Food and nano-food within the Chinese regulatory system: no need to have overregulation. Less physicality can produce more power

EJLT European Journal of Law and Technology

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Less physicality can produce more power.

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1. Introduction

This article aims to present a comparative analysis of the way the issue of food safety is being tackled in the People's Republic of China and in the Special Administrative Region of Hong Kong (hereinafter: HK) and to illustrate the challenges offered by the nanotechnologies applied to food in a newly formed regulatory system.

The People's Republic of China and HK have different structures and regulations. This makes the comparison harder than in other cases, but such comparison is still useful if we consider the central role played by HK in opening a window towards the free market and more in general towards the trends of the international community, even in food law development.[2]

In China, on one hand, sporadic and heterogeneous rules have been introduced one after the other in recent years, but only in 2009 was a general Food Safety Law approved. In HK, on the other hand, a network among technical bodies and institutional actors has been created and consolidated in the past five years. In this sense, in both systems we may find different attempts to implement good governance tools, such as a coordinated set of principles governing food law in China and a strong network of regulatory bodies willing to implement food safety standards and principles in HK.

The HK development in administrative law and in food safety law in particular can constitute a pilot for the other Chinese regions. Actually, the Chinese themselves view HK as a window to the outside world, so capitalist HK is going to become the key to opening the social and regimented Chinese economy. [3]

The first part of the article looks at the problematic areas in the Chinese situation and in that of HK. The first section analyzes food safety rules and their implementation in the Chinese legal system, in order to analyze their flexibility to provide a legal framework also for nanotechnologies and nano foods.

In general, to ensure food safety, the Chinese government has adhered to the principle of giving priority to prevention and control by monitoring and controlling the whole process right from the start. It has established a regulatory format in which local governments take responsibility, related departments provide guidance and conduct coordination, and various sectors make concerted efforts under a unified national leadership [4]. In response to food safety problems, the State Council issued the Decision on Further Strengthening Food Safety Supervision in 2004. The Decision divided food safety supervision into four links, managed by the Departments of Agriculture, Quality Supervision and Inspection, Industry and Commerce, and Health. Primary agricultural production is supervised by the Agriculture Department, food processing quality and hygiene by the Quality Supervision and Inspection Department, food circulation and distribution by the Department of Industry and Commerce, and the catering industry and canteens by the Health Department, according to which each monitoring link is supervised by one government department; sectional supervision is adopted as the main means of control while supervision of different varieties of food is adopted as a supplementary means, making clearer the functions and responsibilities of the food safety supervisory departments. Finally, in 2009 China approved the Food Safety Law (hereinafter: FSL) and its implementing regulations. This approval has marked a fundamental step towards the establishment of a new regulatory framework, which will allow mutual exchange of ideas and practices among China and the other international partners, for the benefits of the development of food science.

The second section of the first part of the article examines the impact of food safety law at the local level, particularly in the HK legal system. Here the different functions of the regulatory bodies and their coordination are analyzed. As a conclusion of the first part, an example of a pilot project shows how food safety may be efficiently tackled at the local level, and possibly extended to the entire territory of the People's Republic of China. In this sense, it will be shown the

relevant role of a bottom up participation and decentralization of powers in enhancing the administrative tasks of food safety actors.

The second part of the article scrutinizes the challenges represented by the new frontiers of nanotechnology and their interconnections with food science. The study will focus on the best way to regulate nano-foods showing flexibility of the new Chinese regulatory system to welcome them within the newly established framework. The European achievements will be the touchstone to offer the best regulatory tools for the Chinese experience.

Some concluding remarks on the opportunity for China to opt in favor of a decentralized system in order to fulfill the expectations of a good administrative system, regulating food and nano-foods, bring the article to a close.

PART I

CHINA AND HK AND THEIR EFFORTS TO OVERCOME THE FOOD SCANDALS

2. The Chinese Food Safety Law: legislative improvements driven by food safety scandals

2.1 Introductory remarks

There is a considerable difference between theory and practice in the Chinese food safety system. China has made important improvements in the field of food safety regulation, at least from the legislative point of view. As we analyze further in the following sections, this remarkable effort towards the development of a regulatory regime has been encountering several problems at the level of its implementation, mainly because of the extended territories of China [5]and of the fragmented institutional framework. [6]

The recent developments in food safety regulation show the efforts made by China to take measures firstly to overcome the crisis and secondly towards achieving a sustainable system of social development. [7] The actual challenge in this post-crisis phase is represented by the heterogeneity of authorities and bodies in charge of implementing the rules and by the heterogeneity of the rules themselves, which have been driven by food scandals, such as the one on tainted milk in 2008, more than by a clear reform plan.

The approval of the Food Safety Law (FSL) was in fact pushed by a food crisis, in particular by that originating from tainted milk in 2008. The FSL was therefore approved within a heterogeneous context, considering that the food safety regulatory system is still an ongoing process and there is still a considerable fragmentation of regulatory authorities among different governmental agencies. This aspect, as we have anticipated and we will further discuss, represents one of the major difficulties in the process of the implementation of the FSL itself and of its acceptance within the legal and institutional tissue.

2.2 The new Food Safety Law and its background

After several years of discussion, the new law was finally approved following the melamine problem. [8]

The facts date back to mid-September 2008, when the Chinese government announced a recall of infant milk powder that was tainted with melamine, a chemical usually used in plastics. [9]

The tainted product came from a private company, which was based in Shijiazhuang, the capital city of Hebei province, in northern China.

Apparently, melamine (nitrogen-rich product) had been added illegally to watered-down milk to increase its protein content. It was quickly revealed that, as a consequence of the mentioned adulteration, melamine was causing infants to develop kidney stones which, if left untreated, could cause renal failure and death. Within days, four babies had died as a result of ingesting melamine-laced baby milk powder, and 54,000 children had become sick, most of whom had developed kidney stones. [10]

Because of the general panic after the announcement of tainted milk, the Chinese government had to face strong demands from its own citizens (as well as from the international community) to approve and implement a package of

effective measures that would ensure the safety and quality of their dairy products. In addition to the emergency measures taken, the Government had to take action in three main areas: strengthening food safety laws, enforcing stricter and more frequent inspections of milk collection stations, and setting maximum tolerance levels for melamine in dairy products.

The new FSL is structured in ten chapters, covering the main topics of food safety, namely, General Provisions (Chapter I), Surveillance and Assessment of Food Safety Risks (Chapter II), Food Safety Standards (Chapter III), Food Production and Trading (Chapter IV), Inspection and Testing of Foods (Chapter V), Import and Export of Foods (Chapter VI), Responses to Food Safety Incidents (Chapter VII), Supervision and Administration (Chapter VIII), Legal Liabilities (Chapter IX), and Supplementary Provisions (Chapter X). [11]

From the institutional side, the FSL coordinates the role of the public authorities in the supervision of the food safety system. In particular, it attributes the power to the competent authorities (State, State Council, Health Administration Departments, Agricultural Departments) to establish a surveillance system for food safety to detect food-borne diseases, food contamination, and food-related hazards to human health (Art. 11-12). The health department is responsible for the organization of risk assessment (Art. 13), which means that it shall carry out an inspection and food safety risk assessment immediately upon discovery of any potential food safety issues by food safety risk surveillance or report, and eventually it shall, together with the relevant State Council departments, conduct a comprehensive analysis on the food safety situation based on the results of food safety risk assessments and the information from food safety supervision and management. The State Council department of health administration shall give food safety risk warnings and announcements on a timely basis for food that such comprehensive analysis proves to be of high risk (Art. 17).

