

# News coverage of GM food in three developing economies: a comparison of Brazilian, Chinese and Indian newspapers

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# The context

- Debates about the benefits and problems of genetically modified (GM) food have raged for over 30 years.
  - And the media have played a large role in them.
- There is a predominance of studies that focus on developed economies, despite the increased importance of developing economies.

# Main objectives

- Explore the continuities and discontinuities in the reporting of GM food in different media systems in developing economies.
- Widening the geographical scope of comparative studies in communication studies.

# GM crops in Brazil

- It has the fastest growing rate of GM seeds use and is the world's second largest producer.
- Debate about GM peaked in 2003, when the government authorized commercialization of genetically engineered soybeans.

# GM crops in China

- It was the first country to commercialize a GM crop, tobacco in 1992, but regulation has limited the growth of area for GM crops.
- In 2013 there was an upsurge in the debate calling for more GM crop to guarantee food security.

# GM crops in India

- India has had some of the most well developed research networks on GM technology, but only adopted cotton in 2002.
- After fierce debate, in 2010 a moratorium was imposed on the commercialization of GM crops for human consumption.

# A comparison

	<b>Brazil</b>	<b>China</b>	<b>India</b>
Political system	Parliamentary democracy	Autoritarian one-party state	Parliamentary democracy
Media system	Commercial and Free	State-owned and Restricted	Commerical and Free
GDP/capita (2012)	11.339 USD	6.091 USD	1.503 USD
Adoption of GM	Second largest producer	Several crops	Only BT cotton
GM production	30.3 million ha (2)	3.9 million ha (6)	10.6 million ha (4)

# Science, GM and the media

- The framing of GM crops, similarly to that of science news in general, has been described as an opposition between two main frames
  - GM technology as a scientific breakthrough
  - GM technology as a risk
- Source selection has also featured prominently in studies of science news.

# Research Questions

- RQ<sub>1</sub>: How **salient** have GM food-related news stories been in the Brazilian, Chinese and Indian press between 2003 and 2014?
- RQ<sub>2</sub>: What **news sources** have been most often used?
- RQ<sub>3</sub>: How have news stories about GM food **been framed**?



# Chinese newspapers



2013年11月25日 星期一  
第13444号  
零售每份0.50元  
广告刊例另议  
http://www.people.com.cn

**走基层**  
2013年11月25日  
【特别报道】  
“走基层、转作风、接地气”活动深入开展，广大干部深入基层、深入群众、深入一线，与群众同甘共苦、共渡难关，以实际行动践行党的群众路线，赢得了群众的广泛赞誉。

**夜访安龙村**  
本报记者 袁 志坤  
“老乡，最近村里有没有什么新鲜事？”  
“有啊，最近村里修了路，交通方便多了。”  
“那好啊，以后你们出门就方便了。”  
“是啊，以前出门还得挑着东西走，现在不一样了。”  
“那真是太好了，你们村还有什么别的什么新鲜事？”  
“有啊，最近村里还修了学校，孩子们上学更方便了。”  
“那真是太好了，你们村还有什么别的什么新鲜事？”  
“有啊，最近村里还修了学校，孩子们上学更方便了。”

## 习近平在青岛黄岛经济开发区考察输油管线泄漏引发爆燃事故抢险工作时强调 认真吸取教训注重举一反三 全面加强安全生产工作

新华社北京11月24日电 中共中央总书记、国家主席、中央军委主席习近平24日在青岛黄岛经济开发区考察输油管线泄漏引发爆燃事故抢险工作时强调，要认真吸取教训，注重举一反三，全面加强安全生产工作。



