Food Policy 36 (2011) 736–741

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

An evolving science-society contract in India: The search for legitimacy in anticipatory risk governance

Aarti Gupta *

Environmental Policy Group, Department of Social Sciences, Wageningen University, 6706 KN Wageningen, The Netherlands

ARTICLE INFO

Article history:
Available online 15 August 2011

Keywords:
India
Biotechnology
GMOs
Risk governance
Science-society contract
Legitimacy

ABSTRACT

This article analyzes evolving institutions and practices of anticipatory risk governance in India, through the lens of two recent and highly controversial developments in governing genetically modified crops in Indian agriculture. These developments include, first, conflicts over approving (or not) the very first genetically modified food crop in India and a related experiment in participatory decision-making; and second, proposals to revamp the existing biosafety regulatory system (with its checks and balances across diverse sources of authority) with one that elevates scientists and scientific expertise to the pinnacle of decision-making power. The article analyzes the distinct means by which legitimacy is sought to be conferred upon the means and ends of anticipatory risk governance, as reflected in these two examples. I contrast claims to legitimacy deriving from innovative experiments in participatory democracy with legitimacy claims based upon "objective" science, showing that despite acknowledged need for the former, the latter is still being prioritized. The article concludes by identifying the contours of an evolving science-society contract in India, as revealed by these cases.

Introduction

One of the most pressing anticipatory risk governance challenges today remains ensuring that use of modern biotechnology in agriculture meets societal needs and does not lead to unacceptable and irreversible adverse ecological, human health or socioeconomic impacts. Governance, or systems of oversight and steering to ensure safe use of genetically modified (transgenic) crops is thus the unavoidable need of the hour. Such governance faces the added challenge of needing to be anticipatory, i.e. of *co-evolving* with persisting scientific and normative uncertainties and conflicts over the very existence and nature of risk. If so, designing *legitimate* anticipatory risk governance systems to address the global spread and use of transgenic crops is a herculean task of complexity with few parallels, raising fundamental questions such as: who should govern and how? Drawing on what sources of legitimacy? And to what end?

This article analyzes evolving institutions and practices of anticipatory risk governance in India, and sources of legitimacy underpinning them, through the lens of two recent and highly controversial developments in governing transgenic crop use in Indian agriculture. These developments relate, first, to conflicts over granting approval (or not) to the very first genetically modified food crop in India; and second, to proposals to revamp the current biosafety regulatory system (with its checks and balances across diverse governmental sources of authority) with one that elevates scientists and scientific expertise to the pinnacle of decision-making power.

This latter aspect highlights that a central dynamic in anticipatory risk governance is the appropriate role therein for science, scientists and processes of scientific knowledge generation. In controversial areas of anticipatory risk governance such as biotechnology, generating socially relevant knowledge about risk becomes a key terrain for airing and mediation of political and normative conflicts. If so, fundamental questions relating to problem framing (what are the risks and hence the scope of risk-related knowledge that is to be generated?); institutional design (how to ensure legitimate processes of knowledge generation and use in policy?); and sources of representation and legitimate expertise (whose knowledge counts and why?) come to the fore.

The central focus of this article is on scrutinizing the distinct means by which legitimacy is sought to be conferred upon recent developments in Indian GMO governance by key actors. The analysis identifies two opposing sources of legitimacy evoked in recent years to justify the exercise of political power in areas of contested and uncertain risk. These include: legitimacy deriving from a privileging of scientific expertise and an objective science removed from politics; versus legitimacy deriving from innovative experiments in direct, participatory democracy. Accordingly, this article highlights the pivotal role that legitimacy and knowledge, the two facets of ideational power depicted in the framework presented by Fuchs and Glaab (this issue), play in the governance

* Tel.: +31 317 482496; fax: +31 317 483990.
E-mail address: aarti.gupta@wur.nl

0306-9192/$ - see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.foodpol.2011.07.011

of risk. Through analyzing sources of legitimacy of evolving risk governance practices and outcomes, the paper identifies the contours of an emerging science-society contract in India. Such an analysis is timely and important, insofar as inter-linkages between science and society are omnipresent in this important agrarian, developing and democratic country context, but remain relatively under-scrutinized.

The paper proceeds as follows: Section 2 discusses scientific expertise and participatory democracy as alternative sources of legitimacy in anticipatory risk governance. Section 3 analyses how these two perceived sources of legitimacy manifest themselves in controversial new developments in Indian biosafety governance. I discuss, first, conflicts over whether to approve a genetically modified variety of a widely consumed vegetable, eggplant (or Brinjal, as it is known in India); and second, a proposal now pending in the Indian parliament to consolidate GMO decision-making within a Biotechnology Regulatory Authority of India (BRAI) to replace the existing multi-governmental regulatory architecture.

