

**International Black Sea University**

**Faculty of Business Management**

**Policy and Regulation of Food Security in Georgia**

**Salome Asatiani**

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**Scientific Supervisor: Teimuraz Beridze, Doctor of Economic Sciences**

I confirm that the work corresponds to the field, is characterized by novelty, scientific and practical value and is presented by the format defined by IBSU

.....

(supervisor's signature)

**Experts:**

Prof. Dr. Tatiana Papiashvili .....

Prof. Dr. Ketevan Lapachi.....

**Opponents:**

Prof. Dr. Elene Chikovani .....

Prof. Dr. Besarion Partsvania .....

I acknowledge that this is my own work .....

(doctorate student's signature)

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## ABSTRACT

The concept of food security cannot be considered under the context of a single country or even an entire region. This is the global one and requires a global attitude. Many international organizations coordinate and pay attention to the food security issues, especially in the developing countries, where this problem more or less exists.

Agriculture represents a significant segment of the economy of Georgia. Development of secure food for domestic consumption or export trade relies on uniform food policies and procedures that are consistently enforced by government agencies.

The basic idea of the dissertation is to identify the concept of the food security, to define those important economic factors that have huge impact on the food security performance. This study explored and described these economic factors. The assessment of these factors was conducted for the Georgian food security. In particular, three factors, food utilization, food access and food availability was identified, their calculation was introduced and their impact on the Georgian food security situation was studied.

The regulation and policy of the European countries were analyzed in order to develop those institutional arrangements and policy examples for Georgian food security regulation. Major important regulations and laws were introduced which gave opportunity to assess Georgian legislative situation and future perspectives.

A multi-method research strategy included qualitative research (where major stakeholders were identified), mathematical and statistical analysis and correlation-regression analysis. Data were collected from multiple sources: documentary evidence, interviews with major stakeholders, the correlation-regression analysis allowed to discover how regional food security factors have an impact on the country level. The research was conducted in order to develop analysis and policy options on food security and food safety issues. It is expected that the policy report will provide a roadmap for government officials, EU representatives, and NGOs to address critical issues of the food security. Furthermore, during the study food security performance in Georgia was studied and analyzed, basic statistical indicators were introduced, it is important to mention that recommendations and conclusions provided by the author will greatly contribute to the establishment of the effective and complex system of food security.

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## LIST OF ABBREVIATIONS

|       |  |
|-------|--|
| AoA   | Agreement on Agriculture                           |
| CAC   | Codex Alimentarius Commission                      |
| CAFIA | Czech Agriculture and Food Inspection Authority    |
| CRL   | Community Reference Laboratories                   |
| CV    | Coefficient of Variation                           |
| CVO   | Chief Veterinary Officer                           |
| DEFRA | Department for Food and Rural Affairs              |
| DFID  | UK Department For International Development        |
| DH    | Department of Health                               |
| EC    | European Commission                                |
| EDPRP | Economic Development and Poverty Reduction Program |
| EEA   | European Economic Agreement                        |
| EFSA  | European Food Safety Authority                     |
| ENP   | European Neighborhood Policy                       |
| EU    | European Union                                     |
| FAO   | Food and Agriculture Organization                  |
| FSA   | Food Standards Agency                              |
| FVS   | Food and Veterinary Service                        |
| GDP   | Gross Domestic Product                             |
| GFL   | General Food Law                                   |
| GMO   | Genetically Modified Organism                      |
| GNP   | Gross National Product                             |
| GSP   | Generalized System of Preferences                  |
| GUUAM | Georgia, Ukraine, Uzbekistan, Azerbaijan, Moldova  |
| HACCP | Hazard Analysis and Critical Control Point         |
| IARC  | International Agency of Research on Cancer         |
| IDP   | Internally Displaced Persons                       |
| IFC   | International Financial Corporation                |
| IPCS  | International Programme on Chemical Safety         |
| IPPC  | International Plant Protection Convention          |
| JEFCA | Joint Expert Committee on Food Additions           |

MAAPAR Ministry of Agriculture, Food, Fisheries and Rural Affairs  
MAFF Ministry for Agriculture, Fisheries and Food  
MCG Millennium Challenge Georgia  
MDER Minimum Dietary Energy Requirement  
MEBIH Hungarian Food Safety Office  
MFN Most Favored Nations  
MINEFI Ministry of Economy, finance and Industry  
MOA Ministry of Agriculture  
NFA National Food Administration  
NATO North Atlantic Treaty Organization  
NRL National Reference Laboratories  
NSOG National Statistics office of Georgia  
NTBs Non Tariff Barriers  
OIE International Office for Epizooties  
PPMs Production and Processing Methods  
PAS Rapid Alarm System  
RASFF Rapid Alert System for Food and Feed  
RDA Recommended Daily Allowance  
SCFCAH Standing Committee on the Food Chain and Animal Health  
SD Standard Deviation  
SFVS State Food and Veterinary Service  
SPS Agreement on Sanitary and Phytosanitary Standards  
TACIS Technical Aid to Commonwealth of Independent States  
TBT Agreement on Technical Barriers to Trade  
UK United Kingdom  
UN United Nations  
UNDP United Nations Development Program  
USAID United States Agency for International Development  
USDA United States Department of Agriculture  
VFB Veterinary and Food Board  
VFI Veterinary and Food Inspectorate  
WFP World Food Programme  
WHO World Health Organization  
WTO World Trade Organization

## INTRODUCTION

**Statement of the problem.** The process of globalization develops every country's possibility to participate in the global food production system and to increase its capital investment in the agricultural sector. It is now a fact that in developed countries all kinds of food products or both common and exotic foods are available to consumers throughout the year. Trade barriers are disappearing, reinforcing this type of development. Food Security represents a major and daily concern in all countries, from the most to the least developed. It has become a truly transnational issue as an important element in the drive of food industries to be internationally competitive. Recent trends in global food production, processing, distribution, and preparation are creating a growing demand by consumers for effective, coordinated, and proactive national food safety systems.

Generally, the concept of food security is used in a broad one. Food security has been defined in many different ways at different times and by different institutions. The most widely accepted definition of food security at the *individual level* is that of the World Bank: "Secure access by all people at all times to enough food for a healthy, active life" (World Bank,1999). This includes three elements that are widely agreed to be necessary for food security:

- *enough* food for an active healthy life;
- *access* to this food;
- *guarantee* of having access to it at any given time (Christiaensen,1995).

At the national level, the evolving food security debate during the 1970s and 1980s made clear what is obvious at the individual level: national food security does not require individual countries to achieve food production self-sufficiency. Depending on a country's factor endowments, a more lucrative and perhaps even safer option might be to produce and export high-value crops or manufactured goods, and to purchase some proportion of national staple food requirements on world markets. Conversely, countries can be food self-sufficient at the national level but also contain some food insecure individuals because of unequal distribution of food within the country.

At the multinational level food security can be identified within the context of the WTO that uses the term 'food security' in a different, narrower sense. It is often taken to relate primarily to the adequate supply of imported food to member states. This reflects concern that the liberalisation of world agricultural trade could lead to a rise in world prices for commercial imports and a reduction in the volume of food aid available.

Moreover, two commonly used definitions of food security come from the UN's Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA):

- Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO) ;
- Food security for a household means access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (USDA), (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

It goes without saying that in the process of globalization food security became the major determinant of the economical security both for the developed and the developing countries. It is obvious that maximization of the country's food industry's international competitiveness is the subject to achieving its socio-economic objectives and in this way efficiently and effectively assesses, manage and communicate the risk of food security problems. Moreover; several mega trends can be identified on the world market originating on either the demand side or the supply side of food product markets. They are as following:

- increasing sophistication of consumer demands (demand side);
- changing attitude of governments to the agricultural sector;
- technological revolution (especially in computer-based information technology) (supply side).

Increasing sophistication of consumers created a demand for enhanced food security; the changing attitude of government encourages the industry to be more focused on the consumer (i.e. more demand driven) and the technological revolution makes this all possible. Let us consider each of them separately.

Fundamental changes are underway in the food system of many countries. A consumer who demands an ever-widening variety of healthful, conveniently prepared products is driving these changes. Consumers are becoming more specific about the food and fibre products they purchase. Five factors are keys to this shift: rising incomes, changing demographics, lifestyle shifts, greater emphasis on nutrition, and globalization of media.

1. *Rising (real) incomes* during the 1990s and 2000s stimulated long-term growth in the most of the largest economies. Higher incomes also boosted discretionary spending so that more food purchases began to be driven by tastes and preferences rather than by the basic needs for

food and clothing. Rising incomes also tended to broaden the mix of products. In the case of food this was manifested in greater purchases of convenience foods and more meals away from home. This has led to a phenomenal increase in interest in international trade. World trade in processed foods is expanding at an average rate of 7% a year and for some countries it is much higher. In Australia, for example, exports of processed foods have been expanding at around 15% a year (Australian Trade Commission, 2008).

2. *Demographic shifts* are also encouraging the purchase of a wider variety of agro products. Demographic shifts include an aging population, faster growth in the number of households, and greater ethnic diversity. The population of Western countries is living longer and the segment that may have the most influence on the agriproduct marketing - the baby boomers - has reached middle age. The aging baby boomers are becoming more health conscious and adjusting their diet accordingly. Western household are also becoming more heterogeneous than in the past. Single-person households, single-parents households, and non-family households are growing in an importance. The demand for agro products is much more diverse as consumers express preferences for taste and convenience that match their lifestyle. Western population is also becoming more ethnically diverse supporting the move to a broader array of food products (e.g. Greek, Italian, Thai, Chinese).

3. *Lifestyle shifts* include the increased role of women in the workforce. This has supported the trend to microwavable foods and other consumer - ready foods as well as meals away from home.

4. Greater emphasis on *nutrition and food safety* is another element of this megatrend. Consumers are eating more fresh fruits and vegetables in response to concern about their health. At the same time they are cutting back on fabric foods like whole milk and beef. Consumers are also concerned about food safety. They expect their food will be safe and if they are disappointed for any reason the result for the food industry can be disastrous. This has stimulated revolutionary developments in the way food is prepared all the way from farm to the plate. Consumers are also expressing an increased demand for information about foods they buy. Thus, consumers are not only becoming more specific about their taste and preferences they also want to be assured their preferences are being met.

5. *The globalization of media* information allows of the rapid dissemination of sensationalized news stories of cases of food-borne illness which can adversely affect consumer confidence and consumer demand for food products across international borders. As a result the

perception of consumers that food products are unsafe may be affected on a much greater scale than ever before even though the actual risk may be quite low.

