行政院國家科學委員會專題研究計畫　成果報告

本土社會之基因科技風險文化整合研究-以基因食品為例

(III)

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Abstract

In light of risk perception and risk communication, this article analyzes the perceptions and interaction relationship between the local public, scientific experts, and the state toward technological risks, e.g. genetically modified organisms (GMO), under the development of global technological competitiveness. This article also points out that “valuing scientific research and neglecting its risk” in a local social system which is continually surrounded with hidden risks would result in combination of mainstream scientific rationality and prominent technological policy resources. A dominant scientific view (system) easily develops and oppresses the opposite opinions from ecological rationality and high discontent of social rationality. As a result, monopoly of scientific rationality and submergence of ecological and social rationality are formed.

This relationship lies in the gap of risk perceptions between the public, the state, and scientific experts: the public highly distrust scientists and specialists; scientists and specialists are dissatisfied with the state for lacking of a risk communication mechanism with the doubt of technological policy being misled or legitimacy of scientific research being deprived; the institutional capacity withers for not actively constructing a risk communication mechanism and social risk assessment. Namely, this article explores how a local social system surrounded with hidden risks devastates trust and accumulates unpredictable technological social consequences.

In order to review and examine the development of high-tech countries and society, this article suggests that a sequence of particular problems in local and less advanced countries should be carefully examined based on an institutional constructed mechanism of risk communication and assessment. Also, active interventions are critical for reshaping the relationship between science, the public, and the nation.

Keywords: trust, technological risk, risk perception, risk communication, risk assessment, scientific expert, technological policy, institutional capacity, delayed high-tech risk society

A Research in Risk Perception, Communication and Decision-making regarding to Genetically Modified Foods in Taiwan in 2003/2004

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Perspectives

One research point in this two-year research is to explore a question of social construction concerning public risk perception of GM foods in Taiwan. The theory is based on a development process that the contents of public perception, experience, acceptance or learning of complicatedly development of high-tech products originates from established social contexts and communication relationships in daily life. Namely, public risk perception is related to the social constructing process of an individual in an open social context, which comprises system, communication, and social learning in a society. As a result, this survey intends to conclude the elements of the theory mentioned above and design diverse groups of analytical variables including risk perception, risk information, risk assessment, risk communication, risk political participation, and risk management. According to these groups of variables, the researcher attempts to constructively promote and analyze the contents f public risk perception in Taiwan in the research behaviors.

The meaning of research time lies in continually extending systematic practice and communication practice of GM foods in local society in recent years. For example, the principles of voluntary labeling on GM foods began from 2002 in Taiwan. Also, compulsory labeling on GM foods has begun since 2003. Whether risk communication and risk perception are generated in the process of systematic practice is worth exploring. At the same time, the issues of latent social communication and rationality embedded in delayed high-tech risk society (Chou, 2002) and what risk perception develops in the practice of the new system (compulsory labeling) should be further discussed.

In other words, does the delayed and latent risk culture with unilateral communication in Taiwan regenerate new risk perception and awareness during this period? Or, does this delayed and latent culture continually generate the original social logic without any significant change? However, the practice and actions of a new system and the change of public perception of labeling on daily foods are the questions the people have to face. Hence, this research tries to explore the contents of public risk perception and awareness which is composed of autonomous perspective and action experience in communication, information, participation, and risk management policy in the practice of new system. On the one hand, people are slowly aware or unaware of the change of labeling system. On the other hand, they are making a risk decision whether to buy GM foods in their private communication, which is very individualized.

This survey also found out that the public in a local society have developed their own autonomous perspectives and critique philosophy against risk policy such as various systems of communication, information, and participation opportunity from

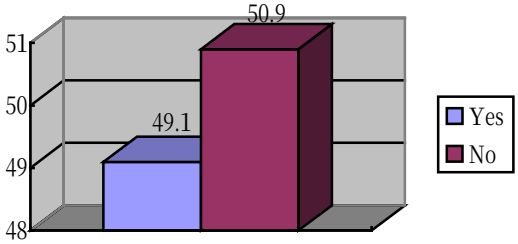
the structure of a latent and delayed risk society. Risk perception constructed based on this perspective and philosophy shows distrust for society and the government. This set of action philosophy which is very individualized, diffusive, and immature is repeatedly constructed in a society to form a collective risk discourse. Furthermore, it becomes the origin of distrust in complex genetic science/technology. Other technological and social areas such as SARS and Environmental Impact Assessment could also be influenced.

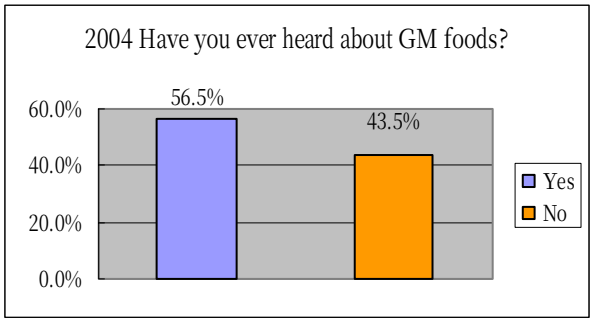
Experiential Analysis

In light of the procedures of new labeling system and practice development, this study preliminarily analyzed public risk perception in recent two years. The telephone survey was from April 21st to 25th in 2003 and from March 29th to April 8th in 2004. Each contains 1702 valid cases in 2003 and 1572 valid cases in 2004 and interval errors are 3.5% in 2003 and 3.36% in 2004. The content of questionnaire consists of risk perception, transparency of risk information, risk communication, the awareness of risk assessment, risk policy participation, risk management, and trust based on the theory of risk perception.