After identification of the institutions involved in the risk assessment, the FSL describes the food safety standards, stating that they have to be scientific, reasonable, safe, and reliable (Art. 18), that they are mandatory (Art. 19), and that they shall include the following items: (1) limits of pathogenic microorganisms, pesticide residues, veterinary medicine residues, heavy metals, contaminants, and other elements in food that may be hazardous to human health; (2) the type, scope, and dosage of permitted food additives; (3) nutritional ingredient requirements of staple foods and supplementary foods exclusively for infants and other designated groups; (4) requirements of labels, identifications, and instructions regarding food safety and nutrition; (5) hygiene requirements for food production and trading; (6) quality requirements relating to food safety; (7) measures and procedures for food inspection and testing; and (8) other items necessary for formulating food safety standards (Art. 20). The generic reference to their mandatory nature, as in the case of the responsibility of the institutions, is not clearly explanatory of the consequences in case of infringements and it necessarily needs to be implemented by further regulations. Moreover, the list in itself probably needs to be implemented and specified by rules ad hoc, containing tables with levels of values admitted and scientific and technical parameters to be followed by food business operators.

From these provisions, we may see that the main principles ruling food laws are contemplated, although the way of regulating them seems to lack a systematic order and is still extremely generic in its content. There is no a clear list of definitions (as it happens in other systems, such as the European Food Law), [12] of actors (apart from the institutional ones, it is not clear, for example, how the experts joining the competent authorities for the risk assessment, mentioned in Art. 13, will be recruited), and of actions and responsibilities (the reference to a generic 'responsibility' of the competent authorities, such as the health department in the above mentioned Art. 13, doesn't clarify whether it is a mere political responsibility or it has also legal effects).

Finally, Article 53 states what happens in case of unsafe food (probably this provision should be better placed at the beginning of the FSL, as it happens in the European Food Law, where one of the first commandment is Art. 4: 'Food shall not be placed on the market if it unsafe'): 'The State shall establish a food recall system. Upon discovery of foods not conforming to food safety standards, food producers shall immediately cease production, recall foods in the market, notify the relevant food producers, traders and consumers, and keep records about the recall and notification status. Upon discovery of foods not conforming to food safety standard, food traders shall immediately cease trading, notify the relevant food producers, traders and consumers, and keep records on the cessation and notification status. If the food producer considers a recall as necessary then foods in the market shall be recalled immediately. Food producers shall adopt necessary measures on the recalled foods, such as remediation, disinfection or destruction etc., and report the recall and treatment to the quality supervision department at the county level and above'.

Although it is clear that food business operators ('food producers' in the translated version, a notion that actually covers a more limited range of actors) play a relevant role in taking responsibility in case of unsafe food,their action is not clearly connected to that of the public authorities, as it happens in European food law, for example. Moreover, it is not clear what the public authorities shall do to enforce the food business operators' action. We know, for example, that Article 17 of the European General Food Law states clear responsibilities for food business operators and defines a precise role for the Member States in enforcing them: '1. Food and feed business operators at all stages of production, processing and distribution within the businesses under their control shall ensure that foods or feeds satisfy the requirements of food law which are relevant to their activities and shall verify that such requirements are met.'

Therefore, Member States shall enforce food law, and monitor and verify that the relevant requirements of food law are fulfilled by food and feed business operators at all stages of production, processing and distribution, maintaining a system of official controls and other activities as appropriate to the circumstances, including public communication on

food and feed safety and risk, food and feed safety surveillance and other monitoring activities covering all stages of production, processing and distribution. Art. 17 states also that: '2 [...] Member States shall also lay down the rules on measures and penalties applicable to infringements of food and feed law. The measures and penalties provided for shall be effective, proportionate and dissuasive'. [13] This means that, in the European Union (EU), the role of food business operators is clearly ruled, and that the public authorities (generically identified with the Member States) have a precise duty to enforce the action and to play the role of watchdogs over the official controls. These provisions should be probably taken into account also for the Chinese regulatory system, where it seems that a considerable gap exists between the actors involved in food safety supervision: although the FSL states that the authorities shall cooperate together, it is not clearly defined how this cooperation could be effectively implemented (Art. 6 generically mentions that 'Departments of health administration, agricultural administration, quality supervision, administration of industry and commerce, and food and drug supervision and management at the county level and above shall strengthen their communication and cooperation, divide their tasks in accordance with their respective duties, legally exercise their authority and be responsible for their respective duties').

Such shortcomings apart, with the new FSL there seems to be a change of mentality, and, according to public opinion, an effective will to strengthen the regulatory regime in this field. [14] The FSL in fact replaces the Food Sanitation Law that had been in effect since 1995, and the change of title is also a symptom of a change of mentality, showing, according to public opinion, that 'the priority for the Chinese government is a clear improvement of the international reputation of the country's food system. Different institutional actors will be responsible to assure a high level of food safety, and in particular the General Administration of Quality Supervision, Inspection and Quarantine, the State Food and Drug Administration and the ministries of health,agriculture, commerce and industry, leading to concerns of possible jurisdictional conflicts over authority and potential revenues from fines'. [15]

The FSL came into effect on June 1, 2009. Even before that date, several attempts had been made to implement it, as to show once again the importance of the topic in the agenda of the Executive power. [16]

2.3 The attempts to implement the Food Law

2.3.1 Implementing regulation

To implement the FSL, the State Council published the first implementing regulation on April 24, 2009. [17] This regulation has the main objective of giving effectiveness to the FSL. It is structured into fifty-seven articles, organized in eight chapters: Chapter 1 is dedicated to general introductory hints; Chapter 2 to Food Safety Risk Monitoring, Assessment and Food Safety Standards; Chapter 3 to Food Production and Business Operation; Chapter 4 to Food Inspection; Chapter 5 to Food Import and Export; Chapter 6 to Handling of Food Safety Accidents; Chapter 7 to Supervision and Administration; and Chapter 7 to Legal Liability.

As highlighted from the very beginning, one of the key requirements is to consolidate a food safety information network 'so that the access to technical information of food safety information institutions and food inspection institutions can be shared' (Art. 2). The entire procedure concerning risk analysis, as ruled in Chapter 2 (Art. 4-17), has to be held by the Ministry of Agriculture (MOA) together with the Ministry of Health (MOH). Moreover, the administrative tasks have to be organized at a local level throughout a strong network: the health administrative department of the people's government of each province, autonomous region, and municipality has to organize its local Administration for Quality Supervision, Inspection, and Quarantine (AQSIQ), State Administration for Industry and Commerce (SAIC), and food and drug administrative department (Art. 5 of the mentioned regulation). Anyway, according to Article 9, a technical institution charged with food safety risk monitoring shall, in accordance with the food safety risk monitoring program, perform monitoring in a systematic and constant way, ensure that the monitoring data are true, accurate, and objective, and shall submit the monitoring data and analysis results to MOH and the department assigned the monitoring tasks. This means that the legislator is aware of the importance of a technical expertise body working together with the administrative entities.

The monitoring data are then collected and summarized by the MOH, which is in charge of spreading all the information to the other actors of the network (AQSIQ, SAIC, and the others cooperating bodies). The risk assessment procedure is also arranged by MOH in the five circumstances (Art. 11): where risk assessment is needed in order to provide scientific references to the development or revision of national food safety standard;where risk assessment is needed in order to identify the key fields and key species of supervision administration Where new factors are identified that may jeopardize food safety; where it is needed to determine whether a certain factor poses a food safety danger; where it is needed to determine whether a food is safe or not; and in all other situations where MOH deems necessary to conduct a risk assessment.

The preparation and implementation plan to settle national food safety standards is open to public discussion; in this sense, Article 13 allows public debate and comments and suggestions for the preparation of the program, which has to be developed jointly by research, educational, academic institutions, together with trade companies (Art. 14). As above mentioned, Chapter 3 provides all the rules to be followed by food producers and business operators, which include the need for traineeships for all the employees on the FSL and its regulation (Art. 19 and 20). This is a good sign showing

the will of the Government to invest in education and training for the involved parties, and it shows that food safety issues are now covering long-term projects in the agenda of the Executive.

Chapter 4 delegates the inspection procedures to food inspection organizations, in this sense opening the possibility to a broader cooperation among the actors in the network, with the compulsory duty to immediately report to the health department of the local county the possible risks of food stuff containing poisonous or harmful substances, unidentified substances, or any kind of sample not in compliance with food safety standards (see in particular Art. 33).