After the Uruguay Round the governments have started to modify their stance on agriculture away from the heavily interventionist subsidization of agriculture towards a less-interventionist, facilitative role with the industry. As a result an idea of a partnership with the industry began to evolve. Government began to search new role in supporting agriculture which did not include the heavy use of subsidies. The new approach was less costly (for government) but it was more facilitative where governments have started to seek a partnership role with the other institutions for supporting the competitive food safety system. All countries have recognized the importance of the remarkable institutional changes. In some countries institutional re-arrangements have been pronounced including the setting up of widely independent food authorities. It became sensible to include both public (government) and private (commercial) actors. The commercial actors may include the individual food businesses, groups of food businesses (e.g. farmers, processors or retailers), and supply chain leaders. Food security regulation by commercial actors (private regulation) and by government actors (public regulation) became more real. An increasing attention is being paid on the combination of these two forms of regulation.

During the 1990s and up to the present day the computer revolution has found all kinds of applications in increasing the efficiency of production, processing, and marketing of agriproducts. This includes the enhanced technology for quality and food safety control.

It goes without saying that the technological improvements in all phases of processing and production as well as in packaging and transportation have made enhanced food safety systems possible.

The second important supply - side driver is the improved coordination among various participants of food-supply chain. From a chain oriented perspective, three major cycles of change can be distinguished. The first cycle encompasses developments in the market. A decreasing life cycle of products and rapidly changing preferences of consumers lead to more impulsive behavior by consumers who have become a moving target for product developers. The second cycle refers to the technologies associated with processing and production systems. In general, innovation in technologies is slower than the changes in the market situation. The third cycle deals with breeding and primary production and is actually the slowest cycle even with the use of modern biotechnology. Short-term changes in the market are impossible to follow. From the chain perspective it is of utmost importance for those actors that are active in

the primary production cycle or the processing cycle to have a strategic view of market developments and to identify market niches they can be strong and ahead of their competitors. On the other side, it is vital importance to have a clear view on technological possibilities and limitations from the processing and the primary production perspective to be able to follow the most effective strategy. From these perspectives it is obvious that strategic collaboration within the supply chain is of utmost importance. These have encouraged enhanced food safety procedures to extend all along the chain to provide an integrated food safety system. Such a system involves food safety controls at every point in the supply chain and product traceability back to the primary procedure.

All these mega trends together the demand and the supply-side international drivers have made food security an important international issue and have encouraged the establishment of international food security and safety rules. At the present producers want international food safety rules that are consistent, stable, and predictable in order to ensure access to foreign markets. Consumers want international food security rules that ensure that all food products for sale in domestic markets achieve an acceptable level of food safety because the internationalization of food production increases the potential range of mass contaminations as it includes many national markets.

**Purposes of the study.** The problem of food security became particularly real and complex in almost every country. Food security in any state depends on the fundamental potential of that country's agricultural production, the volume of its investment in the agricultural and food sectors, including the agro industrial system and the provision of appropriate services to food producers to create the socioeconomic conditions needed for their normal activity. Achieving full harmony between the sustainable use of natural resources and the corresponding food security policy is possible with the sustainable development of agriculture.

The general purpose of this study is to identify the role of the government in achieving food security, to assess the state policy and regulation, institutional arrangements, to identify all stakeholders for achieving the competitive food security and to implement those major economic factors that have an impact on the food security performance in the country.

Basic goals and aims of the following Thesis are:

- to determine the concept of the food security and identify major affecting economic factors,
- to assess the policy and regulation of food security in the developed world,

- to analyze the most important international and national laws and regulations concerning food security,
- to evaluate Georgia's legislation and regulation concerning food security and identify how they comply with the European Union and the European Neighborhood Policy
- to conduct survey in order to identify all stakeholders in the process of food security regulation,
- to conduct statistical assessment and analysis of the economic factors affecting Georgian food security condition.

It must be mentioned, that the purpose of this study is also to develop analysis and policy options on food security, which would establish benchmarks of food security knowledge, awareness and/or practices among various relevant food security stakeholders. This would also explore alternative solutions to food security problems and provide recommendations useful for all interested members of the society.

**Research methodology.** The research methodology of the study is based on the published reports of the World Bank, TACIS, FAO, USDA, and donor organization as well as that of governmental institutions were studied for guidance and information on the food production and food security challenges. In addition, a detailed study of EU and ENP-related legislation was conducted for further consideration to the government as a potential resource to be used to address the emerging challenges.

To gain a comprehensive picture of food security situation in Georgia, questionnaires for regulatory officials, agribusinesses, experts from NGOs, and donor organizations as well as consumers were designed (see Appendix A). Face to face interviewing method was selected for primary data collection. Questions were designed as open-ended, closed-ended and pre-specified. Representatives of each of the stakeholder category were asked regarding and challenges to implementing an effective food security system in the country. Populations of the different stakeholder categories were determined and sampling techniques were tailored to ensure generalization of the results. The findings and conclusions identified during this survey contributed greatly in developing recommendations and conclusions in the dissertation.

In addition, mathematical and statistical methods were used for identification of the major food security factors. Special indices were introduced and calculated, namely Food Utilization Index, Food Access Index, and Food Availability Index (See Appendix B). The calculation was conducted not only for a country, but also on the regional level. The data were chosen for the periods 1997-2008. In order to prioritize these factors special mathematical



methods were used. The correlation regression analysis was conducted to assess the importance of these factors on the food security performance and to identify how the regional factors influence on the country level factors.

**Scientific Novelty and theoretical importance of the study.** The dissertation provides arguments, findings, recommendations which greatly contribute to the future improvement of the food security performance in Georgia.

The main novelty of this study are:

- Systematic analysis of the concept of food security was provided. The term was defined at the individual, national, and international levels. This is extremely important, because the food security is the synergic approach and to understand it's basic, first of all definition should be adequately studied.
- Economic analysis for the food security assessment was provided. Macroeconomic and local policies were determined which are influenced by the food security regulation.
- The institutional arrangements and framework of the European countries were analyzed in order to better understand those tools and mechanisms that are necessary for effective establishment of the food security regulation.
- The relationship between economic growth and food security in Georgia was assessed. Basic statistical indicators were introduced which should be paid great attention for the problem understanding.
- In addition, basic international and national regulations and legislative initiatives were analyzed and studied on the Georgian example
- The research was conducted which gained a comprehensive picture of the food security performance in Georgia. This survey identified basic stakeholders in this process and major challenges and obstacles for the food security regulation, namely certain areas were identified during the interviews that are extremely urgent, such as government communication policy with consumers and industry in regard of food security, information networking between stakeholder categories, standards and regulations development policies, law enforcement, transparency of the current food security system, implementation of the proper reforms in the regulation of food security, etc.
- For the food security measurement, the most important economic factors were introduced. Their indices were calculated and with the mathematical methods their importance

were established. Statistical analysis was conducted to examine their reliability in measuring food security

All recommendations, findings, and conclusions have huge practical and theoretical importance and can be effectively used during the development and implementation of the food security regulation.

The main findings and recommendations of the dissertation were published in 12 scientific articles.

The dissertation can be of particular help to the Ministry of Agriculture, The Parliament of Georgia, the Statistical Department, farmers, scientists, local and foreign experts, consumers, students, and any interested members of the society.

## **CHAPTER 1. LITERATURE REVIEW**

### **1.1. The concept and major measuring tools of food security**

In its general form, the concept of food security essentially means the state of affairs where all people at all times have access to safe and nutritious food to maintain a healthy and active life (FAO, 1996).

Nevertheless, it should be kept in mind that this concept of food security evolved over time. There are many competing concepts in terms of the more specific forms of policy and public action, and these have produced many different definitions, reflecting both the shifting focus of concerns and changes in emphasis in policies on agriculture, food and nutrition (Maxwell & Frankenberger, 1992). Defining food security is an exercise in itself, especially when both macro and micro dimensions are included in the definition.

Christiaensen and Tollens (1995) elaborated on this observation. During the seventies and the beginning of the eighties inadequate food consumption was essentially blamed on inadequate and later also on an uncertain food supply. Consequently food security was then conceived in terms of a sufficient and ensured supply (availability) of food on a national and international level, whereby the required quantity was calculated on the basis of objectively established physical needs. However, by the mid-1980s the emphasis has shifted to access to enough food for the family/individual. They cited the work of Sen (1989), Dreze, and Se (1989) and the studies of recent famines as instrument in shifting the opinion on food security in the mid-eighties that not so much as inadequate and uncertain supply of food formed the basis for hunger and malnutrition, but rather a lack of access to that food. By relating food security to entitlements and ownerships, Sen (1989) contend that the consideration of food security must focus upon adequate access demand.

There are more than 32 different definitions of the term used by various authors between 1990 and 2000. Each definition is sensible in some context. One of the modern definitions can be found in the works of Peter Timmer (2004) who tried to establish two-way links between economic growth and food security. Food security is thus defined as a situation where a population has sufficient physical, social, and economic access to a quantitatively and qualitatively appropriate and secure food supply at all times to allow them to pursue a healthy, active life on the national, regional and household levels (FAO, 2002).

One of the noteworthy definitions of the food security in modern era is provided in the works of Ericksen (2008). According to him food security comprises a set of activities and outcomes ranging from production through consumption, which involve both human and environmental dimensions. Quisumbing (2007) and Clay (2006) mentioned that food security should be considered as a holistic approach. In this context, they believe that food security is achieved if adequate food (quantity, quality, safety, socio-cultural acceptability) is available and accessible for and satisfactorily used and utilized by all individuals at all times to live a healthy and active life.

In general, Georgian authors became interested in food security problems between 1980 and 1990. Among Georgian authors the most valuable definitions can be found in the works of Koguashvili Paata (2002). While defining the food security, the major importance is paid on the poverty and economic growth as main indicators of the concept of food security. Although, systematic and theoretical assessment and examination in this field are still needed.

It would be worthwhile to review these different concepts and dimensions in order to better understand and analyze the problem of food security.

Food security has several dimensions by which it can be defined and analyzed. Busch Lacy (1994) and Koguashvili (2002) defined food security as having at least three dimensions: availability, accessibility, and adequacy (stability). Elaborating on their comments: (1) Availability requires that there be a stable sustainable system of production and distribution to provide food sufficient to satisfy the needs of all dependent people, and resilient enough to survive the natural and climate human disruptions and disturbances by which crop and livestock production can be adversely affected. (2) Accessibility must not be limited to by what economists describe as “effective demand”. Populations of all income and social categories, rural and urban, must have access to nutritionally adequate supply of food. In a free market economy, all must have sufficient disposable income to afford the purchase of sufficient for their needs. (3) Adequacy can be described in general terms as food supply that satisfies different nutritional needs among various conditions of men, women and infants, young and old, rich and poor which make up national and communal populations.

Subsequent definitions further elaborated on or emphasized three dimensions. According to Hulse (2004), a state of food security is one which the individual or communities under consideration enjoy consistent access to foods that in quantity, quality, and composition provide a hygiene and nutritionally adequate diet. In 1986 the World Bank (WB) defined food security as “access by all people at all times to enough food for an active, healthy life.” (WB, 1986).

