing costs of biotechnology toolkits and, are rapidly building up their own capacities and adjusting their general education system in order to accommodate and apply the new knowledge in molecular biology. These countries are increasingly determined to pursue their own biotechnology strategies through increased

South–South collaboration and selective partnerships with advanced research institutes and companies in developed countries.

The United Nations Global Biotechnology Forum that took place in Concepción, Chile in March 2004, was an attempt to emphasise these new developing country initiatives. It also, for once, discussed the real opportunities of biotechnology for sustainable development including food security, environmental management, consumer health and economic productivity.

Perception, politics and policies

Over the last decade, extensive research was conducted on public risk perceptions of agricultural biotechnology, mostly in developed countries. Eurobarometer surveys on the perception of agricultural biotechnology in Europe, are carried out on an annual basis and its results have considerable policy implications (Gaskell *et al.*, 2002). The strong link between perception and politics raises the age-old question of the chicken and the egg. Is politics responding to genuine public perception or are perceptions shaped by public appearances of political state and non-state actors and their interests?

A frequent mistake is to look at perceptions as something completely independent from interests and sources of information. Sometimes, risk perception is naively portrayed as the counterweight to self-interest (that is assumed to impose risks on others) and a genuine expression of concern for the public at large. That is not to say that cognitive, affective and emotional judgements of technological risks are not important and should not be considered in the policy process; in fact, technical experts indeed have a blind eye and often prove unable to anticipate the negative implications resulting from the large-scale introduction of a powerful new technology. But it is certainly only part of the story of public perception.

The formation of an individual's perception of the risks and benefits of a new technology, is a very complex process determined by the selected sources of information, shared values, interests and personal experiences. In the case of agricultural biotechnology, individuals can hardly count on personal experience and simply don't have the time to go through all the different sources of information and study the complexities of molecular biology. As a consequence, the demand for reduction of complexity in the form of dramatic storytelling (narratives) containing victims and perpetrators, heroes and cowards, innocent and guilty actors, is increasing rapidly. Dramatic storytelling is mostly delivered by the mass media, which creates public events in which supporters and opponents are portrayed and asked about their interests and values. In these storytelling episodes, the supportive biotechnology industry is often portrayed as the evil coward or perpetrator leading to its image being associated with poor human values, reckless economic interests and hidden agendas. On the other hand, the public interest groups that oppose the use of modern biotechnology in agriculture are fortunate to be conveniently portrayed as the courageous heroes that want to protect consumers and traditional farmers from possible harm. As the term suggests, public interest groups are assumed to have no self-interest but only the public interest in mind. This simplification allows them to do a lot of stereotyping and to avoid any grey zones that may render the issue more ambiguous. At the same time, the simplification provides real benefits for concerned citizens since they help them reduce the complexity of the topic, provide meaning and orientation, allow them to express presumably informed

opinions at low cost, and help them decide who they think represents their concerns and interests in public and therefore, can be considered trustworthy.

Joseph Schumpeter (1942) noted in the 1940s, that, in affluent societies, the benefits of technology and economic progress are increasingly taken for granted, while its potential risks become less and less tolerated. Consequently, public trust in institutions that produce or manage technological innovation is decreasing, while trust in non-state and non-profit actors who are against such technologies and protest against the 'risk-producing' decisions taken by such institutions, is increasing (World Economic Forum, 2003). Complexity and uncertainty of modern life makes public trust, the essential political resource and source of public legitimacy of un-elected political actors. Within the predominant narrative framework, un-elected non-profit organisations are perceived as defenders of the public interest, and they indeed fulfill an important watchdog function in society, yet they are not immune against dishonest public action.

If we assume that people develop a genuine perception of a political issue, and political actors just try to make these genuine perceptions heard in politics by influencing political decisions in favour of those perceptions, then this would be an ideal democracy guided by authentic general public opinion. Yet, as explained earlier, often the opposite occurs: political actors stage media events, start advertising campaigns or visit family households, to influence public opinion in favour of their particular interests, ideology or general concern. The more trust political actors enjoy in public through such actions, the more freedom of action they have in politics and the more successful they are in gaining commitment from people who share their particular opinion (that is portrayed as 'the public interest'). Since such political actors are often not trusted for what they do but for what they stand for, there is ample space for moral failure. It becomes difficult to hold such actors accountable for acting in bad faith without compromising one's own position in public (e.g., as an enemy of the 'public interest'). Therefore, the more polarisation in a public debate, the more likely that some dishonest action is committed by those who enjoy public trust and use it as a private political resource against their particular political targets (instead of focusing on their watchdog function and conduct investigative journalism). This is especially true for the global debate on agricultural biotechnology where perception is shaped by politics rather than reverse (Lipset and Schneider, 1983; Aerni, 2002).

It is the objective of this guest-edition to countersteer against the political trend of stereotyping by providing extensive empirical and theoretical research from the social sciences and well-informed policy viewpoints from stakeholders in different developing countries. The contributions to this edition highlight the grey shades of agricultural biotechnology, the potential socioeconomic risks but also the opportunities of this rapidly evolving technology for development, given the right public policies are designed and properly implemented. Some people advocate the use of agricultural biotechnology; others ask for caution; yet they all go beyond the cliché arguments proposed for or against agricultural biotechnology that currently dominate the global public debate.

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