Chapter 5 contains rules for import-export products, the most remarkable regarding the necessity of transparent labels, at least for the imported food additives, which shall be accompanied by a label and instructions in Chinese (Art. 36). The need for transparent information is evidently welcome in this rule, and it can be seen as a sign of a general opening to the general principles of publicity and transparency, which are cornerstones of the food safety regulatory regime. Tackling food safety accidents, Chapter 6 provides some guidelines for the institutions in which the accident has occurred. In particular, it shall immediately sale off the food as well as its raw materials and within two hours report to the health administrative department of the local county and take control measures as required by the MOH (Art. 39).

The cooperation among the actors in the food supply chain shall take into account the activities of the competent food safety supervisory body and administration department. Here the regulation shows one of its feeble points, not mentioning the possibility of implementing the FSL through the institution of a Food Safety Authority: the cooperation in case of food safety accidents has to be settled among governmental authorities, with the specific provision that 'no institution or individual shall obstruct or interfere with the investigation in a food safety accident' (Art. 42).

There is no provision aiming to establish a technical body, comparable to the European Food Safety Authority (EFSA), which shall provide scientific and independent opinions. The example of the European General Food Law could shed some light, in this sense. As known, the General Food Law has established an Authority, which plays a relevant role in helping the European Commission in case of crisis management andmore in general in providing technical information and expertise in the field of food safety. [18] The Food Safety Authority shall play also a relevant role in providing technical expertise in the field of novel food and nanotechnologies applied to it.

2.3.2 Implementing orders

Further attempts towards the implementation of the FSL were taken in the early months of 2010. In particular, on March 16, 2010, the MOH issued orders establishing standards and licensing requirements for food service businesses. Order number 70 Food Service License Management Guidelines ('Licensing Order') and order number 71 Food Service Safety Supervision Guidelines ('Safety Order') became effective on May 1, 2010. The Licensing and Safety Orders aim to implement furthermore The Administrative Licensing Law of the People's Republic of China ('Administrative Licensing Law') and the FSL itself, respectively. In particular, the Safety Order seeks to improve food safety by increasing consumer self-protection capabilities, strengthen self-discipline, disseminate food safety knowledge, and establish standards for the operation of food-related businesses. Generally, the Safety Order provides basic guidelines to ensure that businesses comply with the FSL. [19]

Food service providers are instructed to maintain a detailed record-keeping system for supplier purchases, storage, and distribution. The Safety Order also requires reporting for 'food safety incidents' and provides guidance on the management of such events and states that inspection shall include examination of relevant licensing documents, staff food safety knowledge and training, the cleanliness of facilities, water sanitation, product labeling implementation of procedures, and business records. In this procedure, post-inspection also plays a relevant role, where a food service provider is entitled to receive test results within ten days. If a business fails an inspection, reexamination may be requested and shall be considered by a separate reviewing body within the local MOF inspection department. Licensing orders, inspection results, and other information are to be published by the MOF on a regular basis. The Safety Order also outlines potential liabilities for failure to follow relevant FSL provisions. For instance, adulteration of food products, failure to maintain clean work environments, using food outside of its expiration date, utilizing animal or fish products where the animal or fish died of unknown causes, the use of uninspected meat, and exceeding safe heavy-metal or other pollutant limits will require remediation and may carry substantial penalties. Here certainly the provision needs to be further implemented, with a transparent and clear definition of the nature of the 'substantial penalties' that may be applied. [20]

2.3.3 Concluding remarks on the Chinese system

In conclusion, we may agree with the opinion that food safety regulation offers a good perspective to observe the emerging Chinese regulatory state. [21] We have seen that at least at the legislative level, a first attempt has been made to define key roles for food actors. The challenge is to connect their role with the action of the public authorities and more in general to improve the linkages in the network of authorities.

In this field, a good example may be offered by the European experience, where the roles of the actors are specifically defined by the European General Food Law. An improvement in the FSL may probably have positive effects also in facilitating its implementation.

The immediate approval of different documents aiming to implement the FSL is also a symptom of the will to improve the regulatory regime, also considering that growing attention is being given by the public authorities to the protection of consumers, although the effort to recognize the importance of human health has not been yet framed within a more systematic reform plan. [22]

Considering that China has shown its commitment in strengthening food safety regulation and considering that it is an on-going process, which needs physiological time to be operative at full capacity, there is margin to hope that the regulatory regime will increasingly consolidate its structure.

In the next section we will analyze the HK system, where coordination among the authorities is effective and efficient: the example of the Special Administrative Region may shed some further light on the possibilities of improving the system, provided that China would be willing to invest energies in decentralization of powers and more in general in allocating resources at the local level.

3. HK: Regulatory measures approved to overcome the crisis

3.1 Introduction

Old and recent food scandals have also deeply affected the HK economy.

With few major local food producers, the HK food supply relies mainly on imports. The Mainland supplies the lion's share, particularly of fresh provisions and non-staple foods. All food sold in HK must meet the statutory safety requirements laid down under the laws of HK. High-risk food such as meat and milk must go through the import control system of the Food and Environmental Hygiene Department (FEHD). The FEHD is one of the institutional actors that have put into place a food surveillance program, under which foods are checked at various levels, including import, wholesale, and retail, to ensure that they are safe and hygienic. Follow-up action is taken once food of questionable quality is detected. Offenders are prosecuted and are liable to imprisonment for six months and a fine of $50,000. The Mainland health authorities attach great importance to food for export purposes. They have always imposed stringent controls on food exports to HK. Under the mutual notification system established between the General Administration of Quality Supervision, Inspectionand Quarantine of China and the FEHD, the mainland authorities inform HK whenever foods not meeting safety standards enter the territory. Figures for the past three years show that among the approximately 50,000 food samples tested in HK each year, failure rates ranged from 0.3% to 0.5%, reflecting HK's continuing high food safety levels. [23]

In HK, just as in China, after a decade of food crisis, which reached its climax after the melamine scandal, the authorities have been accused of poor performance on food safety monitoring; therefore, the government has made some organizational changes, attempting to address regulatory issues. The main concerns arose after the mentioned food scandals (especially the last one, related to melamine in Chinese milk), which challenged the HK government to enhance coordination through a clear definition of the authorities' role and dedicated political and civil support. In this sense, HK reaction was focused more on strengthening the network of authorities through the implementation of the existing legal provisions, rather than approving a new Food Law package. [24]

For HK, the situation is less complex than in China, because the legal provisions are few and the limited extension of territory allows the development and monitoring of good administration practices in a more efficient way and in a shorter period of time than in the Mainland. The legal framework for food safety control is laid down in Part V of the Public Health and Municipal Services (PH&Ms) Ordinance, Chapter 132 and its subsidiary legislation. The main requirement, as Article 54 of the Ordinance states, is that no food intended for sale should be unfit for human consumption. Within the HK Government, the Health, Welfare and Food Bureau (HWFB) provides policy direction whereas the FEHD is the executive agency implementing food policy. The network was extended in 2006, with the creation, under the FEHD, of the Centre for Food Safety (CFS), which plays a key role in food safety policy implementation. Supportive duties are also performed by other agencies, such as the Fish Marketing Organization (FMO) and the Vegetable Marketing Organization (VMO). The cooperation among new (CFS) and old actors has been strengthened after the sandals, to a point that now the built network can be used as a pilot program also to strengthen the network within the Mainland. A few words are therefore worthy to be spent on the joint role of the mentioned new and old players.

3.2 The Centre for Food Safety, the Fish Marketing Organization, and the Vegetable Marketing Organization.

The CFS was established on May 2, 2006, under the FEHD, to enhance food safety regulatory functions and ensure compliance with international food safety standards. CFS policy is committed to promoting compliance with the Codex

Alimentarius Commission's recommendations, and naturally new standardsintroduced are in line with general legal provisions. [25] This requires a considerable effort of coordination, because when local food products do not have Codex standards, they must be assessed by other food standards in parallel. The Codex standards in global trade are enshrined in the World Trade Organization agreements to which HK is a party. However, the permissible level of some chemicals (such as cyfluthrin, [26] a type of pesticide used on Chinese kale) in certain food products consumed in HK are not covered by the Codex standards.