1. Delayed and Latent Risk Perception (Figure 1)

Figure 1 2003 Have you ever heard about GM foods?



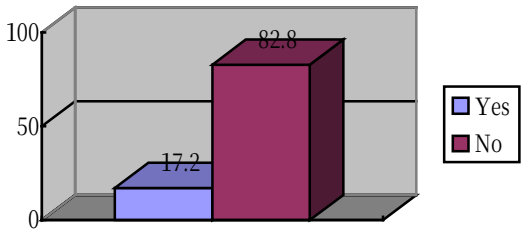


The first point explored in the survey is that the information concerning GM foods is not clear to the public. Only 836 cases (49.1%) in 2003 and 888 cases (56.5%) in 2004 have ever heard about GM foods, and 866 cases (50.9%) in 2003 and 684 cases (43.5%) in 2004 have never heard about GM foods, which do not include the failed cases such as the interviewee refusing to answer or breaking off the interview. More than or near half interviewed people have never heard or been aware of this disputed issue. This result corresponds and extends the inference from this previous research, which is that the delayed risk social structure in Taiwan regenerates unawareness and ignorance of the public. This social context of ignorant risk not only delays the public response to issues of politics, society, or food safety but also regenerates latent and hidden risk social structure and contexts.

2. Blurred Risk Awareness

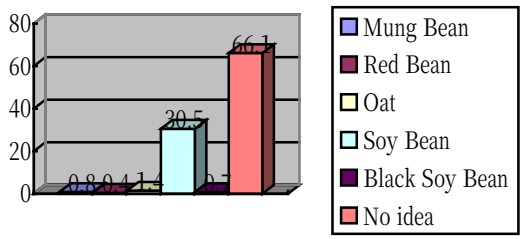
Based on the successful cases that have heard and known about GM foods, their risk perception and knowledge background can be obtained. High as 82.8% of the public in 2003 indicated that they do not understand the principles or productive procedures of GM foods (Figure 2), which shows that this complex high-tech product is difficult to be handled to the public. On the other, risk information and risk

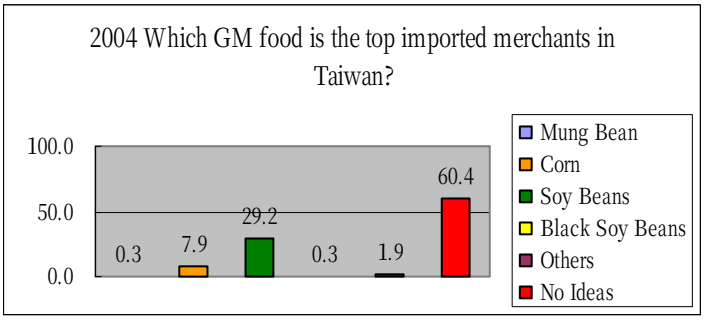
Figure 2 2003 Do you know the productive principles or procedures of GM foods?



communication are obviously insufficient in the whole society, and the access of learning and perception is none. This result also shows that only 30.5% (2003) and 29.2% (2004) of the subjects know that the daily nutrition, soy bean, is the main imported GM food in Taiwan (figure 3). Only 26.3% (2003) of the subjects know the

Figure 3
2003 the main imported GM foods in Taiwan?





main exporting country (figure 4); however, only 66.1% (2003) and 68.4% (2004) of the interviewees are aware of the safety disputes of GM foods (figure 5). In other

Figure 4 2003 the main exported countries and areas of GMO?

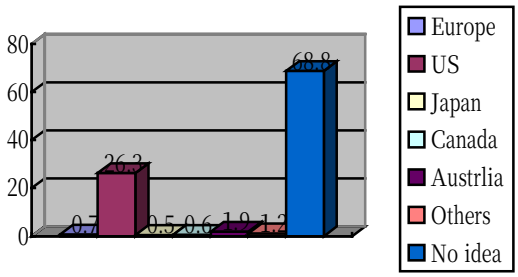
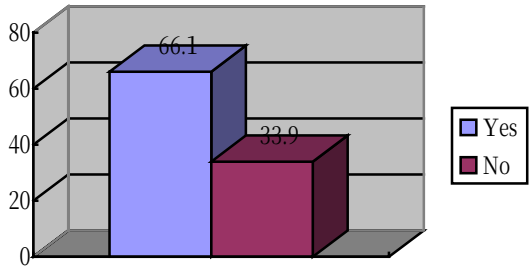
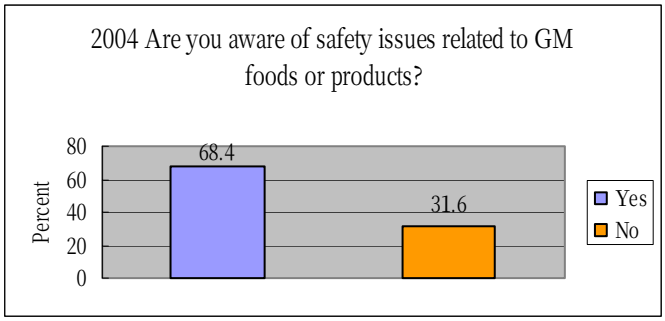


Figure 5 2003 Do you know safety issues about GMO?