Rukini and Eicher (1999) commented that the WB definition of food security is not simple but comprehensive, it also reminds one that there are two inter-acting parts of food security: the availability of food (enough food for an active and healthy life) and the ability of people to acquire food (access by all people). Reutlinger (1987) likewise adopted the WB definition. Very interesting approach can be found in Georgian authors about food security definition. According to Giorgadze P. (1999), food security cannot be assessed by simple definition, because it is a synergic approach and involves various factors. Here, the most influential factors can be regarded human capital, food processors, and the role of government.

Social and moral dimensions on the issue of food security and entailment also exist. Sen (1989) and Dreze and Sen (1989) addressed entitlements as they are accepted in market economies including voluntary trade, production in terms of entitlement to own what they as individuals or communities have provided with their own resources, entitlement in relation to labor and inheritance. Food security entitlement depends on fair exchange and trade of goods and services among those who are gainfully employed. For the poor and unemployed, food security relies in some degree on social programs and provisions. Food security, poverty, and nutritional status are linked concepts in development (FAO, 1997). Lack of food security more often leads to under nutrition - when an individual simply does not get enough food. He or she is short of the calories or protein necessary for normal growth, body maintenance, and the energy necessary for ordinary human activities (Gopalan, 1995; Rao, 1979). Nutrition has been established as a major factor in holding back national development and it brings about a host of health and social problems that impinge on labor productivity, capacity for learning, and mortality and morbidity (Foster, 2005; Garcia, 2007).

Food security likewise has a temporal dimension. Valdes and Siamwalla (1998), Reutlinger (1987), and Bigman (1993) commented that the lack of food availability to poor consumers is a problem that can be analyzed under different time frames. The first type of problem is the chronic lack of food arising out of low productive capacity as a consequence of inadequate resources with which produce or purchase food. Chronic lack of food is characterized by the large number of effected individuals and households, and that its existence and solution extend over many years. The second type is called the temporary or transitory food insecurity resulting from unstable or disrupted food production or supply that causes a sharp rise in food prices or a drop in household disposable income. This is especially pronounced in areas with strong seasonality in the production (usually due to weather), price, and availability of food, as well as the availability of employment (Chambers, 1995; Sahn, 1989). Finally, there is

the acute shortage of food that strikes a community, usually concurrent with some form of natural disaster such as earthquakes or storms which severely damage the normal channels of delivery of food to the area.

Discussions about agricultural or food self-sufficiency and food security are often confusing and controversial. Part of the difficulty results from a lack of common understanding of the term, disagreements about the consequences on various groups of achieving these objectives and the lack of understanding the motivations for establishing these concepts as objectives.

The concept of food self-sufficiency is generally taken to mean the extent to which a country can satisfy its food needs from its own domestic production and release from domestic stocks over a specified period of time. It is sometimes thought that the best way to increase a country's food security level is to increase its level of self-sufficiency. This idea has certain intuitive appeal because it seems that a country has more control over its food supply if it is not dependent on international markets which in some cases are very thin or volatile. Self-sufficiency is usually measured by the self-sufficiency ratio (SSP), the share of domestic production in total domestic use, excluding changes in stock (FAO, 2007).

Many mechanisms are available to governments wishing to raise the degree of self-sufficiency. The factors affecting domestic food supply and effective demand include food prices, population, income, consumer tastes and preferences, technology and resources availability. By intervening to alter these factors, government can influence supply and demand, and consequently, the level of food self-sufficiency. Food self-sufficiency policies, it may be noted, are almost always oriented to supply-side factors. They are concerned more on making food available with little emphasis on ensuring access to that food for the population. In contrast food security policies are complex and controversial (Hulse, 1999) and are concerned more on the human welfare issue - the extent of access of all people over a specified period of time to enough food for an active and healthy life. Self-sufficiency is often an intermediate objective to broader goal that is saving foreign exchange or reducing economic and/or political dependency on certain nations. Thus, food security not only involves issues about food supply (production, storage, imports) but also concerned with the degree to which all people can obtain that food (income levels and distribution, access to resources and services, and specific food distribution programs). The food and nutrition is determined not only by the aggregate level of food supply, but by the average level of food consumption or the average daily caloric intake per person as well. Even more important is the distribution of available food supply among consumers in

different income groups and, in particular, by the quantities of food which the poor can consume since this is the group which is most vulnerable to chronic food deficiencies (Bigman, 1993).

Measuring and assessing food insecurity have proved to be challenging and daunting tasks for researchers and practitioners. Traditionally, a divide has persisted between objective-quantitative methods versus subjective-qualitative techniques for the measurement of poverty and food insecurity. More recently, these two types of measures and methods have been increasingly viewed as complementary, and it has become evident that a suite of indicators is necessary to capture the multifaceted nature of food security. In response, an increasing number of quantitative surveys now collect subjective-type information. Despite these methodological advances and the availability of better quality data, empirical evidence on the reliability and validity of the various subjective indicators in use remains scant. Most examples of the food security assessment and measuring can be found in the works of Pradhan and Ravallion (2003); Lokshin, Umapathi and Paternostro (2005) and Carletto and Zezza (2006).

Resources for coping with the effects of food insecurity and under nutrition are scarce and therefore need to be used wisely. Thus, it is necessary to be able to measure food insecurity accurately. Food security analysis can be done at different levels of aggregation –world, national, and village and even at the household level (Valdes & Siamwalla, 1998) with a set of measures useful at each level of disaggregation. At the national level or regional level, the indirect approach-making inferences about the population based on a set of information are usually employed. At the community or household level the direct approach is more appropriate.

Since under nutrition and food insecurity go together, looking at aggregate data on measures of under nutrition like how birth weights or high infant mortality rates in a country can provide a pretty good approximation on where one will likely find substantial numbers of undernourished (food insecure) people (Foster, 1995). Another indirect approach is to look at food balance sheets. A food balance sheet is a national account of the annual production of food, changes in food stocks, imports and exports, and distribution of food over various uses within the country. This account can be prepared on the basis of the calendar year, the agricultural year or the crop year, or for a number of consecutive years. Annual consumption for one commodity is estimated by adding up beginning –of-the-year stocks, production, and imports, and subtracting from this total, exports, amount used as livestock feed, amount used for seed, and end-of –the-year stocks. Per capita food availability is given for the total population actually partaking of the food supplies during the reference period, i.e. the population present within the geographical boundaries of the country at the mid-point of the reference period.

Once human consumption is estimated for every food commodity in a country, the food consumed can be achieved to calories and nutrients, and per capita consumption figures can be derived. If a country's per capita consumption turns out to be below amounts recommended by nutritionists, there is good cause to assume that a substantial block of its population is undernourished (Foster, 1995) or food insecure.

Indirect measures of nutritional status and food insecurity, although useful in identifying trouble spots, do not provide good information on the nature and extent of malnutrition and food insecurity. To get this information, direct approaches are necessary. Direct approaches requires the examination of individuals and the common methods of direct assessment are clinical, biochemical, dietary and anthropometric (Foster, 1995). Each method has shortcomings and each results in a somewhat different assessment of the nature and extent of thee nutritional problem.

National adequacy of food can be monitored on the basis of total supply relative to total requirements. Ideally, per caput food availability would be a good indicator of adequacy, but statistics on changes in stock levels are often not precise. Per caput food availability, per caput food production and per caput imports often provide good proxy indicators of adequacy. Although domestic production is the major component of food supply in most countries, the level of imports is likewise a key determinant of adequacy at the aggregate level for many food deficit countries. The ability of these countries to secure sufficient amounts of food is largely dependent upon their commercial import capacity (i.e. the volume of basic food items that the country can import without undue economic dislocation). Such capacity is assessed by an objective analysis of major economic and financial parameters. The most common determinants of a country's import capacity are total export earnings, foreign exchange reserves, the value of non-food import necessities, and debt service obligations.

Valdes and Siamwalla (1998) measured consumption instability among different countries using the coefficient of variation (C.V.) around the long-term trend as an indicator of variability. The coefficient of variation as is defined as the standard deviation of the percentage fluctuations from trend, i.e. the standard deviation of the variable:

$$C.V.= C_t-C'_t/C'_t *100$$

Where  $C_t$  denotes the observed consumption at time  $t$  and  $C'_t$  denoting trend consumption at time  $t$ .

The C.V. can also be expressed as a ration of the standard deviation (S.D.) to the mean:



C.V.= S.D./Mean

The C.V. is especially useful in comparing two sets of data that have set two different units of measures, and in expressing the variation in a single data set as a percentage of the mean value. Food consumption variability was expressed as the probability of actual consumption falling below, for example, 95% of trend consumption, given the level of actual imports. The trend in this respect refers to actual food consumption rather than nutritional requirements, thus, even meeting the deficits would not result in a nutritionally satisfactory level of per capita consumption. Hulse (1999) measured price variability using the coefficient of variation in his study about the changing patterns of variability in world cereal prices and production. He assessed the national food security level for India using three criteria: (1) the trend in per capita total availability of food; (2) the stability of availability on an annual basis; and (3) the price level at which food is available to consumers. The coefficient of variation was also used as a measure of variability and stability.

A household is food secure when it has both physical and economic access to adequate food for all its members and when it is not at undue risk of losing such access. This definition, while broad enough to cover the essential components of household food security, namely physical access, economic access and sustainability of access, provides a well-focused scope for discussing monitoring and assessment of household food security.

To ensure food access, an adequate amount of food must be within the physical reach of vulnerable households, whether through their own production or through the market. Food insecurity arises from the fact that the poor spend a high proportion of their income on food. A relatively small shortfall in the supply of food that causes an increase in food prices will reduce their real income. This could generate a decrease in food consumption and a further deterioration of an already impaired nutritional status.

As suggested by Reutlinger (1997), food insecurity results from improper macroeconomic policies and local economic and political structures that restrict the ability of households and individuals to purchase food sufficient for their needs. In order to be able to trace the effects of macroeconomic policies on individuals and household food security, the relevant linkages between the macro and micro spheres need to be detailed. Both are linked through what is called the meso-economy, composed of markets and infrastructure as critical elements (FAO, 1997). Figure 1.1.1. adapted from the World Bank (1995) and used as a framework for analysis in FAO's food security training manual, presents a schematic framework of the main macro, meso, and micro linkages with special reference to the food economy.

The various policy spheres are listed in the two upper boxes. These policies affect both markets and economic and social infrastructure. The market element comprises the markets for labor, production inputs, food and other consumer goods and credit, and encompasses the quantities supplied, the quantities demanded, and the prices. The infrastructure element comprises the institutional as well as the physical infrastructure, e. g. market institutions, roads, education, health and other social services, including food and nutrition programs. There exists many linkages between markets and infrastructure (e.g. markets and road conditions, markets and market institutions, social services and the labor market, etc). Both markets and infrastructural changes affect households in a number of ways (e.g. by changing household incomes, asset holdings, household's aspirations, etc).