In setting the standards in relation to such food items, reference is made to the standards adopted in other jurisdictions, and in particular the major food export partner, Mainland China. The CFS constantly reviews existing food safety standards to keep abreast of international developments and to ensure that public health is adequately protected. In particular, it has embarked on two major initiatives to enhance its risk assessment capacity, with the idea that 'risk from food depends not only on the nature and level of hazard present in food, but also on the amount of the consumption of that particular food'. [27] Hence, up-to-date, representative local data on food consumption are considered essential to assess risk for the population. The CFS conducted a Food Consumption Survey to collect information on the food consumption patterns of the general public in HK.

Findings from the Food Consumption Survey will be used in the Total Diet Studies, the CFS's second major initiative aiming to assess dietary exposure to chemicals and nutrients across the total diet of the population. The Total Diet Studies focus on chemicals in the diet and analyze foods in their commonly consumed states. This is intended to allow the CFS to proactively assess whether or not specific chemicals (such as the above-mentioned cyfluthrin) pose a risk to the health of the public. With the data from these comprehensive research projects, the CFS may detect food items with potential health risks through sampling and testing, assessing whether certain food safety standards are adequate to protect public health, and identifying deficiencies in the food safety regulatory regime.

In promoting food safety, the CFS promotes tripartite cooperation involving the government, food traders, and consumers, seeking to bring about transparent communication between all the stakeholders, also through its website. [28]

The efforts of the government, the trade, and consumers are essential in upholding high food safety standards.

The government's role is to maintain effective surveillance in HK, and to exercise the legal power conferred under its laws to ensure that all food for sale in HK is safe for human consumption. The government also has responsibility for public education that aims to empower the public to become discerning customers, able to make appropriate food choices and handle food properly so that food risks can be reduced.

It is worth mentioning that the CFS should work in network-cooperation with the organizations that existed before the CFS was established: the FMO [29] and the VMO, [30] both under the directorship of the Agriculture, Fisheries and Conservation Department (AFCD).

In terms of global administrative law, the network of players in food safety regulations is a fundamental tool also to improve the external communication with the international agencies, to comply with the aims of the Codex Alimentarius Commission, and to 'protect the health of the consumers and ensure fair practices in the food trade, promoting coordination of all food standards work undertaken by international governmental and nongovernmental organizations, determining priorities and initiating and guiding the preparation of draft standards through and with the aid of appropriate organizations finalizing standards [...] and publishing them in [...] either as regional or worldwide standards, together with international standards already finalized by other bodies.' [31]

4. A pilot project in implementing high level of food safety and its potential extension to the other Chinese regions, included HK

Considering the improvements made both at the legislative and at the institutional levels (with a stronger emphasis on the first one in China and with a stronger attention on the second one in HK) in strengthening the regulatory measures in food safety governance, one of the remaining challenges lies in the need to straddle the two worlds of traditional home-produced food and wet markets, and the centralized food production network. This can be viewed as both a challenge and an opportunity, also considering the developments in applying new technologies to food and the need to anchor them to a stable and well organised regulatory framework, where tradition and progress are deeply interconnected and harmonised.

The challenge is therefore consists in preserving the traditional world the Chinese traditional best practices in the face of modern global trade.

The two methods of food provision may not appear to be compatible, but there is great potential for wet markets to be brought up to par with international hygiene standards, while maintaining their local character. Further, rather than have

supermarkets replace wet markets purely for food safety reasons, wet markets could compete in terms of the 'shopping experience', while still providing high levels of hygiene'. [32]

This issue is relevant to many countries that have both supermarkets and wet markets or farmers' markets (where food is brought from local producers and sold fresh the same day). Good examples of action to be taken to manage food safety in wet food markets, as well as in street food, were provided in a paper presented by China at the FAO/WHO Global Forum of Food Safety Regulators, held in Marrakech, Morocco, on January 28-30, 2002. [33] The paper described two technical assistance programs on street food control that were carried out in China in the 1990s, and were sponsored by the FAO and WHO.

In late 1993, there were three million street food vendors in China, and about 5.16 million people involved overall in the street-food business. At the time, it was seen as one of the symbols of the 'activated economy', which made a significant contribution to economic growth, to improving standards of living, and to increasing job availability. However, due to lack of necessary sanitary facilities and job training, the safety of street food became an issue for the authorities. To understand the safety and hygiene status of street food, to explore measures to prevent contamination of street food, and to improve the hygiene status of street food, the Institute of Food Safety Control and Inspection of the Ministry of Health conducted a pilot program sponsored by the FAO on improving the safety of street food in cities in 1991-1993, in collaboration with local healthinstitutions in Shanxi, Zhejiang and Liaoning provinces. [34] Five cities (Xian, Hangzhou, Dalian, Baoji and Yiwu) with different sizes and characteristics were selected as pilot study sites. Below is a summary of the main results obtained in the three-year project:

1) Investigation of the basic conditions and hygiene status of street food in the pilot sites. Field inspection and laboratory sample analysis revealed the following facts about street food:

- Lack of license: 32.2% of street food vendors;
- Lack of sanitary facilities: e.g., 60.2% of street food vendors had no clean water, 54.2% had no facilities for washing and sterilizing eating utensils;
- Lack of hygiene knowledge in food handlers: e.g., 56.7% of food handlers failed the hygiene exam;
- Common violation of hygiene practices by food handlers: e.g., 66.4% of food handlers did not wash hands before making or selling foods, 64.4% did not use separate utensils for raw and cooked food;
- Most (55%) eating utensils not disinfected;
- Low compliance rate of products: of the 1,000 samples examined, only 47.3% met hygiene standards.

2) Main factors affecting hygiene status of street foods:

- Condition of containers storing cooked foods and storage temperature;
- Legal status of vendors - license and business scope;
- Personal hygiene of vendors or food handlers;
- Construction type and basic facilities of the vending site;
- Type of food treatment: cold or heated process; cooking temperature, etc.;
- Quality of raw materials.

3) Identification and implementation of intervention measures:

- Establish self-inspection and control system by vendors;
- Improve environment and facilities: assign special sites for vendors, provide water, electricity and gas, etc.;
- Carry out special studies on high-risk foods, such as the application of hazards analysis and critical control points (HACCP) in the cooked meat business;
- Improve training for food vendors and handlers;
- Establish central-heated sterilization station.

4) The above program was repeated in 20 other provinces and the summary report was sent to other countries by the FAO. [35]

The paper also relates how, in 1995, with technical assistance provided by the WHO, the Institute of Food Safety Control and Inspection of the Ministry of Health conducted a program on improvement of street food safety through the application of HACCP principles, in collaboration with the Health Department of Wurumuqi city (a minority area in western China). The objectives of the program were to apply HACCP in high-risk street foods, and to present the experience learned from this program at a training course. Under the guidance of WHO experts, safety control processes for five types of high-risk traditional street foods were studied and satisfactory results were obtained. At the same time, a large number of personnel were trained.

After a comprehensive survey of the hygiene status of local street food and previous food poisoning outbreaks, meat and poultry products were identified as high-risk foods.

i. Five HACCP application groups were established to apply HACCP in five different street foods, following standardized principles and methods.

ii. Critical control points (CCPs) were identified for the manufacturing process of each food. For example, chicken purchasing, salting, roasting, cooling, and cutting were identified as CCPs for the manufacturing of electric-roasted chicken. This not only significantly reduced the level of microbiological contamination, but also improved the taste of the product and saved fuel.

iii. Based on the results achieved in this program, the city health department organized training courses on food safety and HACCP. As a result, the level of food safety control was greatly improved among food businesses.

Clearly, such international technical assistance programs combining advanced measures of food safety control with Chinese traditional control methods could be effective in improving the hygiene status of street foods also for HK. These two programs could serve as model examples to prevent health risks connected with the distribution of fresh food in street markets. However, it is essential to follow the criteria specified by the paper itself.