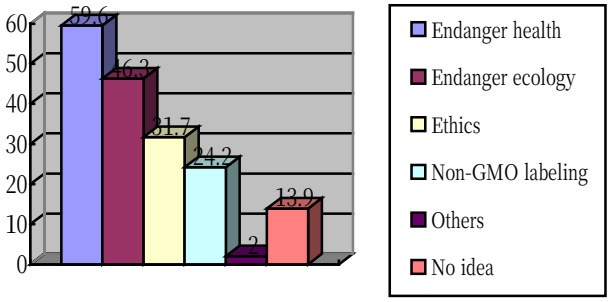
words, most people who have ever heard or known about GM foods do not understand the production, imported categories, and productive areas; nevertheless, two thirds of the public are aware of safety disputes of GM foods. This shows that the public who is ever involved in this issue have preliminarily developed risk perception, but the basic details are still blurred. Being further questioned with information origins, most people (85.8%) answered that the media reports are the major source. According to the previous research inference and continual observation, the time that the media in Taiwan discussed the risk of GM foods principally focused on August and late October in 2000. Follow-up media discourses are scarce because seldom social groups pay attention to discussing it in Taiwan. In the view of risk information

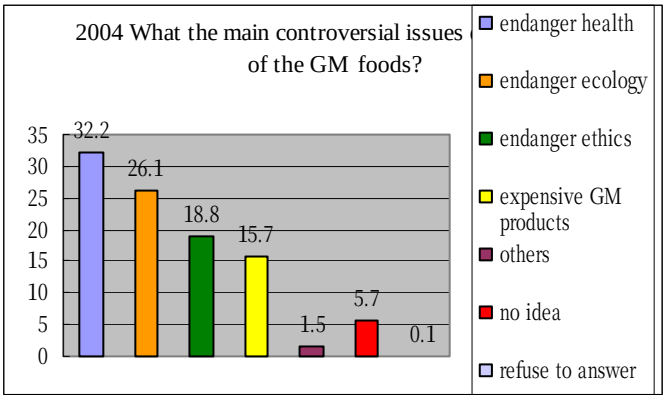
and communication, local public have long lacked for information and content learning from media. Information gap and knowledge difference (Chou, 2002) formed by this still constructively exist.

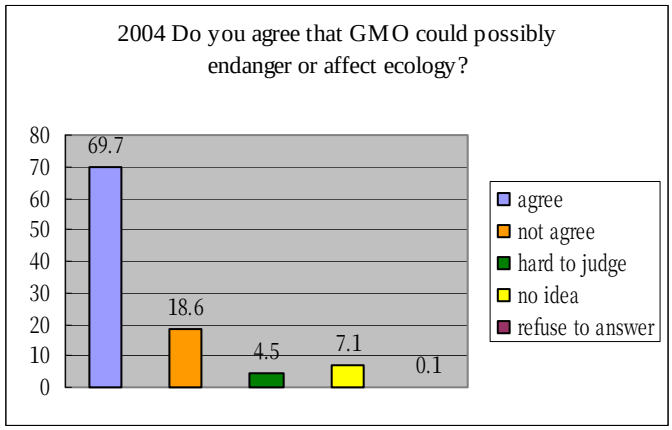
3. Risk Perception of Subjective Construction

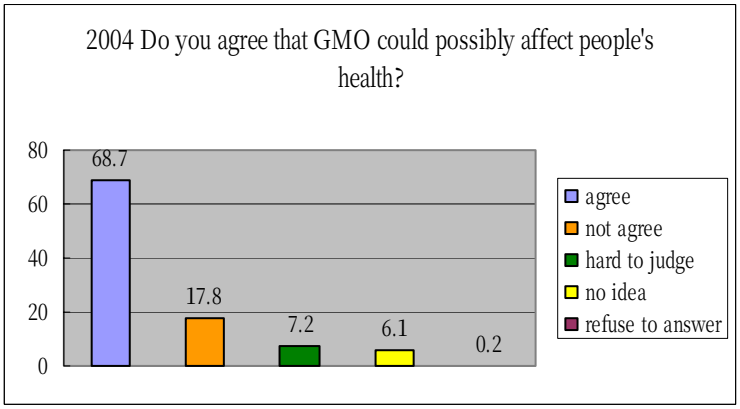
Although constructive knowledge and information gap cause blurred risk perception, 59.6% (2003) and 23.2% (2004) of the subjects clearly considered that GMO potentially threatens health; 46.3 (2003) and 26.1% (2004) of the subjects perceived that GMO potentially endangers ecology; 31.7% (2003) and 18.8% (2004) of the subjects observed that the people who abide by religious or ethical bans such as being a vegetarian can be impacted by GMO (figure 6). According to these data,

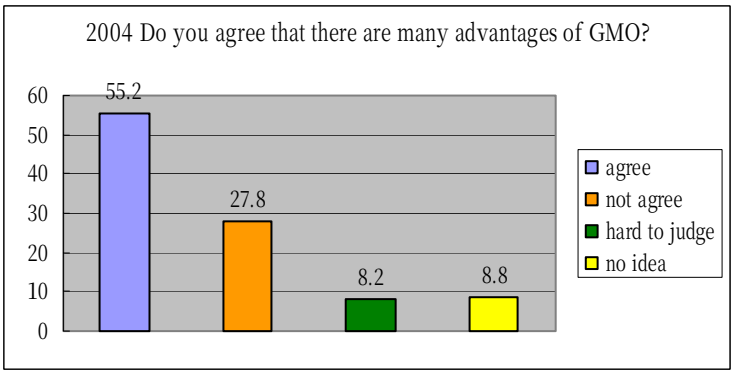
Figure 6 2003 main disputes of GMO?