11月24日上午，习近平在青岛黄岛经济开发区考察输油管线泄漏引发爆燃事故抢险工作时强调，要认真吸取教训，注重举一反三，全面加强安全生产工作。

11月23日上午，习近平在青岛黄岛经济开发区考察输油管线泄漏引发爆燃事故抢险工作时强调，要认真吸取教训，注重举一反三，全面加强安全生产工作。

## 刘云山在教育实践活动中央督导组组长座谈会上强调 整改关键是真改 督导务必从严 以严格有力的督导保障整改任务落实

新华社北京11月24日电 中央教育实践活动中央督导组组长刘云山24日在督导组组长座谈会上强调，整改关键是真改，督导务必从严，以严格有力的督导保障整改任务落实。

## 抓好三项重点 改善环境质量

新华社北京11月24日电 《过紧日子》  
新华社北京11月24日电 《过紧日子》  
新华社北京11月24日电 《过紧日子》

## 加强对全面深化改革的组织领导

八论认真贯彻落实十八届三中全会精神  
新华社北京11月24日电 十八届三中全会召开以来，全党全国上下认真贯彻落实全会精神，全面深化改革取得重大进展。

## 伊核问题初步协议达成

伊朗不得从事5%以上丰度的铀浓缩等，有关六国对伊制裁松绑  
新华社北京11月24日电 伊朗核问题全面协议初步达成，伊朗同意不得从事5%以上丰度的铀浓缩等，有关六国对伊制裁松绑。

## 经济普查不容掺水

新华社北京11月24日电 国家统计局局长王德培24日在全国经济普查工作会议上强调，经济普查不容掺水，要确保数据真实准确。

## 谁给社区挂上27块牌?

新华社北京11月24日电 民政部副部长李民24日在全国社区工作会议上强调，社区挂牌要规范，谁给社区挂上27块牌，要依法依规。

## 手书流传 激励新青年 大学生为何不受待见

新华社北京11月24日电 大学生为何不受待见，手书流传，激励新青年，要关注大学生的成长成才。

2013年11月25日 星期一  
**南方都市报**  
198244-01975  
www.southcn.com

## 习近平在青岛看望 输油管线事故伤员

考察输油管线爆燃事故抢险工作，强调认真吸取教训 注重举一反三，全面加强安全生产工作



## 梁振英：将尽最大努力 落实2017年行政长官普选

新华社北京11月24日电 香港行政长官梁振英24日在记者会上表示，将尽最大努力落实2017年行政长官普选。

深圳·远洋新干线 商业广场II  
地铁口20-50m² 临街小铺王 投资大保障  
8888 3377

# Indian newspapers



# Methods

- Time frame: 01/01/2004 – 31/12/2013
- Unit of analysis: news reports
- For Brazil and India
  - Factiva Database
- For China
  - Wisenews and People's Daily databases
- Population size
  - N: 1.306 ( $n_{\text{brazil}} = 589$ ;  $n_{\text{china}} = 348$ ;  $n_{\text{india}} = 369$ )

# Search logic

- Genetically-modified
- Trangenic\*
- 转基因
  
- Selection
  - At least 2 occurrences of the keywords
  - Or at least 1 occurrence in the first paragraph
  - Food related stories

# Coding scheme

- Name of publication
- Article's date of publication
- Length - number of words/characters
- Authorship
- Sources (Continuous)
- Frames (Nominal Dichotomous)

# Results

RQ<sub>1</sub>: How **salient** have GM food-related news stories been in the Brazilian, Chinese and Indian press between 2003 and 2014?