In the conclusion of the project, it is clearly stated that the best way to enhance it should be to act at the local level, throughout a bottom-up action: 'The program selected for technical assistance shall be the prioritized food safety issue of that country or area. The local government or authority should be aware of the importance of the problems to be solved. [...]. The implementation of the program shall have a detailed plan and design. The preparation of a program plan and design per se is a process of personnel training and technical support. In the above two programs, program experts not only conducted plan preparation, training and guidance, but also carried out field visits and provided assistance in the preparation of the summary report. The selected program should be able to sustain and adapt to the economy and social development of the specific country [...].' [36]

In this regard, HK plays a pilot role, considering its special regime of administration and its attempts to enforce the local authorities in coordinating themselves to reach high levels of safety and quality in food.

What makes HK unusual, if not unique, is the fact that there is essentially only one layer of government regulating environmental and food safety issues. Most other economies have several layers of geographically determined bureaucracy responsible for policy, administration, and enforcement. [37] One positive effect of this is a reduction in the bureaucracy potentially hindering responsiveness and change. This single supervision structure needs to be counterbalanced by strong support from non- governmental organizations (NGOs), representing the needs of civil society.

Before the potential strength in building networks among institutional actors and civil society, both for China and for HK, is analysed, it is worth clarifying their respective administrative relationship, in order to scrutinize how they could better cooperate within their constitutional frameworks in the allocation of competencies.

5. Decentralized action in food safety matters: principles and models from the European Union.

As the examples of the pilot project conducted on the farmers market in some Chinese provinces and in the HK regulatory regime have shown, an effective way to implement food safety in such an extended territory as China is to increment programs that aim to decentralize actions.

Part of the doctrine does not believe that the emerging Chinese regulatory state is simply a variant of the Western models, considering the different historical background and political system. The opinion is fully sharable; nevertheless, there are some mechanisms in different legal systems that may lead to interesting comparisons.

The example of the food safety regulatory regime in Europe can also be quite relevant in this case. The allocation of administrative competencies, evidently including the food sector, among the European Member States is inspired by the principle of subsidiarity, as enshrined in the Maastricht Treaty (originally in Article 3b, then 5(3) in Treaty of Lisbon, and furthermore ruled by the Protocol on application of the Principles of Subsidiarity and Proportionality).

The principle explicitly guarantees the prior right to act to the lower government levels, but implicitly determines a space for the activity and the expansion of EU competencies. The subsidiarity is connected to the principle of proportionality, which guarantees that the action undertaken is proportionate to the public purpose. The two principles are the paradigms of an effective decentralized action and could offer a new point of view for the Chinese public powers, in their efforts to guarantee a good administration at local level.

Certainly, the legal transplant is a delicate operation and it does not necessarily lead to successful outcomes. Whatever the solution is given to the dilemma of whether it is efficient and feasible to confront the Chinese system with the European experience, the European model based on the subsidiarity principles may represent an example to enhance and strengthen the Chinese reform system. Certainly, from the study projectsconducted in the different provinces and from the example of the HK reality, we may notice that a bottom-up action had a positive impact at the local level, in terms of improvements in food hygiene, food safety, and education of the operators in food issues, on one hand, and in terms of coordination between technical bodies and civil society on the other.

Adapting the principle of subsidiarity to the Chinese administrative powers may lead to a new approach in allocating competencies. In this sense, a local action has to be clearly defined at a central level, where the public institutions maintain specific exclusive competencies and have a power of intervention in case of inadequacy of the local action. This system recalls the meaning of the subsidiarity principle, where the central power intervenes to help (ad subsidium) the local entities.

The emphasis on a decentralized action may have several effects on the traditional form of governance. Here again it is worth noting that the food safety sector shows the need for China to tackle a deep regulatory reform. The traditional hierarchical form of governance shall be therefore reshaped into a multilevel system of governance, where the network of players, national and local, inspired by the subsidiarity logic, is broadened throughout the participation of multiple parties, overcoming traditional differences between the public and the private sectors. The multiple parties shall include the institutions and the public authorities, as well as the technical bodies, food business operators, and stakeholders, and more in general the civil society.

A first step is to guarantee that the public sector has few players and is not fragmented into myriad units, subject to rigid bureaucratic rules. The HK reality offers a good opportunity, in this case. If the other Chinese provinces could follow its example, this could represent a great advantage in strengthening the network and building cooperation between the local and the central levels.

The second step is to strengthen the private sector, where traders and consumers have the same desire to prevent risks and ensure higher food quality standards, and to link it to the public actors.

PART II

FOOD SAFETY AND THE NEW FRONTIERS OF NANOTECHNOLOGIES

5. Introduction

The second part of this article analyses the impact of nanotechnologies on food science having in mind a recent study conducted in Europe. [38] The outputs of the study led to the conclusion that the actual European regulatory framework is a network sufficiently organised to sustain also the regulation of Nano-foods as part of set of rules to protect consumers' health. The Chinese regulatory system in food safety is advanced enough to give hope that also in this context the nano-science applied to food will find its own place within the general regulations.

Before analysing in details the outputs of the mentioned study and its applicability to the Chinese system, we would like to briefly describe the meaning hidden in the concept of nanotechnologies and their relationship with science.

6. Nanotechnology and its relationships with other domains

6.1 Nano: the power of mind over matter

> 'The word nano refers to a nanometer. A nanometer is a unit of measure equal to a billionth of a meter. [...] Consider the almost unimaginable smallness of an atom, the building blocks of Universe. If you lined up 100 million atoms in a row it would be as long as the line below:

A single drop of water contains one hundred billion, billion, atoms. Nanotechnology is about downsizing and building things on that tiny scale' [39]. The genius of nanotechnology is the reduction of space. Smaller is infinitely more powerful ... Today, scientists recognize that less matter and less space, not more, equals more raw power.

To solve the problem of space, scientists envision the creation of nano robots to help fulfill the promise of nanotechnology. These robots would be the same size as atoms, being programmed to construct products atom by atom. Using the same disassembled atoms as raw material, the robots would be able to build new products such as clothes and food. Nano-robots could help achieve the ultimate in recycling, bringing about an end to environmental degradation and pollution.

What if we run out of atoms and molecules to create new food? First, the solution could be to use the atoms from our waste products. Second, there is a nearly endless supply of molecules right in front of us [40].

Certainly, the rules of the game shall be set a priori. And in this sense a consistent and organized regulatory system provides in itself all the necessary rules to cope with novel foods. There is no need to create anything new, in the field of food safety law, to allow the creation of new foods. The most relevent aspect is how to reach a high level of compliance with the existing principles, consolidating the regulatory framework and awakening the consciousness of safe food within the community of institutions, stakeholders, and civil society. Once the general principles have been consolidated, the system will be flexible enough to work efficiently also in the specific field of novel and nano-foods.

6.2 The challenge of nano-sciences

How it is possible to apply nanotechnologies to food science remains a challenging question, both for the European system and for PRC and Hong Kong.

Literature has analysed the capability of existing regulatory systems to deal with the challenges posed by nanotechnology, resulting in the identification of regulatory gaps. [41]

A recent study has been conducted in Europe over the next step over the capability of a regulatory system capable to deal with nanotechnology in the context of food safety [42]. We will see how the outcomes of this study can be applied, with the due adaptations, to the Chinese system, considering its quick advancement in consolidating a regulatory framework for food law.

The study is based on the assumption that as science has not reached consensus on an operational definition of nanotechnology, it is not feasible to come to nano-food specific regulation, but it is possible to help to test and improve existing regulatory infrastructures - or if need be to build new ones - such that they can ensure food safety in general in the face of the challenges posed by nanotechnology.

In its main core, the study was built on general food safety regulation. Models have been taken from international sources such as the Codex Alimentarius and then applied to the European regulatory framework. Where such models were not available, examples have been presented from national sources. Only where general food safety approaches fall short in dealing with the special problems presented by nanotechnology, nano-specific provisions have been proposed.

The main outputs of the mentioned study, relating to the European regulatory context, may also be applied to the Chinese system, considering the steps undertaken by the PRC in improving the general framework in food safety. [43]

The primary objective of a regulatory system is to protect the health and safety of consumers of foods that are likely to contain substances obtained by nano-scale chemosynthesis or engineered nano-particles. This relates to substances included in the food but also to substances that may leave traces in food due to their use in proximity to food or raw materials for food. Examples of such substances may be pesticides, equipment and packaging materials. The health protection for nano-foods can be granted through the same tools applied by the Food Safety Authority, both in Europe and in China.