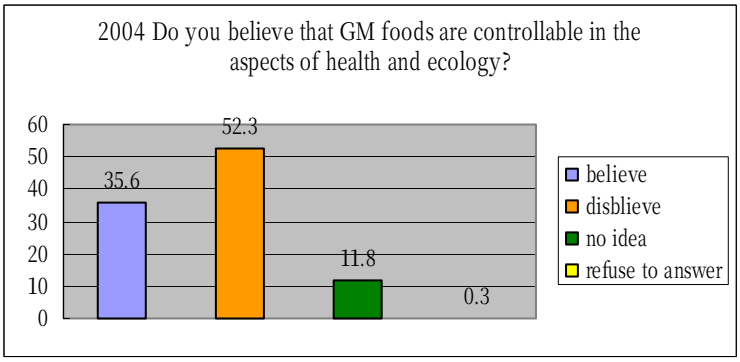








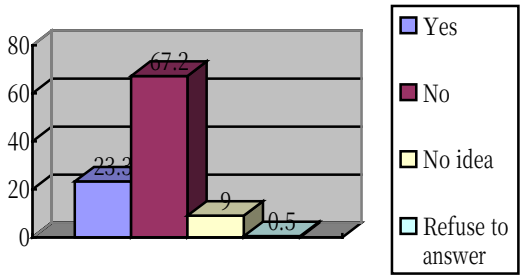


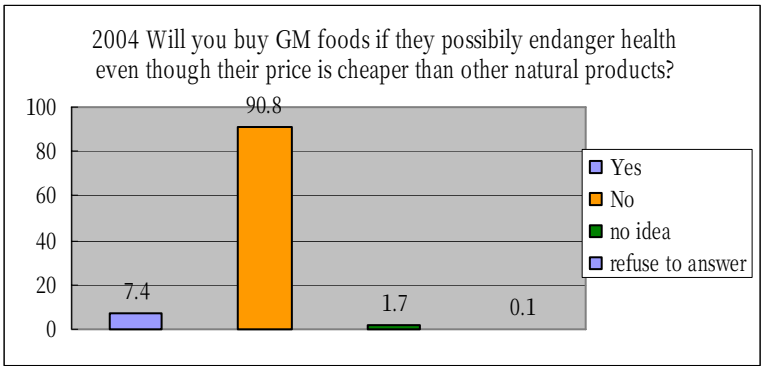


about two thirds of the people do not support the production or research/development of GM foods (figure 8). Even though GM foods offer cheaper

price, 87.5% (2003) and 90.8% (2004) of the subjects still refuse to buy them with concern for health.

Figure 8 2003 Support GM animals or plants even they could endangerecology?





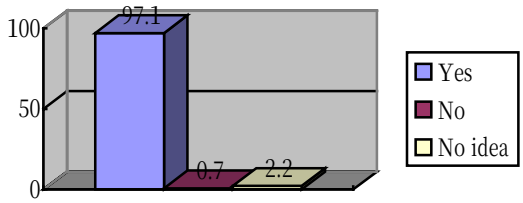
In limited information and blurred risk perception, the public have subjectively constructed their own risk perception and held refusal attitudes against GM foods. In a word, people usually unilaterally accept and believe that they control the only information in a closed society without information exchange and communication. The messages revealing crises of health, ecology, or ethics become firm but assumptive belief among people. Then people subjectively construct risk perception in themselves, which determines their judgment and plants a seed of GMO disputes and distrust in the whole society.

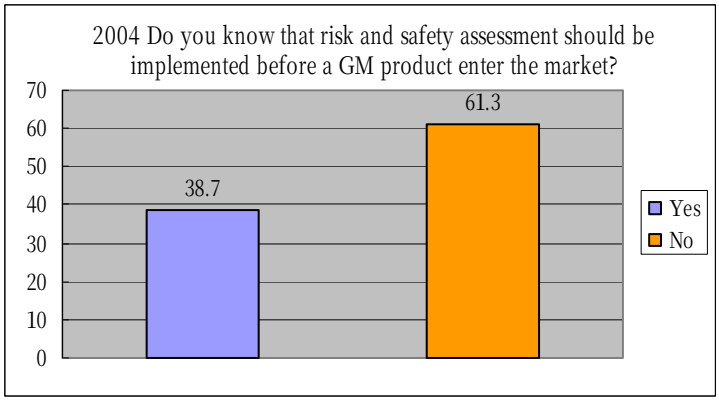
4. Risk Assessment Perception and Risk Communication

GM foods contain the essence of risk controversy due to the complexity of high technology. Hence, the aspects such as ethics and social risk should be further explored, which is different from traditional risk assessment that only limited in the topics of healthy and environmental risks. Besides discussion by specialists, two-way risk communication besides media between the main administration and the public are also be examined. When a social medium fails to fulfill its role in risk communication, a two-way, multiple, and diverse risk communication mechanism offering risk information and bridging public inclinations is obviously essential.