# Salience | RQ<sub>1</sub>

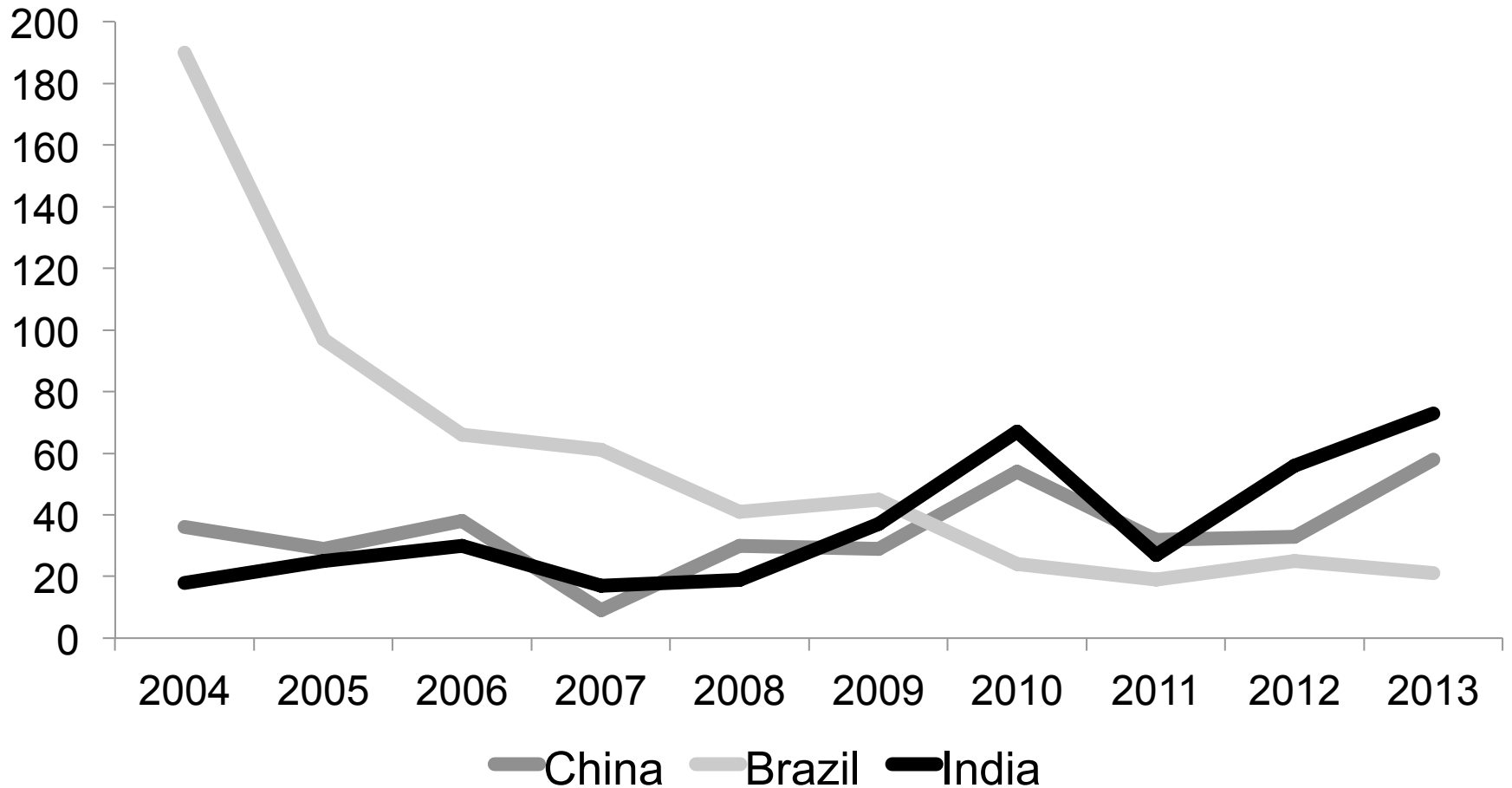


Figure 1. Number of stories about GM food in Brazil, China and India

# Results

RQ<sub>2</sub>: What **news sources** have been most often used in the coverage of **GM food** in Brazilian, Chinese and Indian newspapers between 2003 and 2014?