The major determinant of food demand (share of household income devoted to food purchases on the market) is income, or simply the ability of households to gain access to market suppliers of food. Market demand for food has an impact on the food market on the meso-economic level. This linkage between demand and the food market is very important, as the volume of market supplies is not only determined by the production factors but also by demand factors.

The supply side can be distinguished into three areas: subsistence production, market supplies, and non-market transfers. Subsistence production (by definition as production consumed at home and do not enter the market), contributes directly to households for entitlement which also goes to mean that access to and availability of food are identical. The volume of subsistence production depends on household decisions to allocate part of its productive resources (labor, land, capital, other assets, etc) to this purpose.

Market supplies refer to domestic market production and food imports that are channeled through the market. Non-market transfers refer to food distribution to beneficiaries outside the marketing channels, such as free relief assistance programs or child feeding programs, as in the case of subsistence production, access and availability in this case are directly inter-related. The commodities for free food transfers could either stem from food aid deliveries, bypassing the local market, or from locally procured food for the same purpose. In this regard, there are meso-economic linkages between the social infrastructure and the food market (the food subsidy program as a demand factor on the food market)

Indirect linkages exist, as indicated by the broken lines, between non-market supplies, the food market, household incomes, and food demand. A possible response of households to subsistence production or freely received food is that they would spend less on food purchases

on the market; hence the un-intended effect is less demand for food in the market. Furthermore, if recipients of non-market transfers sell part of their food received (or part of their subsistence food production), this will not only increase their income but also the market supplies of food.

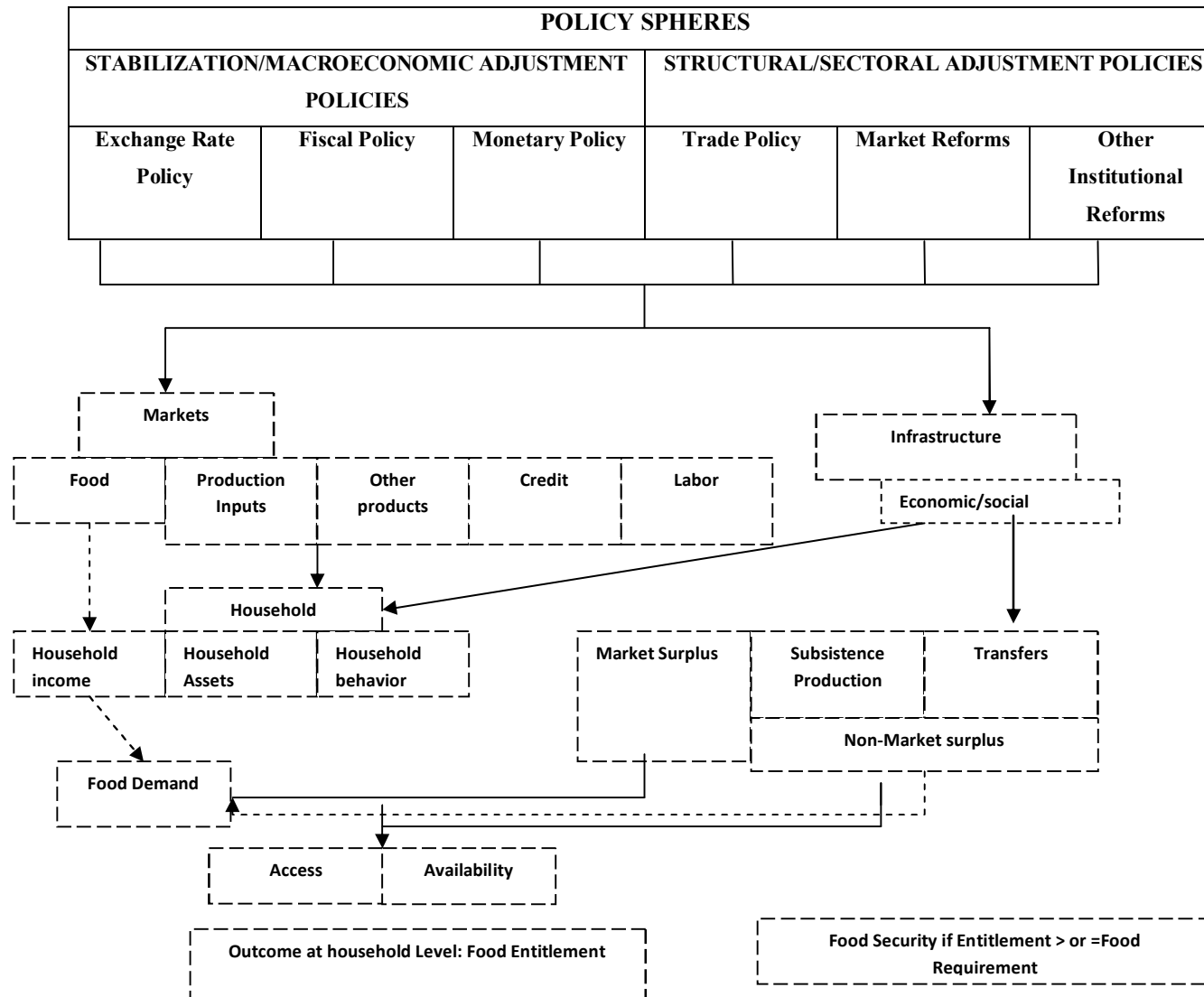
Both the supply and the demand factors determine the level of household food entitlement. Food security is achieved if subsistence production, transfers and market are sufficient to meet the household food requirement. After establishing the linkages between the macro-policy sphere and the factors determining food production, demand and entitlement at the household level, the question can be asked how the various population groups, in particular those vulnerable to food insecurity, are affected by the parameter changes induced by macro-policies.

Almost all policy changes create gainers and loser; very few policy changes benefit everyone in practice. It is important to examine whether the losers from the policy change are amongst the most food insecure. Any policy that penalizes the most vulnerable is likely to create greater problems of food insecurity. The time horizon of the poor is very short. Even if they will benefit in the medium-term, some immediate intervention may be necessary to cushion the impact of policy change on the poor.

The increase of food security requires a comprehensive set of activities and policies that are oriented to addressing both sides of the food security equation. Regarding access to food, investments must be oriented to infrastructural development that allows agricultural products to reach people in isolated areas as efficiently as possible. Infrastructural development is also necessary to develop an effective storage/shock system that can help address questions of transitory food security.

One of the best ways to assure food security is to have broad-based income growth amongst the lower income groups in the society. To accomplish this goal requires special attention to developing employment opportunities for a broad segment of the people. Income enhancement may tend to decrease food self-sufficiently.

Figure 1.1. Schematic framework of the main macro-, meso-, and micro-linkages with special reference to the food security



## **1.2. The importance of the food policy and main influencing factors**

In general, food policy concerns the integration of state actions affecting the supply, distribution, and consumption of food in order to ensure continuity of access to enough food for all the people in the country. In this extent, supply refers not just to domestic production but also to the potential that exist for supplementing food production by commercial imports or by food aid. Distribution refers to the way food marketing channels work and to the effectiveness of the time, place and form function of domestic marketing systems.

In the light of the definition, it is helpful to think about food policy in terms of the equation of food availability to food requirements. This can also be stated as the equation of food supply and food demand, on the understanding that supply and demand refer to the food needed to satisfy the fundamental nutritional requirements of the population.

Many believe, that food policy is also concerned with the ability of the food marketing systems to achieve efficiently the required spatial and temporal distribution of food, including inter seasonal stabilization of volumes and prices, stability of prices and supplies being a crucial integrating in food policy.

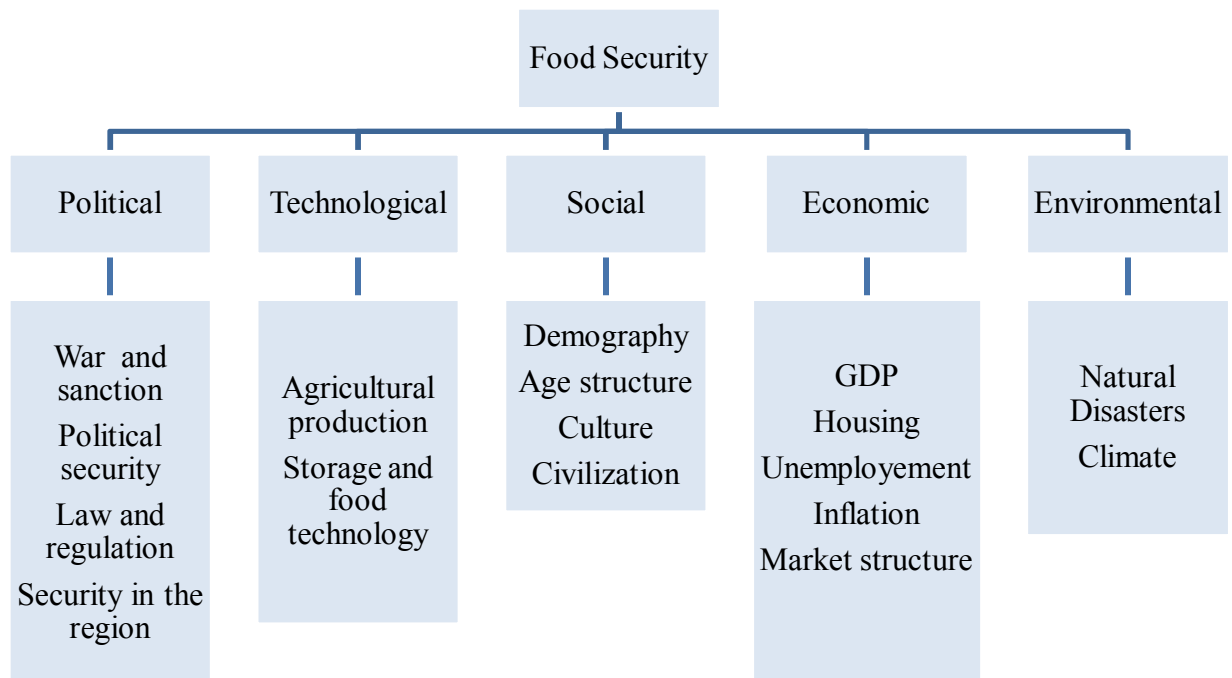
Food policy is ultimately about the stable access to sufficient food for all the people in a country. It is therefore about the avoidance of famine, malnutrition or under nutrition which deprive individual human beings of the basic needs of health and energy. At the center of food policy is the balance between food availability and requirement. This balance can be described at international, national, household and individual levels.