In the investigation, the public have a very strong perception believing that risk assessment of GM foods is a necessary work respectively on health safety, environmental ecology safety, religion and ethics, and social purchasing power (figure 11). However, 72.6% (2003) and 61.3% (2004) of the subjects had no idea that GM

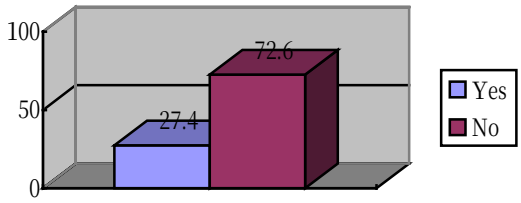
Figure11 2003 Should isk and safety assessment be implemented before a product enters the market?

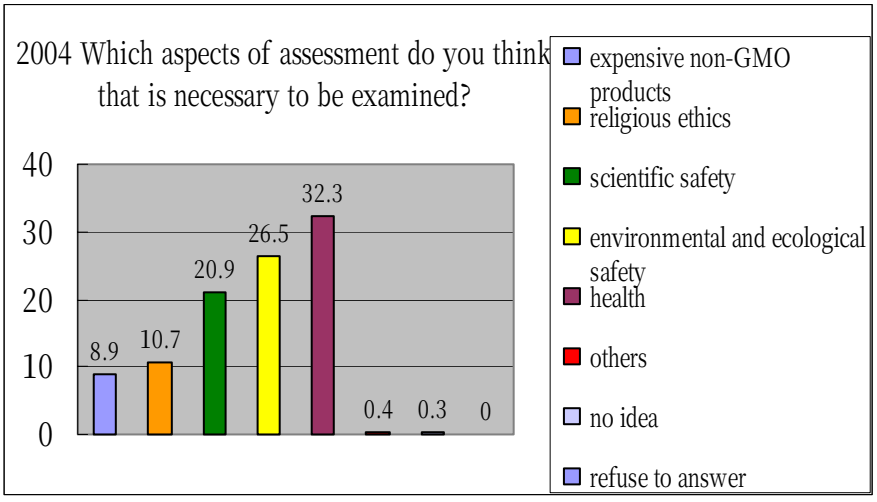




foods should be assessed and controlled by the Department of Health in Taiwan before entering the market (figure 12). The question is that 80.5% (2003) and 83.3% (2004) of the people subjectively considered that the Department of Health does not

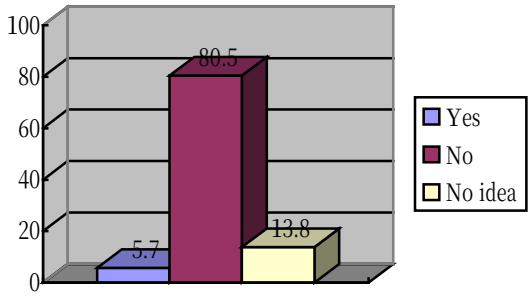
Figure12 2003 do you know that risk and safety assessment is required before a product enters the merket?





communicate and explain risk assessment of GM foods with the public (figure 15). Overall, 90.9% (2003) and 88.9% (2004) of the public did not obtain enough information related to risk assessment of GM foods, and have opportunity to communicate and discuss in the society (figure 16). In addition to media being short

Figure 15 2003 Did the Department of Health communicate the issue of GM foods with the public?



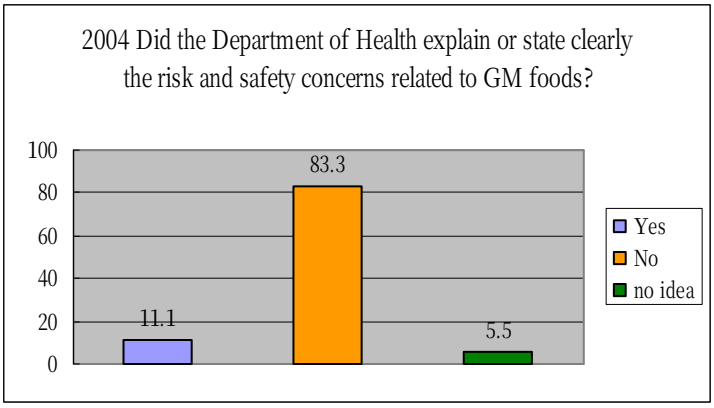
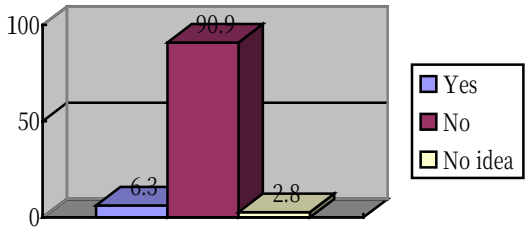
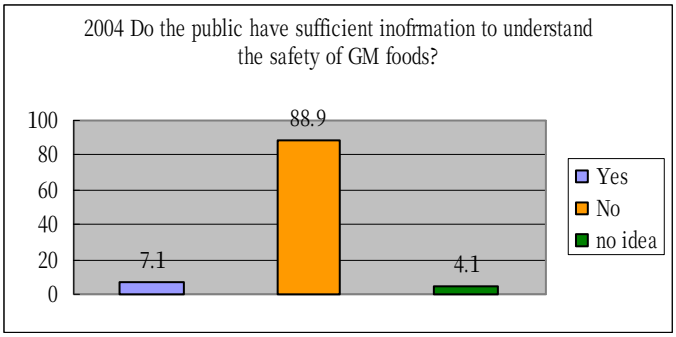
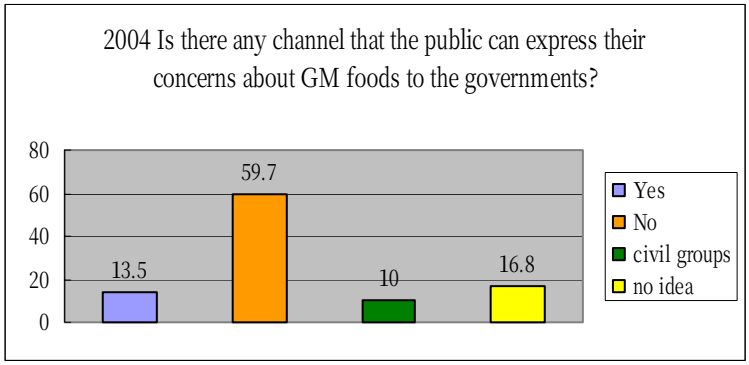


