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DEVELOPING AND MAINTAINING NATIONAL FOOD SAFETY CONTROL SYSTEMS: EXPERIENCES FROM THE WHO AFRICAN REGION

Mwamakamba L[1*], Mensah P[2], Kwakye Takyiwa A[3], Darkwah-Odame J[4], Jallow A[5] and F Maiga[6]

[*]Corresponding author email: mwamakambal@bf.afro.who.int

[1]World Health Organisation (WHO), Inter-Country Support Team for West Africa, Avenue d'Oubritenga N° 1487, 03 BP 7019, Ouagadougou, Burkina Faso.

[2]WHO, Regional Office for Africa, Djoue, P.O.Box 06 Brazzaville, Congo.

[3]WHO, Country Office Ghana, No.29 Volta Street, Airport Residential Area, Accra, Ghana.

[4]Food and Drugs Board, Ministry of Health, Ghana.

[5]WHO, Country Office Gambia, PMB 170 Banjul, The Gambia.

[6]WHO, Country Office Mali, Quartier Ntomiboro-Bougou, BP 99, Bamako, Mali.

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ABSTRACT

The establishment of effective food safety systems is pivotal to ensuring the safety of the national food supply as well as food products for regional and international trade. The development, structure and implementation of modern food safety systems have been driven over the years by a number of developments. These developments include: a reorientation of quality assurance protocols; emphasis on the development of integrated and holistic food safety systems with a farm-to-table approach; increased recognition of the respective roles of the different stakeholders along the food chain; increased food trade coupled with obligations under trade agreements; and advances in the control of foodborne hazards. At its core, a modern food safety system includes enabling food laws, policies, regulations and standards; mechanisms for coordination; operational food inspection and laboratory services as well as national information, education and communication programmes. While progress has been made in some countries in the WHO African Region at modernizing their food safety systems, many others are still grappling with the basics for development of effective food control systems. The traditional food control systems in a number of African countries do not provide the concerned agencies with a clear mandate and authority to prevent food safety problems. Effective food control in a number of these countries is undermined by a number of challenges including limited awareness about food safety, inadequate enabling policy, outdated legislation and regulations; inadequate coordination; and inadequate capacity and resources for food safety. This paper reviews the components of a modern national food safety control system and examines efforts at strengthening national food safety control systems in the African Region. It includes experiences from countries that have made efforts at strengthening their national food safety control systems in view of current developments. The paper further discusses some of the challenges of food control systems in the Region and prospects for improvements. It concludes by suggesting the way forward for improving national food safety control systems in the Region.

Key words: Food safety systems; Programme evaluation

INTRODUCTION

Effective national food safety control systems are essential to protect the health and safety of consumers by assuring the safety of imports and exports as well as foods produced for local consumption. Such systems comprise food policy, law and regulations; food control management; inspection services; laboratory services and information, education, communication and training programmes [1, 2].

The growing membership of the World Trade Organization and the need to comply with the agreement on the application of Sanitary and Phyto-sanitary measures and the agreement on Technical Barriers to Trade have transformed the global context for food safety and food trade [3]. The new global environment for food trade places a considerable obligation on both importing and exporting countries to strengthen their food safety systems and to implement risk-based food control strategies [1]. The establishment of national food safety control systems has, therefore, become a pressing issue**.** This is particularly so as countries, especially developed ones have sought to implement increasingly strict sanitary control measures, converting their traditional food control structures into integrated systems of sanitary control.

The development of modern food safety systems: their structure, practices and functioning, depends on a number of principles and trends including:

(a) *Reorientation of quality assurance protocols.* There is a shift from the traditional focus on end-product testing toward quality management of the production process. There has been a renewed emphasis on preventive measures to food safety [4, 5]. A widely recognized preventive system, Hazard Analysis Critical Control Point (HACCP) is geared on sound science and focuses on identifying and preventing hazards from contaminating food [6].

(b) *Emphasis on development of integrated and holistic food safety systems with a farm-to-table approach.* There is shift from sectoral approaches to managing food safety risks to more holistic and multi-faceted strategies. The farm-to-table approach to food safety is based on the premise that foodborne disease is commonly caused by multiple factors arising at dispersed points along the farm-to-table continuum. It addresses the notion that quality needs to be managed along the entire food supply chain, from the initial stages of raw material production to the final stages of food preparation to consumption [7, 8].