In particular, the regulation of nano food can be easily established in different steps, from the extension of the technical expertise of the food safety authorities to nano-food, to the application of liability rules in case of unsafe nano-foods, to the adaption of traceability and labelling rules, and finally to the establishment of a system of premarket approval, which can easily turn into general, after an exclusivity period.

Firstly, in the field of risk analysis, the set of rules can cover also the area of the nano-food. In Europe, EFSA has been entrusted with extensive competences in this regards, intervening in all fields with direct or indirect impact on food and feed safety, as well as human nutrition, animal health and welfare, plant health, and GMOs.

Moreover, EFSA opinions can be determinant not only in classic risk management processes applied in those fields, but also in the framework of ad hoc procedures like the mediation or crisis management procedures. Furthermore, the scientific opinions and risk assessments carried out by EFSA have acquired an increasing important role at national, EU and international level. [44]

More in general, food safety authorities and the international community are required to enhance and promote cooperation and mutual recognition that ensure worldwide market access for approved food, as well as nano-foods and that aim at simplifying the approval procedures for the food business operators.

As we have extensively analysed in Part I of the article, a similar promising role of the Food Safety Authority is consolidating in the Chinese food safety system (also considering the pilot system of Hong Kong).

In this sense, we can already see the potential applicability of the technical expertise to the nano-food, for both the analysed systems.

Secondly, the regulatory structure of both legal systems is based on the solid foundations of responsibility and liability of food business operators. To ensure their implementation, in the context of nano-foods, registration is desirable of at least all those businesses that place nano-foods into the market. [45]

Thirdly, business operators are required to enable the traceability of nano-foods. The possible presence of engineered nano-particles must be mentioned on the label, along with the identity of the responsible business.This means that the rules on traceability and labelling shall be applied also to nano-foods, both in Europe and in China.

Lastly, the core of nano-food safety regulation is a premarket approval requirement for food categories that include nano-foods. Foods requiring approval can be limited to nano-foods or encompass a wider category such as novel foods or foods with certain functions such as food additives.

To acquire approval the sponsor of a nano-food must provide methods of detection and scientific proof of safety of the food at issue. The scientific community and public authorities must develop and agree on methods of risk assessment. Applicants for approval enjoy an exclusive right for a certain period from the moment of approval. After this exclusivity period, the approval follows the general rules.

Taken together the proposed measures constitute a regulatory framework capable of ensuring the safety of nano-foods.

7. Concluding remarks and the way forward to consolidate food and nano-food safety

As seen above, Mainland China and Hong Kong are seriously committed to strengthen their regulatory framework in order to protect consumers from unsafe food and this commitment can involve the field of nano-foods, as an integrant part of the novel foods regulation. The regulatory framework may allow PRC, as well as Western countries, to reach astonishing developments in the field of nano-foods as well.

Although HK's autonomy depends on the Mainland, this doesn't necessarily mean that HK cannot play a relevant role in showing the way to reform the system. Its delicate role has to be supported, however, by private parties, NGOs, and inter-governmental organizations, and finally by the State's commitment in further enhancements of food safety levels and standards.

It's a matter of fact that communication may be achieved only by allowing reciprocal exchange. On one hand, the public sector should be extended to the private one. In contrast to the practice in many western democracies, where the public is given the opportunity to express its concerns about proposed projects and regulators must give due consideration to public opinion, Chinese citizens have no systematic means for expressing their objections to proposed projects that could adversely affect them. One of the reasons is the lack of food safety watchdogs, linking civil society to the public authorities, at least in Mainland China: we have seen that the CFS has been working in HK since 2006. The following question is therefore how to facilitate the participation from civil society, how to coordinate the activities of the different players, and more in general how to give effectiveness to the idea of bottom-up action. A possible answer may come from the environmental law, which can be considered the ancestor of food safety law. The example of NGO activity in this field may also be helpful.

Environmental law and in particular the precautionary principle have played a key role in the development of a food safety legal doctrine. The precautionary principle has been adopted in a variety of forms atinternational and national levels. It is applied across an increasing number of national jurisdictions, economic sectors, and environmental areas. It has moved from the regulation of industry, technology, and health risk to the wider governance of science, innovation, and trade. In the aftermath of a series of formative public health controversies, economic calamities, and political conflicts, precaution is nowhere of greater salience or importance than in the field of food safety. [46]

In the field of environmental law, NGOs started to emerge in China in the 1990s, but the numbers are small and their functions have been limited to raising public awareness of environmental problems, carrying out campaigns to adopt environmentally sound behavior, and conducting environmental policy studies. [47] It is hoped that the time will come for public interest organizations, both for environment and food safety protection, to flourish and to play a more significant role in policy making and law enforcement processes in China. To reach that goal, foreign funding, and professional and technical assistance will be essential, together with an awareness of the local situation. [48]

In particular, in food safety regulation the recent goal reached by Mainland China in welcoming comments during the approval of the FSL is a certain sign of a participatory decision-making process. In April 2008, the approval of the FSL was opened to public scrutiny, and more than 11,000 comments were made to the law-making body. This opening to public participation for the benefit of the whole community may be considered a decisive starting point in building an administrative system based on good governance.

In conclusion, if China decides to make a decisive effort in terms of a systematic reform towards decentralization, enlarging the platform of players and facilitating the coordination of different governing levels(through participation, transparency, publicity, proportionate actions), a significant improvement also in the field of food safety regulation will be

recorded. The reform has to touch the nerves of the administrative structure, linking the private interests to the public policies. Through a decentralised action, not only the administrative law will benefit, but also the special sector of food law, with its challenges and new frontiers, such as nano-foods and their interconnections with other sciences.

The seeds to build up an effective bottom-up participation have been sown. We have found some of them firstly in the public scrutiny in approving the FSL, secondly in the high level of coordination reached by food safety authorities in HK, thirdly in the general public consent on the effectiveness of a bottom-up action, and finally in open participatory rights recognized in environmental issues. The benefits of a participated consensus will help the food science to embrace new challenges, such as the one of nanotechnology.

Hopefully these seeds have fallen on good earth, and may grow, yielding thirty, sixty, and hundredfold

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[2] On the reciprocal relationship between China and HK, see further analysis in the the following paragraphs. In the literature, an important study has been conducted in proximity of HK independence by A. D. Jordan, Lost in the Translation: Two Legal Cultures, The Common Law Judiciary and the Basic Law of the Hong Kong Special Administrative Region, 30 Cronell Int.'l, 335, 1997. Regarding the delicate issues of their reciprocal relationship, noteworthy is the socio-economic analysis of T.K.P. Leung, Y.H. Wong, S. Wong, A study of Hong Kong Businessmen's Perceptions of the Role 'Guanxi' in the People's Republic of China, in Journal of Business Ethics 15, 1996, 749. The authors underline the importance of the Guanxi (in English 'gwan-shee', loosely translated into 'social networks', 'special relationships') as a fundamental concept not only to understand the complex reality of the People's Republic of China, but also the reciprocal relationship between the Mainland and HK The conclusions of the study show that understanding the logic of Guanxi, of reciprocal relationships based not only on economic interests, but rather on the skill of 'art of social relations' is a very important determinant on trading with China. As the regulatory regime with the formal law is increasingly spreading in the mindsets of the Chinese public authorities and economic actors, there shall be a complementarity between the rule of law and the informal rules of Guanxi relations. See on this topic also T. Gold, D. Guthrie, D. Wank, Connections in China. Institutions, Culture and the Changing Nature of Guanxi, Cambridge University Press, United Kingdom, 2002. See also R. Stone, Negotiation in China is not easy, Hong Kong Business, November 1992, 4.

[3] See Y. Wing Sung, The China-HK connection: the Key to China's Open-Door Policy, 1991, Cambridge University Press, Hong Kong, p. 6.