There are four main reasons for governments to be concerned with agricultural and food policy from the point of view of the consumers: 1) the most general reason is a need to reduce the effects of domestic inflation. This is especially important in those countries where food bills make up a substantial proportion of a family's budget. L. D. Haeseh, For example, mentioned that in Asian countries more than 60% of a family's budget had been spent for food consumption while in the western Europe this proportion had been about 30% (L. D. Haeseh, personal communication, April 15, 2007); 2) the second reason is to control the price of certain basic food commodities such as milk, meat, bread, rice, etc. The objective here is to reduce the effects of price rises and to ensure sufficient consumption in such a way that the rich do not benefit more than the poor, which is seriously implemented in Asian countries; 3) to provide subsidized food to selected groups of the population specifically in need of additional food or cheaper food. And finally, a government objective may be to provide subsidized food to other sections of the population who can not to be considered to be in nutritional need but whom the

government wishes to reach for other reasons (such as people’s contribution to elect government hence indirectly to the government’s policies and decisions towards food).

In general, food security is a complex phenomena, which is influenced by lots of factors. In the Figure 1.1. nearly all important factors that affect on food security are shown. The following factors are: political, social, technological, environmental, economic, and so on. However, these factors are also influenced by sub-factors, which are mentioned in the circles. For instance, economic factors are defined by such indicators as GNP, housing, unemployment and so on.

**Figure 1.2. Food security influencing factors**



Besides, food security is greatly connected with the food production and the food consumption. Agriculturally and economically, there is a very remarkable cause-and-effect relationship between food/feed production and food consumption, as well as increase in food consumption accompanied by improvement if income distribution in the society. So let us consider each of them independently.

**Food production factors.** It must be admitted, that when per capita consumption in terms of calories grows, the volume of agricultural products used up in order to generate calories and demands at a faster rate, due mainly to: 1) higher value products increase peoples' share in the basket of food consumed directly and 2) indirect consumption of agricultural products in the form of animal feed that is consumed proportionally far more livestock, thereby resulting in much higher society's demand to agricultural productions.

Factors which potentially lead to market and consumption instability include: production shortfalls, variation in import capacity, distribution bottlenecks, or high transportation costs, weak and variable demand due to income fluctuations.

**Land.** Land's importance for food production is self-evident. Only 2 percent of the world's food energy and no more than 7 percent of all dietary protein come from waters. Food/feed production increases may result from either increase in the amount of cultivated land or, with multiple cropping, cropped areas or from yield increases. In order to increase food/feed production, the increase in the amount of cultivated land could be attainable.

**Climate.** The countrywide regional climate diversity can be as a factor affecting the food production and consumption in every country. The regional differences in the climate and the weather's temperature fluctuations can influence the food production in countries that can lead to diversity of food production.

**Irrigation.** It must be admitted, that without substantial commitment towards arable lands and irrigation, the people's food demand is never met by domestic food production in the world. The efficiency of irrigation water use represents a major bottleneck for the enhancement of production and productivity (FAO, 2003).

**Management.** Food production in any scale has to be associated from conception, in the programming, management, and evaluation steps of the project of the intervention; the latter is more useful and successful if people are involved in decision making process. This programming management has also to lead to a better response towards interrelationships between population needs, program targets, and program activities.

**Capital investment.** Public investment in agriculture research, rural infrastructure, and human development is still fundamental for achieving food security. The investment to be targeted in ways that are more beneficial to the poor than in the past, and supported by policy and institutional reforms that improve incentives for sustainable management of natural resources.

**Technological advances.** High advance technology and management schemes and development of groundwater recourses are necessary for food production and so prevention of food insecurity.

**Labor.** As well as other factors, the efficiency of labor force is the important indicator of the food production. If the employment share in the agricultural sector decreases, this has a bad effect on the food production.

**Supply.** Food supply is considered as a fundamental part of a food production. Food supply refers not only to domestic production but also for the potential that exists for supplementing food production by commercial food production or the imports or by food aid to meet peoples' fundamental demands. According to Bigman (1993) The food and nutrition situation in a developing country is determined not only by the excessive amount of food supply, the average level of food consumption, or the average daily calorie intake per person. But more importantly, by the distribution of the available food among consumers in different income groups and in particular, by quantities, of food which the poor, most vulnerable to chronic food deficiencies, can consume.

**Political stability (wars, sanctions).** It goes without saying, that political stability greatly affects upon the production level in the country, because, as lots of examples show, the longest and damaging wars have resulted in long-term infrastructure damages in all fields of progress and advances.

**Food consumption factors.** Food demand rises due to increases in personal consumption expenditure as income rises, especially when per capita calories consumption levels are low. But a greater increase in consumption occurs when the distribution of income improves.

Let us consider **food consumption factors:**

**Population growth.** One of the basic and pivotal determinants of demand is "population". Different rates of population growth among different income groups will give wide ranging per capita and total food demand levels in various countries. As long as population growth rates continue to be higher among rural and urban low-income groups, population pressure, as it relates to income distribution, will continue to be the major determinant of effective demand and consumption levels. In addition, demand decreases due mainly to crucially influential factors in the country.

**Income.** Changes in the economic environment and income structure generally lead to shift in food consumption pattern. One of the most important determinants of food consumption in most countries is demographics: changes in population growth determine food demand that leads to a creation of food production and processing.



If the income distribution changes then in the future demand for food will increase faster or slower than the rate of population increases, depending on whether the population becomes generally better or worse off. At the same time, increasing affluence not only creates demand for more calories but also for different foods, particularly high-protein food, which is calorie expensive in production

If the extra income can be provided through the processes of development there is no longer guarantee that it will be spent on food for those most in need of it. The extra income can be delivered to other necessities and alternative consumer goods. Accordingly (J. Vianne, personal communication, February 24, 2007) two crucial items affecting on interpretation of income in a country: level of income and its distribution.

**Culture.** Culture plays a crucial role in shaping food, eating, food consumption and nutrition. Contrarily, consumer needs, values, beliefs, habits and lifestyles differ across cultures.

**Temporary environmental diversity.** Not only the regional differences, worldwide, influentially diversify on food consumption pattern but also countrywide regional differences can be as a factor affecting the food consumption pattern. Substantial environmental changes exist in some countries; this leads us to conclude that the diversity in food consumption in any country could partly be resulted from diverse environmental and climatic condition.

**Population growth.** The most significant variable affecting the future demand for food must be population growth. One of the important determinants of calculated total food needs is the proportion of the population at different ages.

**Social factors.** The level of society and social class greatly determines food production and consumption pattern. Generally, the stable social and cultural picture of the country society can always help the government to plan and fuel more agricultural products to achieve food security.

**Food habits.** There are considerable differences on food habits/behavior among countries and in the different regions. People have different consuming habits and accessibility in various part of the world. Also the environmental and climate diversity can in part be as an influencing factor on food production diversities, thereby influencing on food consumption diversities in the country.

**Price.** The impact of prices on food consumption in any country and society is obvious. When the price increases, food demand will decrease due to income limitation.

**Other external factors.** Principally, trade is the only feasible way of meeting the demand. The separation of production and consumption does lead to trade, which is normally

based on comparative advantage. Very few countries exist independently of international trade in agricultural and food products. Although the export side of the food trade is dominated by few countries food and agricultural imports are vital to a large number. Trade policies may be a part of, and/or a consequence of, production policies through the need to control cheap imports. It may also be a part of consumption policies by preventing or controlling exports to a more lucrative world market or by encouraging imports of cheap food. There are two additional reasons, which are rather more independent from direct production and consumption consideration.

1. Where there is an actual or potential surplus production, governments may wish to encourage export.
2. The country's dependency as an importing country due to known and unknown reasons may lead to government programs striving towards self-sufficiency in food production regardless of being economically beneficial.

Here is important to identify such factors as exports and imports, because in general, trade imbalance mainly affect on the level of employment in nearly every country.

## **CHAPTER 2. FOOD SECURITY LEGISLATION AND REGULATION AT THE EU LEVEL**

### **2.1. Major international legislations for food security regulation**

During the globalization, burgeoning international agricultural trade has a growing impact on the food security on every country participating in the international trade. This situation requires additional assurance for everyone their requirements somehow should be satisfied. Modern tendencies encouraged the establishment of internationally standardized food safety rules under the jurisdiction of international institutional arrangements. International institutional arrangements have an important influence upon the development of food safety systems in the countries. The most important of these arrangements include the World Trade Organization's (WTO's) Agreement on Sanitary and Phytosanitary Standards (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement), as well as the Codex Alimentarius (Codex). These arrangements attempt to standardize the rules for establishing domestic food safety regulations while simultaneously discouraging their use as an unwarranted barrier to trade.

When talking about legislation, directly those tasks arises, that the legislation must confront and resolve. Among these tasks are:

- Legislators must establish policies that provide an abundant, safe and wholesome food supply at a reasonable cost that customers will accept and with which they will be satisfied;
- They must protect both customers and consumers from unscrupulous activities associated with the commerce of food;
- They must support directly and indirectly the primary producers and harvesters of food to assure an abundant and continuing supply of food;
- They must protect their manufacturing industries. In many countries the food segment on the economy is a major component employing a significantly large work force;
- Legislation must protect the independence of the national food economy from foreign domination yet maintain international trade relations with other countries for safety of the food supply and to earn foreign monies.

It goes without saying that food security as well as food safety and food quality is one of the major priorities for any government and they should be regulated. There are several distinct

levels of governance that target safety, quality, and wholesomeness of food and food products, that define standards of identity and that regulate its trade and commerce:

**International level.** Agreements between one nation and another or amongst groups of nations of nations will regulate trade. The Codex Alimentarius is an international code of food regulations agreed upon by many nations for use in such alliances. The World Trade Organization acts as a governing body for trade disputes.

**Levels of governance within nations.** Most nations have a governing body or department (often several) which is responsible for the safety of food, its labeling and standards of identification, e.g. Food and Drug Directorate (Canada), Food and Drug Agency (U.S.), Ministry of Agriculture, Fisheries and Food (U.K). Other government departments regulate agriculture, trade and commerce, health and welfare of citizens, and consumer affairs. At lower legislation levels, there can be provincial, state, municipal, country, or parish governments that promulgate regulations governing food, its trade and agriculture according to the needs of the regions they represent.

**Nongovernmental level.** At this level are organizations, some of which may have a quasi-legislative power, that are permitted to regulate the supply and flow of certain commodities or of some trade practices. Marketing boards, professional associations and trade associations are examples.

**Contractual level.** Contractual agreements, for example, between a grower and a processor, may adhere to all the regulations posed by the foregoing but in addition the processor may require that additional criteria be met for which the buyer will pay a premium.

As mentioned above, the most important set of international institutional arrangements is the Codex, a joint agency of the United Nations (UN's), World Health Organization (WHO) and the Food and Agriculture Organization (FAO), whose mandate is to develop international standards, guidelines and codes of practice on issues of food safety and food quality. The creation of the WTO has led to two other important sets of international institutional arrangements: The Agreement on Sanitary and Phyto-Sanitary Standards (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement).