# News sources | RQ<sub>2</sub>

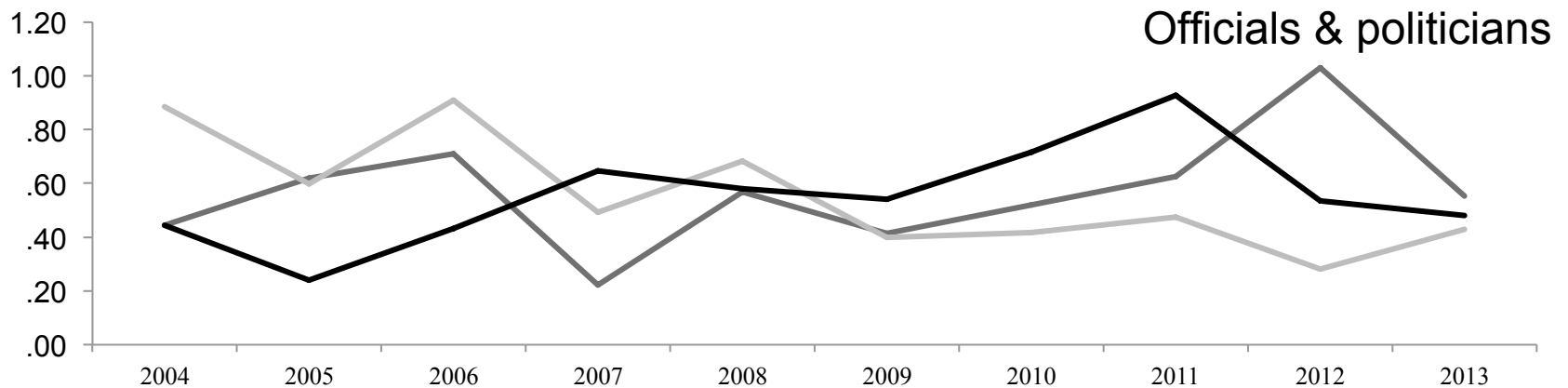
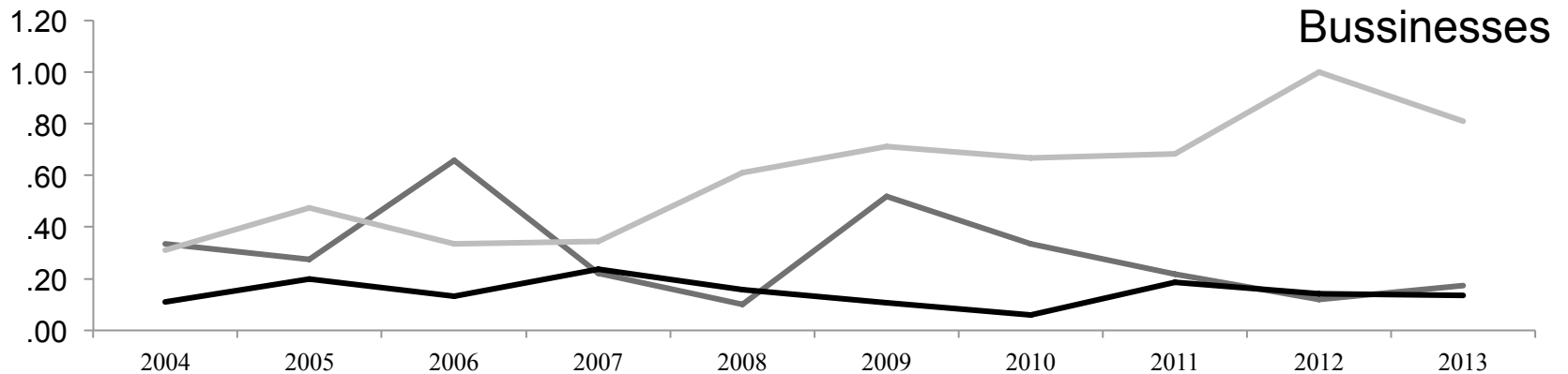
Table 1. *Tukey's HSD Post Hoc Test Results for Between-Groups Differences in the Use of Sources*