[4] W. Tam and D. Yang, Food safety and the development of regulatory institutions in China, in Asian Perspective, Vol. 29, No. 4, 2005, pp. 5-36

[5] The administrative division in China is extremely complicated. In particular, as reported in a document cured by the Federation of Finnish Technology Industries on Environmental Legislation in China (Mainland), November 2008, available on the website www.teknologiateollisuus.fi/file/4045/Environmentallegislation-MainlandofChina-0811.pdf.html, last consulted in November 2010: 'The entire country is divided into provinces, autonomous regions and municipalities directly under the Central Government; the provinces and autonomous regions are divided into autonomous prefectures, counties, autonomous counties and cities; the counties and autonomous counties are divided into townships, ethnic townships and towns; the municipalities directly under the Central Government and large cities in the provinces and autonomous regions are divided into districts and counties; and Autonomous prefectures are divided into counties, autonomous counties and cities. The Central Government may also set up special administrative regions. Provincial governments are first-level local state administrative organs in China. There are 23 provinces in the country. Provincial governments implement local laws, regulations and decisions of the provincial people's congresses and their standing committees, are responsible to and report on their work to provincial people's congresses and their standing committees. Provincial people's congresses and their standing committees have the power to supervise the work of provincial governments, change and annul inappropriate decisions of the provincial governments.'

[6] Regarding the fragmented structure of the bureaucratic authority in China, see K. Lieberthal and M. Oksenberg, Policy Making in China: Leaders, Structures, and Processes, Princeton, N.J., Princeton University Press, 1988. Currently, the Ministry of Health (MoH), the Ministry of Agriculture (MoA), the General Administration of Quality Supervision, Inspection and Quarantine (GAQSIQ), the State Administration for Industry and Commerce (SAIC), the Ministry of Commerce (MoC), and the State Food and Drug Administration (SFDA) are actively involved in the regulation of food safety.

[7] See W. Tam and D. Yang, Food safety and the development of regulatory institutions in China, in Asian Perspective, Vol. 29, No. 4, 2005, pp. 5-36. As underlined by P. Liu in her article Tracing and periodizing China's food safety regulation: A study on China's food safety regime change, in Regulation and Governance, 2010, 4, 245, the issue of food

safety is 'more one for public opinion than one for academic research'. Some of the existing literature, both in Chinese and in English, focuses only on general issues such as regulatory agency reform (P. Liu in particular refers to W. Tam and D. Yang, op. cit.) and food safety crisis management (in particular W. F. Li, who has written a Chinese article on the topic: Woguo Shipin Anqan Biaozhun Tixi Jianshe Yu Weiji Yingdui Celue Zongshu, (A Policy Review of China's Food Safety Standard System Building and Crisis Management), in Shijie Biaozhun Xinxi, (World Standards Information), 2008, 1, 60).

[8] See on Food Safety in China: M. Zhang, The present situation and policies on food safety. The theory and practice on food safety, HeFei University of Technology Press, 2005, 12; Z.-J. Zhao, Considerations on the basic frame of the law system on food safety. The theory and practice on food safety HeFei University of Technology Press, 2005, 12, 425; M. J. Ma, The shortage of the standard system on food safety. The theory and practice on food safety, 436, HeFei University of Technology Press, 2005, 12; Y. Guangyu, Study on the standard system on food safety. The theory and practice on food safety, 445, HeFei University of Technology Press, 2005, 12, 445; Z. Liu, Establishing consciousness without social effects of pollution. Improving the quality of aquatic product, China Marine Lives Press, 2002, 12, 24.

[9] Major web news portals in Chinese have followed the developments with dedicated channels. See for example http://news.sina.com.cn/z/milkpowder/indez.shtml, last visited in October 2010. The news items were reported firstly in English on the website http://news.bbc.co.uk/2/hi/8478195.stm, last visited in October 2010. Unfortunately, the scandals related to melamine in dairy products are reported in the years following 2008. The news regarding the scandals has been widely reported by the press, since 2008. See T. Branigan (2 December 2008), Chinese figures show fivefold rise in babies sick from contaminated milk, The Guardian (London). http://www.guardian.co.uk/world/2008/dec/02/china, last visited in November 2010; J. Macartney (22 September 2008), 'China baby milk scandal spreads as sick toll rises to 13,000", The Times (London), http://www.timesonline.co.uk/tol/news/world/asia/article4800458.ece, last visited in November 2010; China 'fake milk' scandal deepens. BBC. 22 April 2004. http://news.bbc.co.uk/2/hi/asia-pacific/3648583.stm, last visited in November 2010; http://news.xinhuanet.com/english/2008-09/25/content_10112354.htm, last visited in November 2010, Wu Jiao (1 November 2008). Checks on animal feed 'tightened', China Daily, http://www.chinadaily.com.cn/china/2008-11/01/content_7164471.htm, last visited in November 2010.

[10] Associated Press, 2008 China: 'Out of control dairy system led to abuse, contaminated formula sickened at least 54000 babies, killing four'. , last visited in October 2010. This was not the first time that Chinese food products had caused safety and health concerns around the world. Several food safety scandals inside and outside China related to Chinese products were recorded in the past years: in 2006, more than one hundred people died in Panama after consuming cough medicine that contained toxic diethylene glycol that was imported from China and mistaken for glycerol by a local manufacturer. In September 2007, the United States banned the importation of wheat gluten from China because they found it was contaminated by melamine. The adulterated wheat gluten was blamed for the death of thousands of pets in North America. Also in 2007, the United States Food and Drug Administration banned several types of Chinese seafood that repeatedly tested positive for banned veterinary drugs. See on the topic Ramzy Austin, 2009. Will China's new food-safety laws work? Time, March 3., last visited in September 2010.

[11] We refer to the English version of the FSL, in the unofficial document provided by Frank Rocco and Associates, see website http://www.fra-law.com/, visited in February 2010.

[12] Reg. n. 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety, in OGEC L31/1 contains a list of definitions in Art. 2 and 3.

[13] For a recent study on the responsibilities of food business operators in the European market see C. Charlier, E. Valceschini, Food Safety, Market Power and Private Standards, An analysis of the Emerging Strategies of Food Operators, in Int. J. Food System Dynamics, 2010, 2, 103-110.

[14] See P. Liu, op. cit., 251.

[15] See Ramzy, Austin, 2009, cit.

[16] The original law in Chinese can be found at http://news.xinhuanet.com/legal/2009-04/23/content_11243343.htm. The English version may be found at www.cecc.org, last visited in November 2010

[17] In this article, we refer to the unofficial translation of the implementing regulation published on website page http://www.fas.usda.gov/gainfiles/200905/146347786.pdf (The translated document is provided by the USDA Foreign Agricultural Service). The website was last visited in November 2010.

[18] The European Food Safety Authority was established by Reg. 178/2002 cit., in particular Art. 22 and ff. The website of the EFSA is www.efsa.europe.eu, last visited in November 2010.

[19] The content of the two orders is reported in the document http://www.winston.com/siteFiles/Publications/CLU_Sept2010.pdf, published in the website www.winston.com, last visited in November 2010.

[20] The provisions are also still extremely vague whereas it is stated that businesses may face substantial fines, suspension of business licenses, and/or criminal liability in the most egregious cases. Finally, the Safety Order provides for an internal MOH appeals process for businesses subject to negative findings. For further information on the two orders, see the document above mentioned at http://www.winston.com/siteFiles/Publications/CLU_Sept2010.pdf, last visited in November 2010.

[21] In this sense see P. Liu, op. cit., p. 257.

[22] On the topic see F. Pavoni, M. Poto, Food Safety is peeping from the Chinese corner, in EFFL, 2009, f. 6, p. 420.

[23] See the information reported in the Centre for Food Safety website: http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/whatsnew_fstr_Melamine_in_Mainland_Milk_Powder_Incident.html, last visited in August 2011.

[24] Ibid. last visited in August 2011.

[25] F. Veggeland - S.O.Borgen, Negotiating Food Standards. The WTO's Impact on the Codex Alimentarius Commission, in Governance: An International Journal of Policy, in Administration and Institutions, vol. 18, No. 4, 2005, 683. The purpose of the Codex Alimentarius Commission: protecting the health of consumers and ensuring fair practices in the food trade; promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations; determining priorities and initiating and guiding the preparation of draft standards through and with the aid of appropriate organizations; finalizing standards [...] and publishing them in a Codex Alimentarius either as regional or world wide standards, together with international standards already finalized by other bodies; wherever this is practicable; amending published standards, as appropriate, in the light of developments. See Statutes of the Codex Alimentarius Commission, Article 1, Year 2006, in www.codexalimentarius.net., last visited in November 2010.