(c) *Increased recognition of the roles of stakeholders.* There is a general shift in thinking about the roles of stakeholders from the farm-to-table, with responsibilities for food control shifting from the government to producers, processors, food manufacturers, transport operators, retailers and consumers that operate along the food chain [9]. Food producers at all levels have a responsibility for the production of safe food. At the farm level, farmers and workers must control pesticide and other chemical inputs and recognize potential sources of microbial contaminants from water, soil, animals and humans. Fishermen must understand that the safety and quality of their catch is linked to

the levels of contaminants in the harvest waters. The food processing and transportation industries must assess where food safety may be jeopardized at critical points in food production and transport and take appropriate measures to control these potential hazards. Retail establishments, restaurants and other food vendors must also understand how to ensure proper sanitary practices and temperature controls. The role of the consumer may be the most important since at that level food safety is assured at the point closest to food consumption [10]. It is the last safety check on the road from the farm to table.

(d) *The globalization of the food supply chain and obligations under trade agreements as well as advances in the control of foodborne hazards.* Greater scientific understanding of food safety risks and means to assess their impact on public health as well as the development of international food standards by the Codex Alimentarius Commission are some of the factors that have influenced proactive approaches to food safety control over the years [11, 12, 13].

National governments have a mandate to ensure the health of the population, including the provision of safe and nutritious food. To do so, a national food safety control system needs to be in place that keeps pace with the present environment in the food safety arena while addressing new challenges that impact on public health.

Components of a national food control system

As indicated, certain guiding principles govern modern food safety systems and directly impact on their effectiveness. The successful application of these principles requires countries to have the essential foundations of a food safety system in place. The elements of a national food safety control system are discussed below.

(a) Food policy, law and regulations

The development of relevant and enforceable food policy, legislation and regulations is an essential component of an effective food control system. Relevant and enforceable laws are required to create an enabling and predictable environment in which to develop and enforce food safety measures. The capacity of stakeholders involved in different aspects of food safety is dependent, in part, on the effectiveness of this national legal framework.

Modern food law should contain the necessary statutory powers to ensure jurisdiction over food safety from farm to table and allow competent food authorities to take immediate preventive and enforcement measures. In addition to food laws and regulations, governments need updated food standards. They should take full advantage of existing Codex standards. They must tailor available information, concepts and requirements to the national context, so as to develop a regulatory framework that will both satisfy national needs and meet international obligations and trading partners' demands [1].

(b) Food control management

Effective food control systems require operational coordination at the national level including an institutional structure which responds to the needs of food safety management.

Where food control responsibilities lie among different government agencies, the roles and responsibilities of these agencies should be clearly defined and efforts made to establish a more integrated system, in order to provide increased consistency in assuring the safety of food.

(c) Inspection services

As indicated, legislation and complementary regulations are some of the fundamental components of a national food control system. The best food safety regulations are worthless in the absence of proper enforcement. Consequently, because it is central to the enforcement process, inspection plays a critical role in food safety and quality control [14].

An effective food safety management system requires clear inspection policy and procedures that are applied by inspectors who are well trained not only to apply these procedures but also to act as quality assurance advisors and extension officers to the food industry [15].

(d) Laboratory services: Food monitoring, foodborne disease surveillance and epidemiological data

Monitoring of contamination at relevant stages in the food chain and the timely surveillance of foodborne disease are of uttermost importance. Laboratories underpin decisions of food control services. It has been noted that limited resources to maintaining and equipping laboratories are often cited as major constraints to enhancing national laboratories. It has been pointed out, though, that while laboratory capabilities are expensive resources, it is essential, at least at the national level, that good laboratory facilities and competent personnel be adequately supported.

(e) Information, education, communication and training

Assuring food safety along the entire food chain requires partnerships and education at all levels. Stakeholder participation and empowerment grounded on sound knowledge of food safety is paramount. All should recognize their individual role to enhancing and minimizing food-related risks. Emphasis of food safety information, education and communication programmes should be in providing the different stakeholders with the information and motivation necessary to make informed decisions on food safety.

Experiences from the WHO African Region in the development and application of modern food safety systems and practices

The WHO African Region is one of the six regions of the WHO consisting of forty six member states. The region adopted a systems approach to food safety implementation after adoption of a food safety resolution AFR/RC57/R2 in 2007. The region has been

working collaboratively with partners such as the Food and Agricultural Organization of the United Nations to strengthen food safety systems to ensure safer food for better health, market access and poverty alleviation**.**

Several countries in the region in recent years have made considerable efforts to update and strengthen their food safety systems and infrastructure. This has included restructuring of food control structures for better coordination and integration of services. For instance in Mali, a national food safety agency was established by Law Nº 03-043 of 30 December 2003, charged with coordinating all food safety actions in Mali, and a National Food Safety Council was created by Decree Nº 04-066/PRM of March 2004, subsequently amended by Decree Nº 05-536/PRM of 7 December 2005. The agency is specifically tasked to coordinate all food safety activities, provide technical and scientific assistance to organs in charge of food control, and provide technical and scientific support needed for the development of food safety regulations. It was also charged to undertake risk assessment activities, support surveillance activities and epidemiological networks and ensure risk communication [16]. In Gabon, Ghana and Kenya efforts have been initiated to optimize coordination of food safety responsibility by creating working groups and coordination bodies, such as intersectoral commissions and food safety task forces/committees.