Figure 16 2003 Have the public reveived any risk and safety information about GM foods?







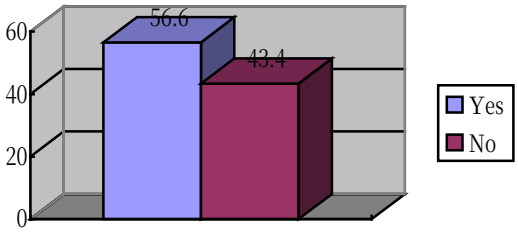
of local risk communication, risk communication as a significant index between the government and the public is also absent. Without risk information reported by media and risk communication between the government and the public, the mechanism lacking of social learning contains more hidden risks. Thus the differences of risk perception are caused. These procedures and phenomena indicated the same social crisis according to the practical experience of compulsory labeling policy in this year.

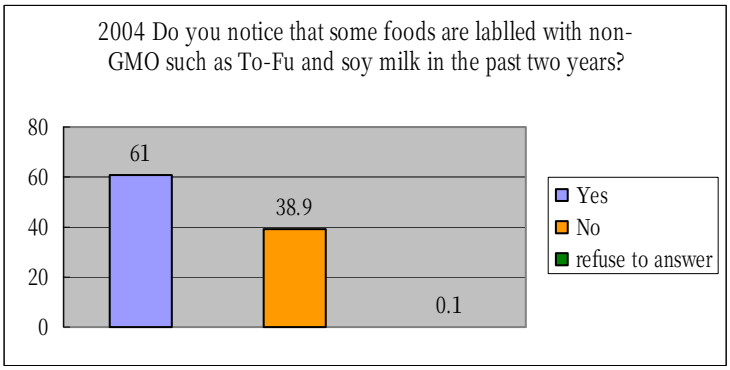
5. Compulsory Labeling Policy without Risk Communication

This year that the government begins the policy of compulsory labeling on GM foods is well-timed for policy propagation and risk communication. Compared to the restricted use policy on plastic bags of which the Environmental Protection Administration put great efforts on propagation, the Department of Health was relatively inactive on risk communication. The acts of the Department of Health happen to corresponding with the critical view of “irresponsible organization” in the theory of risk society. As a modern bureaucratic organization, the Department of Health did not actively offer information and communication opportunities for the public but further reproduce a hidden risk structure. The critiques made by the public can be found in the interview.

Even though 56.6% (2003) and 61% (2004) of the public have gradually noticed the products with “voluntary labeling” of non GMO (figure 21) on the selves of supermarkets in the past two years, 2002 and 2003, 78.9% (2003) and 78.6% (2004)

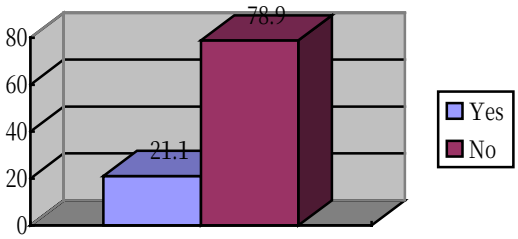
Figure 21 2003 Do you notice some products labeled with non-GMO in the past year?

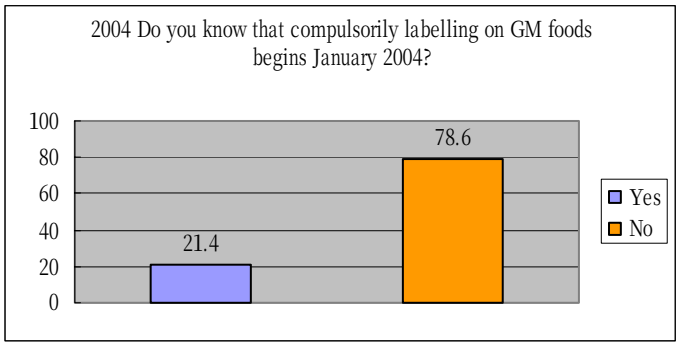




of the public have no idea that compulsory labeling policy beginning on January 1st, 2004 (figure 22), and more than 85% (2003) of people did not know about what

Figure22 2003 Do you know GM foods should be labeled from this year?





kinds of products should be labeled compulsorily (figure 23). 89.8% (2003) and 78.6% (2004) of the interviewees indicated that they had never heard about any propagation related to compulsory labeling policy which was carried out by the Department of Health this year (figure 24). In light of two-way risk

Figure 23 2003 which products should be compulsorily labeled this year?