	Scientists	Business	Officials	Activists
Differences between means				
Brazil – China	-.215***	.170**	.082	.071
Brazil – India	-.243***	.336***	.113	-.250***
India – China	.028	-.166**	-.031	.321***

df = 1; \*\* p < 0.005 ; \*\*\* p < 0.001

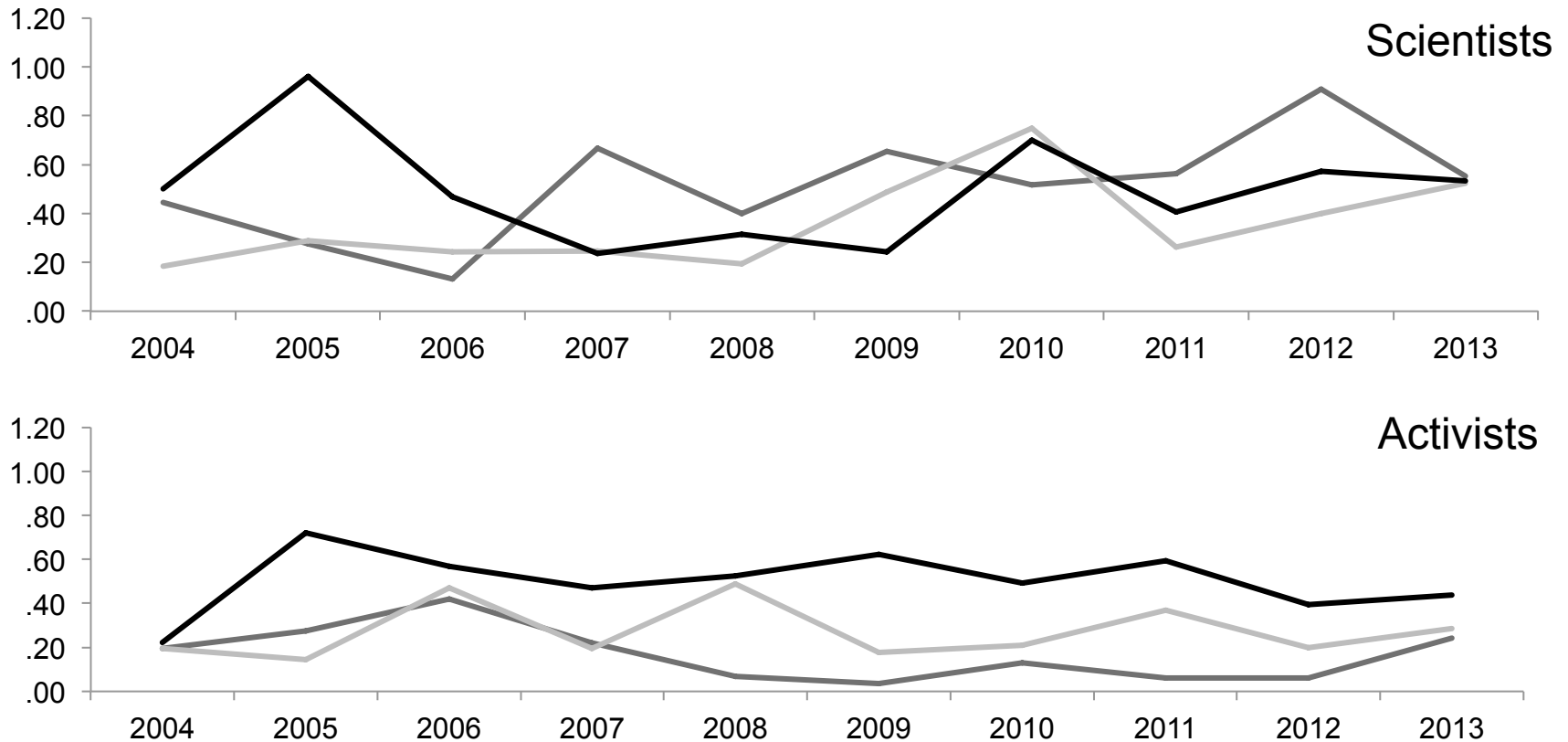
# News sources | RQ<sub>2</sub>

Figure 2. Comparison of News Source Use in Stories about GM Food Across Time



# News sources | RQ<sub>2</sub>

Figure 2. Comparison of News Source Use in Stories about GM Food Across Time



# Results

RQ<sub>3</sub>: How have news stories about GM food **been framed** in Brazilian, Chinese and Indian newspapers between 2013 and 2014?