Efforts have also been made at modernizing national food control systems by the development or revision of regulations on food safety and bringing them in line with the Codex Alimentarius requirements and the strengthening of national codex committees. In Mali, for instance, a work commission referred to as the national codex committee was established within the ministry of health by order Nº 05-1812/MS-SG of 1 August 2005. The national food safety agency was designated as the codex central liaison unit for Mali to facilitate the active and effective participation of the country in the activities of the codex commission [16]. In South Africa, a national codex committee has been established comprising stakeholders from government through to consumers. The Department of Health is the codex national contact point and has established a dedicated codex office where all codex activities are coordinated. A website for food control activities, including codex activities has also been established. The country has made concerted efforts to harmonize its standards where applicable with that of codex [17]. Ghana established its national codex committee since 2002 and acts as a consultative group to the government on matters related to codex in the country. The membership of the national codex committee includes the consumers' association of Ghana (CAG), an independent consumer non-governmental organization and the Ghana private public partnership project, an autonomous food safety initiative.

The role of consumers in food safety and related matters is also increasingly being recognized. In Nigeria, for example, the government has established the consumer protection agency, located in the Federal Ministry of Commerce. The agency is represented in the national codex committee, councils of the national agency for food and drug administration and control, standards organization of Nigeria and their technical committees [17]. In Benin it is reported that the number of consumer associations has increased since 2001. The two most important associations "Que

Choisir/ What to choose" and "Ligue pour la Défense des Consommateurs/ Consumer Defense League" are members of the National Codex Committee [18].

The Kenya horticulture sector is an example of how investments in quality assurance and food safety enhanced their ability to meet external market food safety requirements. By investing, among others, in improved sanitation systems, storage systems and the hazard analysis critical control point, the leading companies of Kenya's fresh vegetables have reaped significant benefits. From 1991 to 2003, Kenya was able to increase the value of its fresh vegetable exports significantly [19].

The need for technical assistance in strengthening food control systems in developing countries is well recognized [1]. The World Health Organization and other international organisations have been providing varying degrees of assistance to countries in the African Region to establish or strengthen their food control programmes. The Food and Agriculture Organization of the United Nations and the World Health Organization have jointly been providing technical assistance to enhance effective participation of member countries in the work of the Codex Alimentarius. Training courses aimed to address urgent training needs to enhance national capacities to effectively interact/contribute and participate in Codex deliberations have been organized [20]. Recognizing the need to support countries assess capacities of their national food control systems, the WHO Regional Office for Africa has been actively engaged in providing assistance to countries to assess food safety control systems and identify their specific needs (figure 1). These assessments serve as a basis to identify major problems associated with the control and prevention of foodborne diseases, plan and design targeted strategies to improving the food safety systems (figure 2). The assessment process in countries have proven to provide a valuable opportunity in raising awareness of food safety in the countries and a means for identifying joint actions among the different government ministries and agencies involved in food safety, quality and consumer protection.