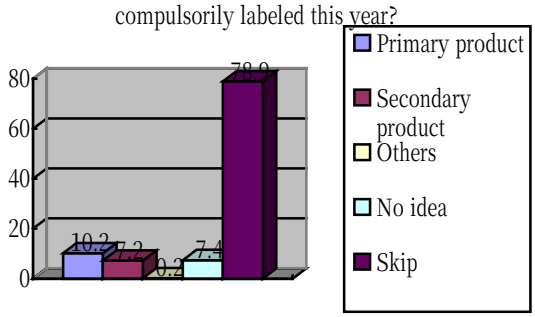
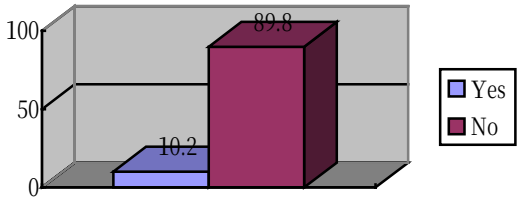
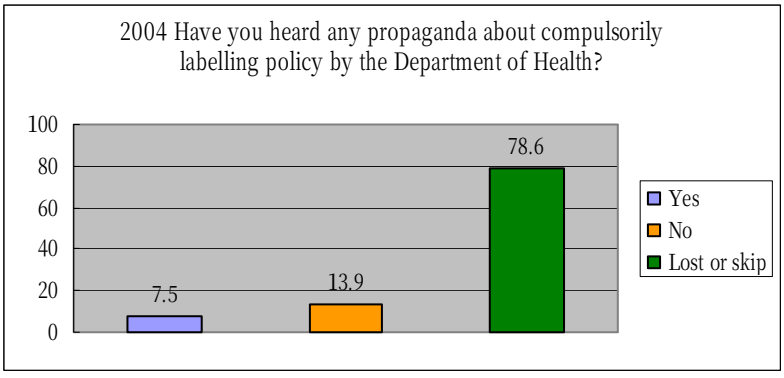


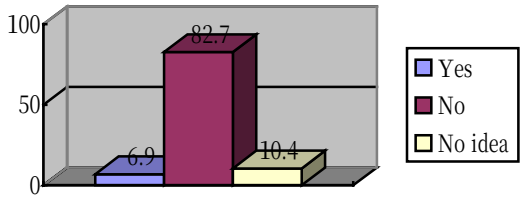
Figure 24 Have you heard about any propagation related to compulsory labeling this year?





communication, the subjects were questioned respectively according to two propagation methods, media and other channels, taken by the Department of Health to fully communicate with the society. The results reveals that 82.7% (2003) of the interviewees regarded the main administration fails to inform the public the compulsory labeling policy of GMO (figure 27). Also, 80.6% (2003) of the subjects said the Department of Health did not regularly announce relative information about GMO through media.

Figure 27 2003 Did the Department of Health communicate compulsory labeling policy of GM foods to the society?

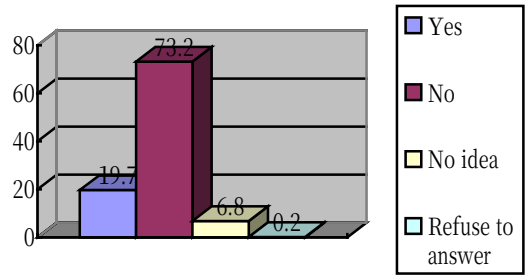


6. Social Distrust in Hidden Risk Communication

Due to the lack of active risk communication and opportunities and procedures of two-way social learning, nearly two thirds of the interviewees stated that the decision-making process of GM foods requires transparency when the Department of Health administers this affair. In these delayed and latent risk hidden structure and social developmental contexts, the public do not trust high-tech products more and more. Nevertheless, trust is the basis of a modern society. The survey in Taiwan shows that 73.2% (2003) and 63.3% (2004) of the public distrust the statement that GM foods are completely safe to health made by the Department of Health (figure 20). More than half (54.3% of 2003 and 51.2% of 2004) of the public did not trust that the

Department of Health is able to manage the potential risks of GMO (figure 30).

Figure 20 2003 Do you trust in the statement that GM food is safe to health?



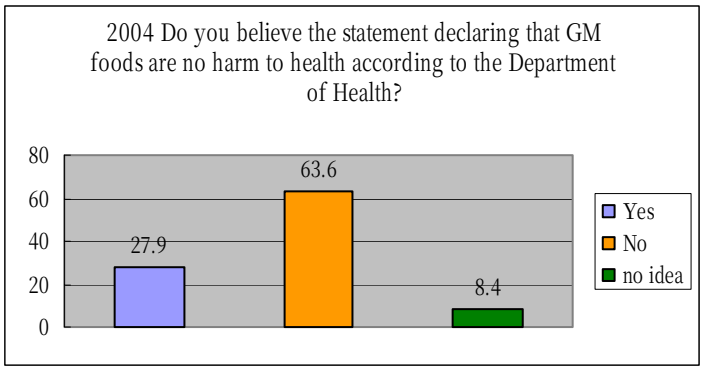
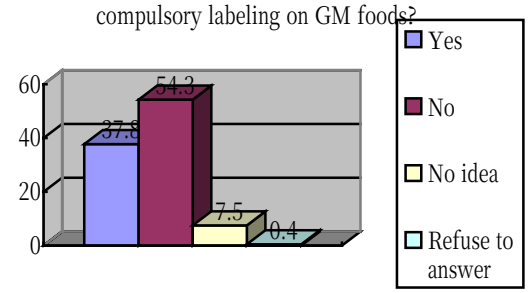
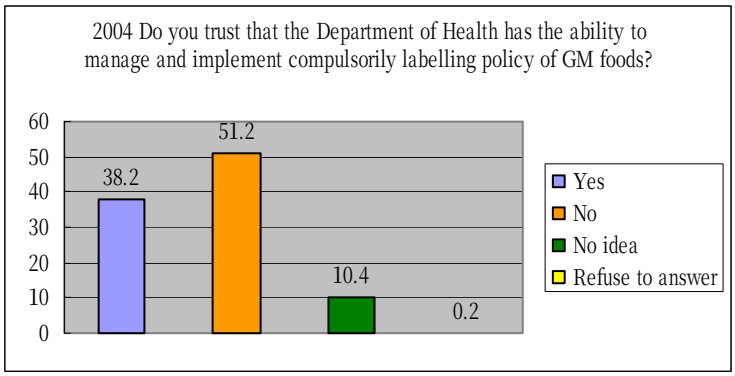