# News frames | RQ<sub>3</sub>

Table 2. *Frequency of News Frames Used (Percentages in Parentheses)*

	Brazil (n = 583)	China (n = 324)	India (n = 369)
Science Frame	82 (13.9)	49 (14.1)	43 (11.7)
Economy Frame	211 (25.8)	89 (25.6)	118 (32.0)
Food Shortage Frame	25 (4.2)	98 (28.2)	64 (17.3)
Ethics Frame	23 (3.9)	29 (8.3)	25 (6.8)
Food Safety & Risk Frame	54 (9.2)	172 (49.4)	126 (34.1)
Environment Frame	85 (14.4)	29 (8.3)	105 (28.5)
Regulation & Politics Frame	363 (61.6)	182 (52.3)	226 (61.2)
Public Opinion Frame	62 (10.5)	147 (42.2)	160 (43.4)
Definition Frame	12 (2.0)	53 (15.2)	19 (5.1)

# News frames| RQ<sub>3</sub>

- Strong significant correlations exist between certain news frames
  - In Brazil, the political frame is negatively correlated at over 0.2 with most other frames.
  - In China, there are strong positive correlations between public opinion and safety-related frames.
  - In India, the scientific frame is negatively correlated at 0.3 with the political and public opinion frames.

# Discussion

- Salience tends to follow an episodic pattern, with specific events (politically related) triggering a surge in coverage.
- Beyond the broad similarity of dependency on official sources, there are differences apparently motivated by the topic (GM food) more than the media system.

# Discussion

- The framing of GM food stories, contrary to what most literature found in Europe and the US, is largely political in the three countries.
- Within this broad characterization, national differences exist on how the frame is employed.

End

# Coding scheme | Sources

Frame Name	Frame content
Scientist	Researchers and scientists; academic publications and journals; professors; research institutes; physicians; biologists
Business	News releases from corporations; companies' spokespeople; business organizations; producers; distributors
Official	Government officials; ministries and agencies; political party spokespeople; official reports and papers; ethics committees
Common people	Farmers; consumers; shop owners;
Activists	Advocates; NGO's; grassroots activists; religious groups; environmental groups; celebrities rallying against GM food
Foreign media	Foreign newspapers; news agencies; television reports
Others	Economists; journalists

# Coding scheme | Frames

Frame Name	Frame content
Scientific progress	Scientific breakthrough; new discovery; progress; paradigm shift; new direction for history; technological improvement
Economic implications	Economic potential; economic gain/loss; increase/decrease yield; investment opportunity; role of corporations and multinationals: food price
Food shortage	Food shortage; food supply and food security; having enough food; keeping up with rising food demand
Ethical issues	Professional ethics and principles; moral arguments; playing god; call for ethical involvement; beliefs and values; calls for restraint; trust in scientific community

Coding unit = paragraph

# Coding scheme | Frames

Frame Name	Frame content
Safety and risk	Contamination of food; safety for human health; food safety concerns; potential/actual health impact; nutrition; fatalism after the innovation; scientific uncertainty; catastrophe warning; lack of control
Environmental issues	Actual/potential environmental impacts; unintended consequences; testing location safety; beneficial/harmful effects; field trials
Regulation	Regulatory mechanisms; public involvement; national and international policy; transparency; trust in government; codes and guidelines; entry of GM in a country; labeling of ingredients; start of commercialization; political debate
Public Opinion	Consumer concern; public opinion on GM food; polls; public involvement/exclusion; anti-GM movement; non-GM food alternatives
Other	