### **2.1.1. Major regulations of the World Trade Organization**

As a part of the conclusion of the Uruguay Round of multinational negotiations on international trade, the World Trade Organization was created as a permanent institution administering several international trade agreements as well as dealing with cases of international trade dispute. The international trade agreements that are particularly relevant to the issues of meat safety are the SPS Agreement and to a lesser extent the TBT Agreement.

By way of background, the international trade regime has been built on the traditional principle of non-discrimination. Essentially, there are three important aspects of this principle. First, it is the “like product” concept implying that products which serve the same end-use are considered like products and treated equivalently regardless of any differences in their process or production methods. Second, it is the concept of National Treatment whereby foreign products must face the same regulatory standards as like domestic products. Third, it is the concept of most favored nation (MFN) whereby all like foreign products must face the same market access requirements as those foreign products from MFN. The non-discrimination principle has been applied to ensure that government reactions to producer pressures for trade protectionism are constrained by trade rules and obligations.

The traditional principal of non-discrimination has been used successively to reduce border-type trade barriers such as tariffs as well as Non-Tariff Barriers (NTBs) such as quotas, variable levies, and quantitative restrictions. Indeed, the WTO’s agreement on Agriculture (AoA), which focused on these types of trade barriers, offers the prospect of real international discipline on agricultural trade. Such measures can no longer be established in a unilateral manner and must meet the principle of non-discrimination.

Yet, disciplining these types of trade barriers should not be interpreted to mean that the political pressures for protections have disappeared. In fact, a new type of NTBs has been emerging, which is less transparent yet potentially as effective as older more familiar NTBs. These new measures for protections include domestic regulatory standards and technical rules for consumer and environmental protection. In other words, two new challenges face the international trade regime. It must deal with new types of trade protectionism as well as new sources of trade protection.

Food safety is as the vanguard of these two challenges. Domestic regulations that diverge from regulations in other countries have been enacted which delay and sometimes prohibit market access. Also, some segments of society call for public intervention to ensure not just

safety, but also product quality and to ensure that new products have socio-economic benefits. Beyond regulatory standards applying to the products, there are also growing calls for governments to regulate the production and processing methods (PPMs) used to create products in order to ensure that they do not have adverse environmental or animal or welfare impacts.

From a trade perspective divergent food safety rules among trading nations can create access for barriers products. This trade thread has encouraged the development of international agreements to provide standardized rules for establishing domestic regulations so that the various national standards and regulations do not provide fertile ground for NTBs. Therefore, while the AoA addresses traditional agricultural trade barriers, the SPS and TBT Agreements both address the potential NTBs created through the use of domestic regulations.

The SPS agreement constitutes a considerable strengthening of rules governing the legitimate use of domestic health regulations to restrict food trade. At the heart of the SPS Agreement is the tenet: No member should be prevented from adopting or enforcing measures necessary to protect human, animal or plant life or health.

Thus, the SPS Agreement specifically allows for the establishment of NTBs on food imports, but only where there is a proven scientific risk to human, animal or plant life or health. The main contribution of the SPS Agreement was to standardize the procedures for determining a proven, scientific risk to human, animal or plant life or health. In this way, it reduces the opportunity for using food safety measures for the other (inappropriate) reasons.

The SPS Agreement established the following principles to be applied by all WTO members to any domestic regulations concerning human, animal and plant health. In order to legitimize the regulations, they:

1. Must be appropriate to the risk involved, based on scientific proof and the trade impacts should be minimal while achieving the desired level of SPS protection (the principle of proportionality);
2. Must not involve arbitrary or unjustifiable discrimination between members (they require a scientific justification for discrimination);
3. Should ideally be based on the international standards, namely Codex for food safety, the International Plant Protection Convention for plant safety and the International Office of Epizootics for animal safety (countries are permitted to exercise more stringent standards than the ones set by these international institutions; but only if they can demonstrate a scientific justification for doing so); and
4. Should be transparent (members are obliged to provide notification during the development; implementation and alteration of relevant regulations).

These principles serve to strengthen the role of international standards. However, a country can still maintain or introduce SPS measures that exceed the international norms if there is scientific justification (Article 3) and provided that science-based reasons are based (Article 12). According to the Article 12 the burden of proof in such cases lies with the exporter (Article 4) (WTO, 2008). But even without sufficient scientific proof, members are allowed to adopt temporary measures to deal with short-term safety concerns (Article 5(7)). Thus the SPS Agreement is one of the few WTO Agreements to observe the principle of precaution.

In short, the SPS Agreement allows WTO members to impose additional food safety regulations and to discriminate against imports on the condition there is an acceptable scientific justification to do so. Of course, this raises the important issue of what constitutes acceptable scientific justification. According to the WTO case law (Salmon Case-WTO, 1998b), there are three important criteria. The country's regulations restricting imports must:

- Explicitly identify the diseases whose entry, establishment or spread the member wants to prevent and must describe the potential biological and economic consequences of entry;
- Evaluate both the likelihood of the entry, establishment or spread disease and the economic and food safety consequences according to a risk assessment procedure under the risk analysis framework; and
- Be those that minimize the trade impact.

The objectives of the TBT Agreement as stated at the beginning of this chapter are: to ensure the quality of exported products, protect human and animal health, preserve plants, protect the environment, prevent practices which may mislead consumers (economic fraud) and ensure national security.

The TBT Agreement is thus broader in scope than the SPS Agreement is. Whereas the SPS Agreement focuses explicitly on food safety issues, the TBT Agreement are concerned with all (mandatory and voluntary) technical standards that apply to internationally traded products included food. When a dispute arises, it is first necessary to verify whether the technical issue falls within the scope of the SPS Agreement. If it does not, it immediately goes to the TBT Agreement. The technical standards considered under the TBT Agreement include technical performance standards a product must meet to be imported or exported, for example, energy efficiency standards for washing machines. The performance standards include product quality attributes, packaging requirements, labeling rules, as well as advertising and marketing claims. They may also include environmental, health, labor or other standards a product must meet during the life cycle (e.g. that forest products must come from sustainable managed forests). The

TBT Agreement dictates when such barriers may be allowed and what conditions must be met (notification, transparency, and so on). It applies fully to all government standards, including most levels of government. Non-governmental, non-mandatory standards are less strictly covered under what is called the Code of Good Practice.

The principles underlying the TBT Agreement are:

- avoidance of unnecessary obstacles to trade;
- non-discrimination and national treatment;
- harmonization;
- equivalence of technical regulations;
- mutual recognition of conformity assessment procedures (these are procedures which ensure imported products conform to domestic technical regulations and standards);
- transparency.

Hooker and Caswell (2001) pointed out there is a blurred distinction between food safety and food quality issues and hence, in the case of food there is opportunity for jurisdictional overlap between the TBT and the SPS Agreements. This is problematic because while SPS Agreement attempts to distinguish legitimate trade barriers according to scientific justification, the TBT Agreement is not limited to a scientific justification. As a result, the TBT Agreement appears to be softer on allowing import trade barriers against specific products. For example, a country wishing to protect the domestic food industry may successfully appeal to the TBT Agreement on the grounds of environmental and ethical requirements on food PPMs where such grounds would not be available under the SPS Agreement. This is not to say the TBT Agreement allows open season on PPMs because a country cannot simply discriminate against imported products which serve the same end-market as domestic products based on differences in the manner in which they were produced.

From the discussion above, it is clear, that while the international trade regime is an important institutional arrangement impacting food safety, underlying this regime is the Codex Alimentarius (Latin for Food Code, Codex for short), an equally important international arrangement.



### **2.1.2. Regulation of CODEX Alimentarius Commission**

The need for a consistent and non-fragmented international approach to food regulation after the Second World War culminated in the creation, in 1962, of the Codex Alimentarius Commission (CAC). The objective of the CAC was to develop the Codex. The codex was intended to provide universally applicable food safety guidelines that would facilitate international trade in food products and ensure international consumer protection.

Although the initial intent of the Codex was to focus on food safety and consumer protection, its mandate has broadened to include food quality issues. Given its objective of facilitating international food trade, as well as the inclusion of Codex standards and standards – setting principles into the SPS and the TBT Agreements, the CAC has found it difficult to ignore such issues.

Administratively, the CAC is a joint agency of the UN's FAO and the WHO created under the UN's food standards programme. As a result, all member countries of the UN may be members of the CAC. Assisting the CAC is the Codex Secretariat and the Codex Executive Committee. The codex Secretariat is located in Rome and is administered by the FAO. The purpose of the Secretariat is to provide day-to-day support for member countries as they attempt to interpret, develop and implement national food regulation congruent with the Codex Alimentarius. The Codex Executive Committee meets yearly and, unlike the CAC, is organized according to principal regions (Europe, Africa, Asia, the South Pacific, Latin America and North America) not according to subjects. Hence, the Codex Executive Committee is a regional coordinating committee providing a regional perspective on food safety.

The CAC is composed of committees organized around commodities, general subjects, regions (which were indicated above), and around expert groups providing supporting advice and guidance. Committees are chaired by a member country and they may be active or dormant. The 14 worldwide commodity committees cover the following product categories: cereals, pulses and legumes, vegetable proteins, tropical fresh fruits and vegetables, processed fruits and vegetables, fats and oils, processed meat and meat products, meat hygiene, fish and fishery products, milk and milk products, sugars, cocoa products and chocolate, edible ices, soups and broths, and nutrition's and foods for special dietary uses.

The eight Codex General subject Committees are:

1. Residues of veterinary drugs in food;
2. Import/export inspection and certification;

3. Food additives and contaminants;
4. General principles;
5. Pesticide residues;
6. Food labeling;
7. Analysis and sampling; and
8. Food hygiene.

Essentially, the codex attempts to develop anniversary acceptable food standards through its elaboration and consultation procedure that may be aligned with domestic food safety standards. However, under the principles of codex, each contracting party maintains the right to establish its own appropriate level of food safety and consumer protection and to act unilaterally to ensure this level of protection. It is anticipated that when countries do deviate from the codex food standard, they do so in a scientifically justifiable manner.

The various international institutional arrangements discussed above attempt to “de-politicize” international trade (WTO, 2008). Rather than subjecting trade flows to the divergent normative preferences of various member countries, they attempt to subject trade flows to universal, scientific determinations of safety or hazard or to universal principles of non-discrimination. The SPS and TBT Agreements along with the Codex attempt to ensure consumer protection while disciplining the use of unilateral food safety regulations as non-tariffs barriers to trade. In the case of food safety issue, the basis for a legitimate SPS measure is the scientific evidence of a risk or hazard, proven through credible scientific methods congruent with either Codex standards (if they exist) or Codex standards-setting principles. In the case of a non-safety issue, the basis of a legitimate TBT measure must not violate the MNF and the national treatment principles and must be the least trade distorting measure available. All other justifications for unilateral trade barriers are considered to be illegitimate and in contravention of international trade agreements.