Both these developments have unleashed controversy on a large-scale and are re-shaping the institutions and practices of Indian GMO governance. The analysis in this paper reveals that GMO governance in India is at cross-roads today, with the trajectories of these two new developments throwing up quite distinct lessons about legitimate sources of authority and appropriate norms and practices of anticipatory risk governance. The analysis suggests that a key challenge is how to combine institutional mechanisms to generate legitimate policy-relevant science with those that can ensure that societal concerns have a systematic rather than *ad hoc* place in risk governance. The analysis is based on thirteen interviews with policymakers, scientists and private sector representatives in India in 2008 and 2011, and on primary and secondary sources.

Anticipatory risk governance: sources of legitimacy?

An evolving science-society contract to underpin legitimate risk governance faces a series of classic dilemmas highlighted by scholars of science and technology studies and risk analysis for the last decades. As articulately stated by Yaron Ezrahi (2008: 177):

> "The current problem of assimilating knowledge into public policy-making in the modern democratic state stems largely from the fact that socially relevant knowledge often appears too complex and underdetermined to effectively check the arbitrary use of political power by policy-makers. Furthermore, political power has become too diffused, unstable, and elusive to effectively guide and regulate the production and uses of knowledge".

How then can one ensure that the institutions and practices of generating and feeding socially relevant knowledge into governance processes are perceived to be legitimate? Can an evolving science-society contract provide adequate checks on the exercise of political power, even as it provides the legitimization that the exercise of power seeks?

The most oft-noted sources of legitimacy and checks on the exercise of political power tend to be, at one end of a spectrum, a call for an objective, rational, universally valid science to mediate political and normative conflicts; and, on the other, a call for a broadly participatory and inclusive process by which to ensure public input into the decision-making process. This dichotomy has been captured in a vast interdisciplinary risk literature over the last 30 years, which has illuminated that "expert" versus "lay" perceptions of risk vary greatly, thus highlighting that these differences have to be considered in designing legitimate anticipatory risk governance systems (Starr, 1969; Johnson and Covello, 1987; Horst et al., 2007).

A related challenge is continued scientific uncertainty and conflict over diverse claims of risks and benefits. In the face of such uncertainties and conflict, science as a "neutral" mediator of conflict is rendered ever more problematic. As Ulrich Beck noted almost 20 years ago, it is a central paradox of our age of reflexive modernity that the very characteristics of uncertainty and complexity associated with technological risks necessitate increased reliance on scientific input in precisely those areas where the ability of science to provide certainty is ever more tenuous (Beck, 1992).

In considering the evolving nature of science-society interactions, two schools of thought then continue to dominate: the first that views the central impediment to effective and legitimate risk governance to be an ongoing *politicization of science*, with the antidote seen to be an objective, value-neutral science kept apart from politics; and a second that attributes lack of effective and legitimate risk governance to a problematic *technicalization of politics*. This latter view, emanating from critical science studies, argues that attempts to keep science untainted by politics are not only futile but inevitably result in broader societal and lay concerns being marginalized in the design of scientific knowledge generation processes, resulting in a problematic transfer to the technical domain of what are essentially political conflicts (Jasanoff and Wynne, 1998; Jasanoff, 2003a,b; Liberatore and Funtowicz, 2003; Gupta, 2004). As an antidote to a technicalization of politics, such writings emphasize the need for innovative institutional mechanisms that ensure that a broad array of risk perspectives are included in socially-relevant knowledge generation and governance processes.

Drawing on the brief discussion above, then, knowledge generation and governance processes that can guarantee *objectivity of science* through its separation from politics, versus those that can ensure input of socially relevant knowledge into governance processes through *participatory and deliberative democracy*, are two diametrically opposing means by which the legitimacy of risk governance is often sought to be ensured by different actors. How do these two assumed sources of legitimacy manifest themselves in new developments in GMO governance in India, and with what consequences for an evolving science-society contract? I address these questions next.

Legitimizing GMO governance in India: objective science versus participatory democracy?

Since its development in the mid-1990s, the evolving biosafety governance system in India has largely privileged science-based decision-making. Yet, as I have documented in detail elsewhere (see Gupta, 2002), significant modifications to the regulatory framework have been stimulated by socioeconomic concerns relating to foreign dependence, social need and economic gain (or lack thereof) from transgenic crops, especially those developed by the private sector. Furthermore, the regulatory system has sought a balance of authority between concerned governmental actors, with the central axis of conflict being between a proactive Department of Biotechnology under the Ministry of Science and Technology, which aggressively promotes development and adoption of transgenic crops, and a more precautionary Ministry of Environment and Forests. Official participation of civil society, consumer groups or private sector representatives in the institutions of decision-making has been limited, with only *ad hoc* membership of specific experts from various segments of society participating in the inter-governmental biosafety regulatory committees on an as-needed basis. Experiments with broader citizen participation in these institutions and practices of biosafety governance have been minimal.