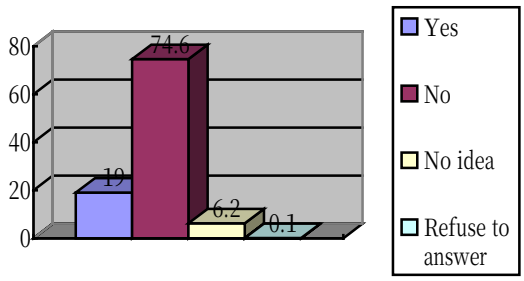
Figure 30 2003 Do you trust that the Department of Health is able to manage compulsory labeling on GM foods?





Furthermore, reaching up to 74.6% (2003) of the subjects did not believe the manufacturers would follow the regulations of compulsory labeling (figure 32).The

Figure 32 2003 Do you trust that the manufacturers would follow the regulations?



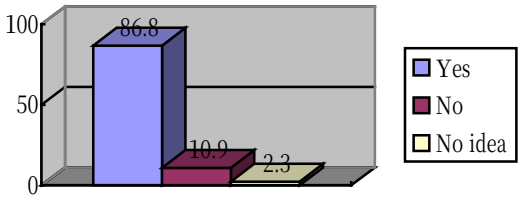
situation of distrust in risk has highly developed. Because risk has not been collectively discussed for communication and mutual learning, aggregative recognition and views are not formed in the society and further develop political pressures. Risk has become the problem of high individualized distrust: distrust in scientific statements of the main administration and distrust in safety certification of manufactures. The social basis, trust and recognition, becomes a greater crisis in this local, delayed, latent, and unknown risk social structure.

7. The Rights of Self-participation and Decision Making of Risk Policy (Figure 17, 18, 19)

Although the recognition crisis of social distrust in a risk hidden social structure is exposed, the individualized and personalized of risk developmental context does not impede the development of individual autonomous privileges in a local society with high exchange of information, especially the perspectives of civil rights to participate in technological policy decision-making. According to other countries' experiences, the participation in technological risk policy-making has gradually introduced into the systems.

As a result, 90.3% (2003) and 67.6% (2004) of the interviewees stated that they had no opportunities to access the risk policy-making of GM foods (figure 19). It also corresponds to the fact that the Department of Health had not established any procedures or mechanism for participation of the public in technological policy making. This part of issue should be discussed and planned overall under the framework of technology and society of Taiwan. Also, 86.8% (2003) of the subjects claimed that the citizens should have the right to participate in decision-making of technological risk policy (figure 17), which is worth to discuss.

Figure 17 2003 Do the public have the right to participate in decision-making of GM foods policy?



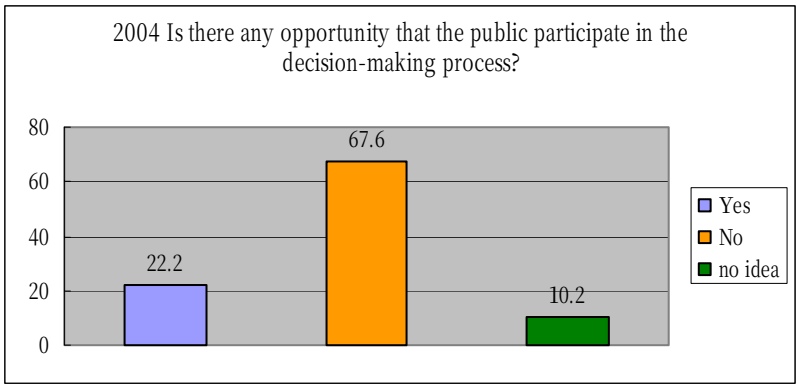


figure 18 2003 Do the public have the channel to participate in policy-making of GM foods?

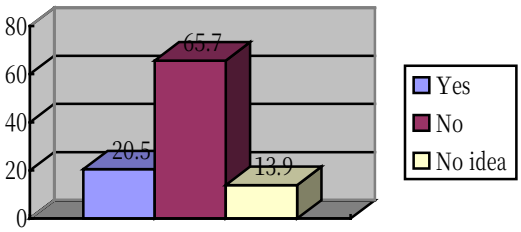
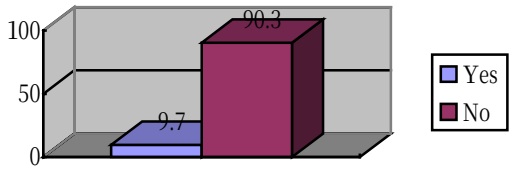


Figure 19 2003 Do the public have the opportunity to know and participate in policy-making of GM foods?



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