International institutional arrangements have significant implications for the restructuring of the domestic food safety systems under the study. Hence they may be considered as a special class of drivers for change. The international institutional arrangements are broadly consistent with our socio-economic objective. They have helped to standardize the international rules governing food safety, and in so doing have lowered the transaction costs involved in the international trade in food products. Of course, they have not eliminated differences in standards between countries, and neither should they. The codex provides an acceptable minimum standard of food safety as stipulated in our socio-economic objective. However, allowing for differences between countries (subject to this minimum) allows different

countries to explore changes to their food safety systems, which may enhance international competitiveness. This ability is enhanced by the concept of “mutual recognition” which is enshrined in the SPS and TBT Agreements and in the Codex. Thus, for example, domestic food safety systems, when deviating from the Codex food standards, must show that their standards yield the equivalent effect on overall food safety. Allowing for differences between countries (subject to the minimum standards provided by Codex) raises the cost of difference between countries.

The international institutional arrangements have also helped to lower the enthusiasm of special interest groups (either from industry or civil society) to seek economic protection through the inappropriate use of food safety rules. The present international institutional arrangements are unable to completely solve this problem. However, they do raise the political costs to errant country governments, and for other governments these arrangements provide international support to resist this form of economic protectionism.

It is important that the SPS Agreement remains based on scientific risk assessment and that it does not entertain social concerns as a basis for allowing a trade restriction. Allowing the consideration of social concerns would considerably enhance the prospects of special interest groups seeking economic protection from imports.

These international institutional arrangements also contribute to the ability of countries to move towards an optimal food safety systems because they attempt to move the process of dispute resolution from one of negotiation to one of adjudication. Hence the most economically powerful countries will tend to achieve the most gains. This power imbalance tends to limit the ability of other countries to achieve what would be for them an optimal food safety system. By contrast, a process of adjudication reduces the impact of power imbalances on dispute outcomes. Of course, the present international arrangements do not completely remove the effect of power imbalances on disputes outcomes.

## **2.2. General understanding of the regulation at the EU level**

Food safety regulation in Europe is a highly dynamic policy field. The European Community and its member states have increasingly recognized the food safety area as an important risk governance priority. Over the past one and a half decades, institutional arrangements of food safety governance have been re-examined and re-structured at the level of the European Union and within several of its member states. The process of transformation and

re-establishment has systematically been continued. The main reasons of these remarkable institutional dynamics are as follows:

1. During the past decades the diversity in food supply has significantly increased due to the development of the new production methods in the crops and livestock sectors of agriculture, the advancement of food science and progress in food technology. Consumers can choose from a much greater variety of foodstuffs. These include entirely new or fundamentally modified products such as foods containing genetically modified organisms. For these novel foods, there exists no experience in safety matters.

2. A series of food supply incidents afflicted in the EU and many of its member states over the past 15 years and has been widely interpreted as contributing to significant reductions in the level of public confidences in food safety and in the competence of the authorities formally charged with assessing and managing food risks.

3. During the past decades the mobility of people (especially via tourism) and the global trade in food and feed have significantly increased. Increased mobility and trade mean that pathogens and viruses are exchanged at a global level.

4. Issues of food safety, public health, and consumer protection remain high on the agenda of the general public, civil society organizations, and international trading partners.

It must be mentioned, that all major institutional and substantive changes are mainly based on a new, integrated approach to food safety – “from the farm to the fork”- by means of the introduction of a sticker separation between the tasks of the risk assessment and risk management, a stronger emphasis on the consumer protection and democratic procedural norms and the creation of a new regulatory agency, the European Food Safety Authority (EFSA). Hence, today EU food safety regulation provides the basis for the assurance of a high level of protection of human health and consumers’ interests in relation to food. Against this background, the EU is currently responsible for the adoption of nearly all important legislative provisions on food safety by its member states. In close collaboration with the member states, the EU institutions thus deal with the adoption of legislation on food safety and the management of risks to human health to set up a framework of post-market control; they are responsible for the conduct and harmonization of the risk assessment at the European level and represent many shared “European” interests on the international level.

On the basis of the new approach to the food safety, Regulation 178/2002 was adopted as the new legal framework for the European food safety regulation in 2002. This Regulation, which is better known as the “General Food Law” (hereinafter: GFL) lays down common principles, procedures, and responsibilities with regard to foodstuffs, whilst ensuring the

effective functioning on the internal market. Its objective is to provide a high level of protection of both health and consumers' interests. It does not therefore merely seek to protect consumers' health, but also aims to protect them against fraudulent behavior, including fraud with foodstuffs. Moreover, it broadens the specific Community rules regarding labeling and advertising by stating as a general principle the consumer may not be misled.

The GFL puts risk analysis at the heart of its food policy. It says that "Food law shall be based on risk analysis except where this is not appropriate to the circumstances or the nature of the measure". Risk analysis consists of risk assessment, risk management, and the risk communication. The GFL herewith establishes a link with the general definition of risk analysis of the WHO and the Codex Alimentarius, the most relevant bodies for the food safety regulation at the international level. The GFL moreover, lays down the division of responsibilities for the three stages of the risk analysis. It makes clear, first of all, the primary responsibility for the food safety lies with the food and feed business operations. "Food shall not be placed on the market if it is unsafe" (GFL, 2002). The operations must guarantee that products at all stages of production, processing, and distribution within the businesses under their control fulfill the requirements of food law. Furthermore, they are obliged to withdraw products from the market when they suspect that these products do not satisfy the safety requirements.

Importantly, the GFL sets up an independent agency, the European Food Safety Authority (EFSA), as it had become apparent that the reform of the scientific committee system had not been to restore confidence in EU regulation. One of the major goals of the establishment of EFSA is therefore to address the problem of confidence by guaranteeing more independence and excellence and greater transparency. In addition, it was thought that an independent agency with its own scientific staff would be in a better position to collect data and prepare opinions than the former scientific committees, herewith addressing the insufficient capacity that previously blighted these committees.

According to the GFL, risk assessment consists of a scientifically based determination of a political hazard. It encompasses hazard identification, hazard characterization, exposure assessments, and risk characterizations. It is prescribed that food safety regulation on the European level to be developed upon a "strong science base" within "efficient organizational arrangements and procedures" (GFL, 2002). The commitment to this aim is manifested in the creation of EFSA. The GFL adheres strictly to a functional and institutional separation between risk assessment and risk management. Even the few management functions in relation to crises situations, which were conferred upon EFSA in the Commission's initial proposal, have been entrusted to the Commission by the GFL.

EFSA is one of the numerous Community agencies, now more than 20, that have been created by the Council and European Parliament at the European level. After being provisionally seated in Brussels, EFSA has been located in Parma since 30 October 2005. Its main task is to provide “the best possible”, independent scientific advice on all matters that directly or indirectly influence food safety. EFSA is therefore the main actor responsible for the risk assessment at the EU level. It is also required to give independent information on all matters within these fields and communicate these risks to the public. Furthermore, EFSA fulfills supportive tasks for the Commission, providing scientific and technical support in the areas within its mission, and, when so requested, in the interpretation and consideration of risk assessment opinions. In addition, it is required to provide scientific and technical assistance for the crises management procedures set up by the Commission with regard to safety of food and feed. Its tasks also include the duty to promote and co-ordinate a network of organizations operating in the relevant fields in the member states. Finally, EFSA is required to act as early warning emerging risks and as a risk communicator, providing reliable, objective, and comprehensive information to the public and interested parties.

EFSA is made up of a Management Board, an Executive Director and Secretariat, an Advisory Forum, a Scientific Committee and Scientific Panels. A division of responsibilities and the mandates of the respective bodies within EFSA are set out in the GFL.

Further support to EFSA in the conduct of risk assessment is provided by the Community Reference Laboratories (CRLs). Their current legal basis is established through Regulation 882/2004 on the verification of compliance with feed and food law. According to the Article 32, the primary function of CRLs is not to act as a point of reference and co-ordination for the National Reference Laboratories (NRLs) that each member state has to nominate for particular fields of food safety regulation. These laboratories are therefore the cornerstone of a variety of European networks of the risk assessment institutions, linking them to the Community level and specifically EFSA. For each of these networks, the main tasks of CRLs include the dissemination of information about analytical methods and advances in the technical field, the organization of comparative testing and holding of training courses for staff from the NRLs; furthermore, their function is to provide scientific and technical assistance to the Commission. The respective CRL for a certain sector of food safety governance is designated in the relevant legislation, usually the directives and regulations setting out the regulatory framework for a distinctive area. There are now 13 CRLs in the area of food safety: six for biological risks, four for residues, one for feed additives, one for GMOs, and one for food contact materials. Interestingly, some of the tasks formerly assigned to the CRLs are now gradually being taken

over the EFSA, such as the monitoring of and data collection on *Campylobacter*. Moreover, data collection activities that were formerly conducted in the framework of SCOOP have now been transferred to EFSA, such as in the case of aflatoxins.

In general, the starting point of any risk management action is the identification of a risk. It must be said, that the EFSA has been assigned an independent role in the early identification of risks. Article 34 of the GFL requires setting up a procedure for monitoring and systematically searching for, collecting and analyzing information and the data in order to identify food safety risks at an early stage. Therefore, EFSA has created a specific unit on data collection and exposure as part of its scientific services; furthermore, it is accepted, at least in principle, that all relevant information at the disposal of national food safety authorities should be made available to EFSA. In cases where the agency suspects there to be an emerging risk, it must be contact the member states, other agencies and the Commission with a view to obtaining additional information about the potential emerging risk. EFSA must then evaluate the risk on the basis of this information and inform the member states, the Commission and the European Parliament of the result. The independent obligation upon EFSA to be active in risk identification can thus be considered as a further “tool” in the pursuit of risk reduction

Major difficulty encountered in attempts to integrate the results of risk assessments of different national food safety authorities is that in many cases, the relevant authorities of each member state apply their own methodologies in carrying out risk assessments. As a consequence, the Commission has made declarations on the necessity of harmonizing the concept of risk assessment and the methods applied, so as to ensure consistency in the pursuit of food safety. In this context, a debate was started by the Committee on how to develop a harmonized approach to risk assessment in the Community. Following up this initiative, EFSA has made use of its capacity of self-tasking by identifying several areas where harmonization should be a priority. In this way, the authority has started to develop its own risk assessment policy independently of the Commission.

EFSA has taken the initiative in developing a harmonized approach for the risk assessment of compounds that are both genotoxic and carcinogenic. This can be taken as an example of how EFSA is beginning to establish common methodological approaches in areas where thus far no single approach assessment is accepted as sufficient and appropriate. Through such initiatives, EFSA is taking the lead in developing risk assessment policies with the objective of implementing common approaches in all member states and thereby insuring coherent and comparable inputs into the risk assessment process on the European level.