[26] Cyfluthrin is a Pyrethroid compound: the symptoms of poisoning with it are irritation of skin and eyes; irritability to sound or touch, abnormal facial sensation, sensation of prickling, tingling or creeping on skin, numbness; headache, dizziness, nausea, vomiting, excessive salivation, fatigue. In severe cases, fluid in the lungs and muscle twitching may develop. Seizures may occur and are more common with more toxic cyano-pyrethroids. See the website of PAN pesticide Database at the webpage: http://www.pesticideinfo.org/, last visited in July 2010.

[27] See The Report Centre for Food Safety, edited by the Centre for Food Safety, Food and Environmental Hygiene Department, printed by the Government Logistics Department, September 2007, and available on the website www.cfs.gov.hk, last visited in September 2010, page 35.

[28] See Centre for Food Safety, published by the Centre for Food Safety, Food and Environmental Hygiene Department, cit..

[29] The FMO is a non-profit body, established in 1945 by the Authority of the Market Fish (marketing) Ordinance, Chapter 291. The FMO operates seven wholesale fish markets. Although the Directorship of Marketing of the FMO is held by the Director of the Department of Agriculture, Fisheries and Conservation, the FMO is a separate entity from the civil service. For further information, visit the website: http://www.fmo.org.hk/index/lang_en/page_contact/, last visited in October 2010.

[30] The VMO is a non-profit body established in 1946 to rehabilitate farming in the post-war period. It provides facilities to promote vegetable farming and to improve the socio-economic status of the farming community. In the same way as the FMO, the Directorship of Marketing of the VMO is held by the Director of the Department of Agriculture, Fisheries and conservation, but apparently remains separated from the civil service. See http://www.vmo.org/en/, last visited in October 2010. A useful initiative by the VMO is the publication of protocols to be followed by the 'good farmer'. See, for example, the Protocol for Organic Farming: http://www.vmoproduce.org/eng/media/organic_farming_e.pdf, last visited in September 2010.

[31] See M. Poto, Regulations on Food Safety and the Role of the African Actors in the Global Arena, in Journal of African and International Law, 2008, cit., 115.

[32] M. J. Burnett, Enhanced food traceability: promoting food safety, quality and consumer choice, 2004, p. 138, e-thesis published by the HK University Library Division: http://sunzi.lib.hku.hk/hkuto/recordB31245146, last visited in February 2010.

[33] See http://www.fao.org/DOCREP/MEETING/004/AB439E.HTM, last visited in June 2010. It is noteworthy that similar projects have been progressively intensified in the area of the PRC in the last decades. For instance, in the past three years, more than fifty projects directed by FAO are interested this area with the specific purpose to enhance food safety standards at the local level. For a complete overview see the webpage: https://extranet.fao.org/fpmis/FPMISReportServlet.jsp?div=&type=countryprofileopen&language=EN&countryId=CN, last consulted in November 2010. We decided to focus on the project presented in 2002 because it clearly maps the reality of food street vendors, which represents a source of major worries in protecting food standards.

[34] See http://www.fao.org/DOCREP/MEETING/004/AB439E.HTM, last visited in June 2010

[35] See the mentioned document, page 1.

[36] Ibid., p. 34.

[37] See M. J. Burnett, op. cit., p. 142, who quotes the studies conducted by A. C. C. Lam; The Consultant's Report on Food Safety and Environmental Hygiene Services in HK. Consultancy Study for the Government of HK Special Administrative Region, 1998.

[38] Bernd van der Meulen, Harry Bremmers, Leon Geyer, Vittorio Fattori, Nidhi Gupta, Hans Bouwmeester NANO FOOD LAW Towards an adaptive regulatory infrastructure for the application of nanotechnology in the food sector, publication cur. by FAO, forthcoming 2011.

[39] Rav Berg, Nano. Technology of mind over matter, Los Angeles, 2008, p.16.

[40] Id., op. cit., p. 20 and ff.

[41] Bernd van der Meulen, Harry Bremmers, Leon Geyer, Vittorio Fattori, Nidhi Gupta, Hans Bouwmeester NANO FOOD LAW Towards an adaptive regulatory infrastructure for the application of nanotechnology in the food sector, publication cur. by FAO, forthcoming 2011; Qasim Chaudhry, Lawrence Castle and Richard Watkins (eds), Nanotechnologies in Food, London: The Royal Society of Chemistry; Gergely, A. Q Chaudhry and DM Bowman (2010), 'Regulatory perspectives on nanotechnologies in foods and food contact materials', in Graeme A Hodge, Diana M Bowman and Andrew D Maynard (eds), International Handbook on Regulating Nanotechnologies, Cheltenham: Edward Elgar, pp.321-342; Chaudhry, Q, A Gergely and DM Bowman (2011), 'Regulatory Frameworks for Food Nanotechnologies', in Qingrong Huang (ed), Nanotechnology in the food, beverage and nutraceutical industries, Sawston: Woodhead Publishing; European Commission's 2008 review and report by Breggin et al (2010).

[42] Bernd van der Meulen, et al., cit., forthcoming 2011.

[43] Ibidem, 2011.

[44] See A. Alemanno, S. Mahieu, The European Food Safety Authority before European Courts. Some reflections on the judicial review of EFSA scientific opinions and administrative acts, in EFFL, 2008, p. 325.

[45] Bernd van der Meulen et al., cit., 2011.

[46] The precautionary principle was originally cited in German environmental law in the 1970s to prevent harm to the environment in the face of scientific uncertainty. It was expanded in Europe in the 1980s and has become one of the guiding principles of environmental laws and policy in the EU. It was written into the United Nations (U.N.) 'Rio Declaration', an international agreement, signed by many countries including the United States (U.S.) and China at the 1992 U.N. conference on environment and development in Rio de Janeiro. As a general approach, it has emerged during the past 10 years and has been intensively debated in recent years because of globalization and resultant trade controversies concerning issues such as bovine growth hormone, food safety, climate change, and genetically modified organisms (GMOs). For the application of the principle to China see H. Liu, Comparing the Precautionary Principle in the United States and China Shanghai Municipal Disease Control and Prevention, P.R. China, published on the website www.ehib.org/, last visited in November 2010. For the application of precautionary principle to the food science see R. Lofstedt, B. Fischhoff and I.R. Fischhoff, Precautionary Principles: General Definitions and Specific Applications to Genetically Modified Organisms, in Journal of Policy Analysis and Management, 2002, 21(3), 381-407; N. A. Manson, The Precautionary Principle, the Catastrophe Argument, and Pascal's Wager, Journal of Ends and Means, 1999, 4: 12-6; Id., Formulating the Precautionary Principle, in Environmental Ethics 24, 2002, 263-74; G. E. Marchant, G.E, The Precautionary Principle: An 'Unprincipled' Approach to Biotechnology Regulation, in Journal of Risk Research, 2001, 4(2): 143-57, P. H. Martin, P.H., If You Don't Know How to Fix It, Please Stop Breaking It!', in Foundations of Science 1997, 2, 263-92; M. Matthee, D. Vermersch, Are the Precautionary Principle and the International Trade of Genetically Modified Organisms Reconcilable?, in Journal of Agricultural and Environmental Ethics, 2000, 12: 59-70; J. Morris, Defining the Precautionary Principle, Pp. 1-21 in Rethinking Risk and the Precautionary Principle, edited by J. Morris. Oxford: Butterworth-Heinemann, 2000.

[47] M. Xiaying, L. Ortolano, Environmental Regulation, Rawman and Littlefield Publishers Inc., 2000, 72.

[48] The private initiative undertaken to enable participation in environmental issues is noteworthy: in particular, the China Environmental Law blog, created by Charlie McElwee, an international energy & environmental lawyer based in Shanghai, is worth mentioning.