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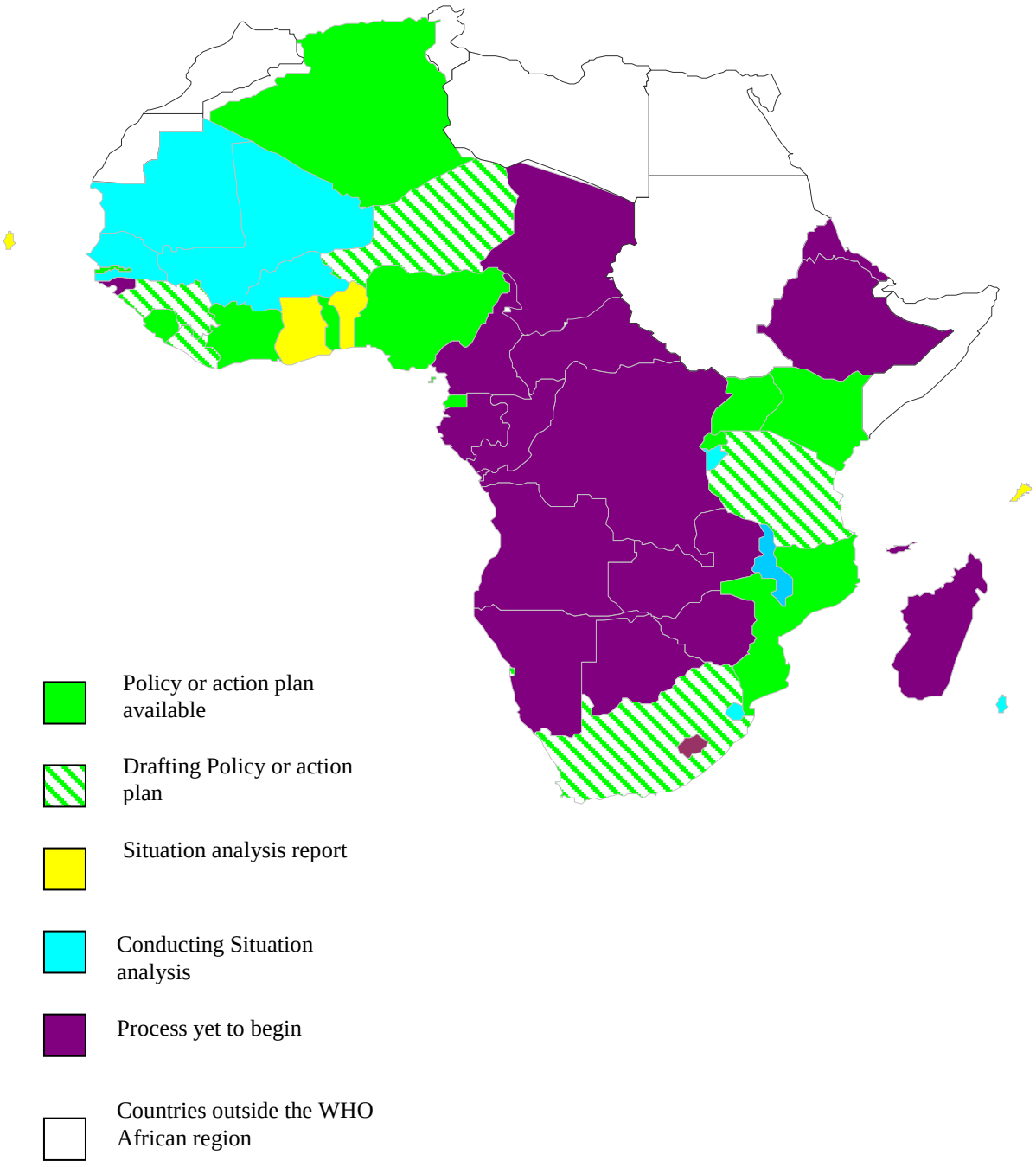

Figure 1: Status of assessment of food safety systems and availability of food safety policies and action plans in the WHO African Region

Figure 2: Process for development of a National Food Safety Programme

Challenges of food control systems in the Region

Although there are efforts by some countries in the Region to improve or modernize their food safety systems, the capacity and efficiency of many countries need to be improved to control the safety of locally produced food and demonstrate compliance with food safety standards in export markets. The major challenges faced by countries include [21, 22]:

- *Limited awareness about food safety.* Information, education, health promotion and training programmes for the food industry and consumers are limited in a number of countries. There has been a drastic increase in countries of small-scale food industries, ever-growing number of food vendors and household level production. This change, however, in the increase of small-scale food industries has not been accompanied by the improvement of food safety patterns in most countries. Personnel engaged in food production and processing have insufficient knowledge to comply with food safety assurance schemes including the Hazard Analysis Critical Control Point (HACCP) system. In Malawi, for instance, among the challenges reported in the implementation of food safety programmes is the inadequate awareness among the general public on the dangers of food hazards and unsafe foods. The fact that there is limited coordination among the stakeholders involved in food safety programmes means that the public do not get standardized messages and information [23].

- *Inadequate coordination.* The administration of food safety is complicated by the fact that food safety has many facets. National food safety control systems within the Region often have a sectoral or fragmented structure. Typically, under such arrangements the food control responsibilities are shared between several government ministries such as health, agriculture, commerce, environment, trade and tourism. The roles and responsibilities of each of these agencies are specified but remain quite different. While multiple food control agencies may be the norm, they suffer several drawbacks, including lack of coordination, and confusion over jurisdiction. To overcome the problems associated with fragmentation of food control, food control functions could be transferred to a single government department or a national food control body with inter-ministerial and inter-departmental representation. Food control activities in Tanzania, for instance, as in many other countries is scattered in several ministries. Food control is carried out by departments and agencies in seven ministries. The multiplicity of agencies is occasioned by the amount of legislation mandating some enforcement role on food safety aspects in the country. To better coordinate food control functions in Tanzania, the Tanzania Food and Drug Authority (TFDA) was established in 2003 under the Food, Drugs and Cosmetics Act 1 [18]. In Ethiopia, the lead government institutions responsible for food safety collaborate together in organizing training workshops, standard setting, and drafting of regulations. A technical committee that implements a food safety assurance system has been established. Coordination of activities at the lower level of the hierarchy, however, remains to be strengthened [18].

- *Inadequate enabling policy, outdated legislation and regulations.* In many cases existing legislation is outdated, incomplete and fails to adequately address current and emerging food safety problems. In some instances, food legislation was formulated decades ago and never got updated to take into account current principles of food safety that are being taken up in Codex and/or trade agreements. Even with a food act and regulations, enforcement may be undermined by the lack of effective food control infrastructure and institutional capacities to ensure compliance. Failure to clearly clarify in legislative documents the respective responsibilities of the main stakeholders involved in food safety, and the mechanisms through which they should work together results in duplication of regulatory activities and inadequate coordination in policy implementation and surveillance. The existence of several different laws each addressing various aspects of food, animals, plants, public health and trade further compound the problem. Malawi, for instance, as in other countries is reported to have various laws and regulations that have been enacted over the years to regulate and enhance food safety. There is, however, no unified policy that regulates issues of food safety. Various ministries and sectors involved in food safety and quality control have their own pieces of legislation that govern their operations according to their area of focus [23]. In Swaziland, food control is carried out by different ministries, departments and organizations/local authorities. These are the Ministry of Health and Social Welfare, (Environmental Health Department), the Ministry of Agriculture and Cooperatives (the Veterinary and Home Economics Department), the Standard Section of the Ministry of Enterprise and Employment

and the City Councils (Environmental Health departments). Various pieces of legislation are scattered in the above agencies. There have been efforts to harmonize the food legislation through the Food Act [18].

- *Insufficient and inadequate capacities for food safety.* Human resource capacity is inadequate in terms of: development and implementation of policies that affect food safety and trade, including capacity to implement relevant international agreements; capacities for food analysis and microbiological risk assessment procedures. In Kenya, for instance, it has been noted that the human resource capacity in terms of knowledge in food safety management tools such as HACCP and risk analysis among food inspectors is inadequate [23].

- *Inadequate resources for food safety.* One key factor affecting food control systems is the lack of financial support. This is exacerbated by the low priority accorded to food safety in national and regional planning, and the limited funding food safety receives in relation to other areas. Funds are needed to improve infrastructure, purchase equipment, train personnel and monitor food contamination. In Malawi, there are wide variations in the expertise for food safety activities carried out by different agencies. The available numbers of staff and their areas of specialization are reported to be inadequate to perform the required tasks of a fully-fledged national food quality control system [23].

CONCLUSIONS AND WAY FORWARD

The establishment of modern national food safety control systems that apply an integrated food chain approach requires the implementation of food safety policies; the enforcement of food legislation; the implementation of integrated surveillance systems; the establishment of food safety assurance systems, including consumer education programmes; the implementation of inspection programmes; and good coordination of all institutions involved in food control.

Whilst every country in the Region has some type of a food safety system at national level, this may not be necessarily effective. Several countries still have fragmented or traditional food control infrastructures, which are unable to reduce the negative effect of foodborne diseases on public health as well as meet international sanitary and phyto-sanitary standards. For those countries in the Region that have modernized their food safety systems or are in the process of improving their systems, such efforts represent a strategic opportunity not only to enhance the safety of domestic products but also to fully benefit from regional and international trade agreements.

The absence of enabling policies and standards, coupled with inadequate coordination of relevant institutions is among the challenges faced by food control systems in countries. Developing an effective programme through national planning processes may be hindered unless food safety is recognized at the policy-making level as part of the national development planning agenda, National Health policy and Agriculture policy.

The food control needs of countries in the Region may differ and be specific to the individual country. All countries would require the development of food safety systems that respond to these needs in their own context, using best practice principles applied in other countries and regions. There is a need, therefore, for countries to conduct detailed evaluations of their food control systems in order to identify gaps, mechanisms for improvement as well as identify technical assistance needs. Technical cooperation activities for strengthening national food safety systems would then be tailored on the specific needs of individual countries. The public, in particular, consumer organisations could have key roles in the food control system. They could bring attention to deficiencies and at the same time constructively assist the functioning of national food quality systems.

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