The EU member states contribute to the conduct of risk assessment in various ways:

through their involvement in the rapid and early warning system, in the representation of all relevant food safety authorities in the Advisory Forum of the EFSA, as well as through their activities of monitoring, and data collection. The latter involvement is not entirely new, as a system for the scientific co-operation on Questions Related to Food between member states (SCOOP) was set up in 1993 by Council Directive 93/5. Under this system, the member state authorities responsible for food safety risk assessment are required to assist and co-operate with the Commission with the aim of co-operative assessment. Each member state must designate a competent institute to establish a link with the Commission, which is in charge of managing the scientific co-operation between the member states. National authorities collect and review the best available scientific information, organize food intake surveys and investigate dietary products. Furthermore, they prepare reports for the risk evaluation of certain substances. Through SCOOP, the member states thus provide an input for the scientific of risks by providing scientific data to EFSA. The collection of scientific information in the framework of SCOOP continues to exist, even under the new system establish by the GFL.

At the Community level, no separate phase of risk evaluation (i.e. the evaluation of the outcomes of risk assessment and their consideration alongside other relevant social and economic factors) exists between risk assessment and risk management. Risk evaluation is intergraded into risk management, which is carried out by the Community institutions, primarily the Commission. According to the definition of the GFL, risk management involves weighing policy alternatives, consulting concerned parties and taking into account the scientific risk assessments supplied by the EFSA and other legitimate, social, cultural, ethical and political considerations. As already mentioned, the division of tasks between the EFSA and the Commission and therewith the division between risk assessment and risk management, can be regarded as an expression of the prevailing opinion within the Community institutions and literature that independent organs may be endowed with decision-making power, but only ‘in application of regulatory measures’ (GFL, 2002 ), as the commission has put it and hence not for the adoption of risk management decisions, which need to balance between various interests.

It is the European commission (DG SANCO) that is primary responsible for managing food safety risks. It is empowered by various legislative provisions to adopt legally binding decisions in this field, such as the authorizations for the GMO food. It does so in consultation with a comitology committee, the Standing Committee on the Food Chain and Animal Health (SCFCAH). This committee was formally established by the GFL and replaces the various comitology committees. As a consequence, the SCFCAH is divided into eight Sections on particular topics. It is made up of the representatives of the member states and is chaired by a



Commission representative. The chair does not have voting rights. It is foreseen that the Commission will also regularly consult the Advisory Group on the food chain and animal and plant health, which is composed of representatives of industry, consumer, and other relevant stakeholder organizations.

In relation to the information exchange systems between EFSA, the commission and the member states, which were discussed above, it appears necessary to have in place not just mechanisms for identifying slowly emerging risks, but also systems that are effective in quickly alerting all relevant actors of a threat that emerges suddenly and unexpectedly, such as the spread of virus diseases or the presence of contaminated food on the market. The occurrence of several food scares have revealed the shortcomings regarding the existing system of rapid alert in matters of risks related to food, and a crises management is therefore explicitly addressed in the GFL. In this context, mechanisms of priority setting and early warning appear especially necessary for the handling of urgent cases. To this end, the GFL has taken over the Rapid Alert System for Food and Feed (RASFF), which was established in 1979, while trying to improve this system.

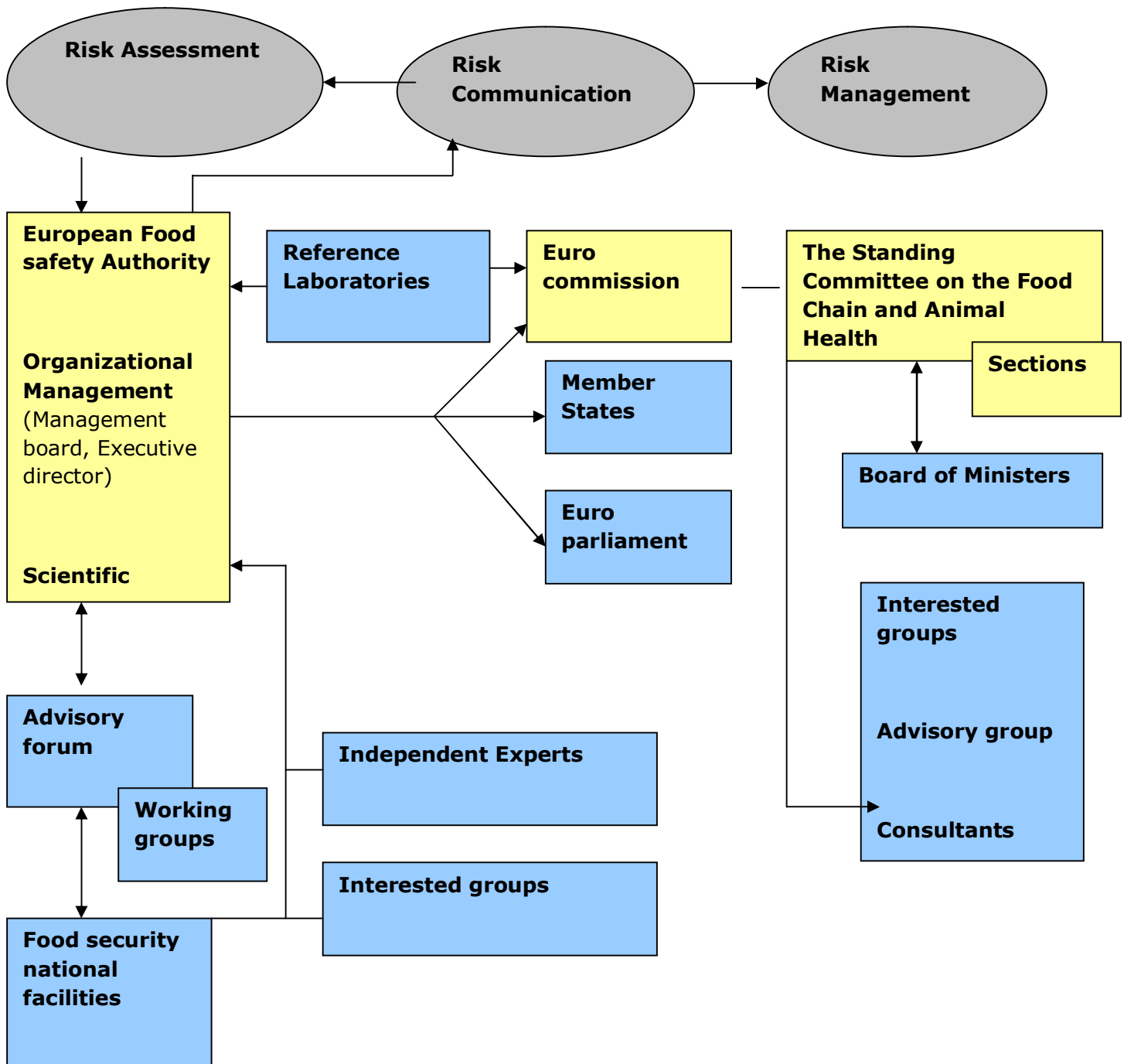
The aim of the RASFF is to monitor direct or indirect risks to human health connected to food and feed. This system, which is managed under the responsibility of the Commissions, establishes a network between the contact point of member states, the Commission and EFSA. The possibility also exists for third countries or international organizations to become members of the network. The GFL requires the members of the network to notify the Commission of any serious direct or indirect risk to human health related to a foodstuff or feed and the commission forwards any such information to the Commission under the RASFF include situations in which a member state must immediately notify the commission of such action and explain the reasons for the taking it. The commission subsequently forwards this and all other relevant information to all members of the network.

The third of risk analysis is risk communication. It is defined by the GFL as ‘the interactive risk assessors, managers, consumers, academia and other interested parties’ (GFL, 2002). Risk communication designated as communicator par excellence. The commission, as the risk manager, communicates on the risks assessment, risk management, and enforcement and monitoring. EFSA, as the risk assessor, communicates to the public about the risks on an independent basis. It is required to provide timely, accurate, effective and consistent information to consumers, stakeholders and the public at large on food safety risks, based on the results of the scientific risk assessment. EFSA’s advisory forum working group on Communications is responsible for the interaction with stakeholders and the public at large and for promoting the

authority's reputation. EFSA therefore has some independent obligations and powers with regard to risk communication, but these are tempered by the requirement that it acts in close collaboration with the Commission and the member states to promote the necessary coherence in the risk communication process. The GFL also requires national public authorities to inform the public of risks to health. Thus, member states continue to play a significant role in the risk communication stage.

Several provisions of the GFL establish the objective of developing close contacts with a wide variety of stakeholder organizations in all parts of the regulatory process. In its preamble, the GFL states that it is necessary to ensure that consumers, other stakeholder and trading partners have confidence in the decision-making process underpinning food law. Article 9 of the GFL requests that "there shall be open and transparent public consultation, directly or through representative bodies, during the preparation, evaluation and revision of food law, except where the urgency of the matter does not allow it" (GFL, 2002). Furthermore, the Commission has committed itself in its White Paper on Governance to opening up the policy process and furthermore to setting out criteria for stakeholder involvement in its communication on the "General Principles and Minimum Standards for Consultation of Interested Parties by the Commission.

Figure 2.1. Institutional framework of the food safety at the EU level



## **2.3. Institutional regulation of food safety in European countries**

### **2.3.1. Institutional regulation of food safety in the UK**

The current UK system of food safety regulation has been shaped by a series of food scares over the last 20 years. It has been heavily influenced by an awareness of the need to provide transparency and increase consumer and public confidence. This has led to a complete overhaul in the institutional arrangements, processes, and procedures to form those that are in place today. The most important institutional challenge of the last years is the creation a separate, independent agency with the main objective of securing consumer safety. The Food Standards Agency (FSA) has worked hard to rebuild trust and to fulfill its objective of protecting public health from the risks posed by the consumption of food. The FSA undertakes annual surveys of consumer attitudes to measure the levels of confidence in food safety and in the work of the Agency. This has shown that the overall awareness of the FSA has increased significantly between 2000 and 2004 and confidence in the FSA protecting health with the regard to food safety has also increased overall since the Agency's launch in 2000.

In June 2001 an outbreak of foot-and-mouth disease in early 2001, led to the eventual abolition of the Ministry for Agriculture, Fisheries and Food (MAFF). As a result, the FSA was created in 2000, to maintain its dual responsibilities of furthering producer interests as well as protecting the consumer. All other responsibilities of the MAFF were transferred to a newly created Department for Food and Rural Affairs (DEFRA). The place in DEFRA's strategy is evolving their primary objective to ensure that the food supply chain is sustainable, safe, and competitive.

The launch of the FSA and the creation of DEFRA have been the two main institutional reforms in the UK food policy in recent years. The FSA overcomes many of the criticism made of MAFF, in that it is free from the direct sponsorship of the food industry sector, it is answerable to the Ministry for Health and has a strong consumerist approach towards dealing with many food safety issues. The FSA has been set up as a non-ministerial government department and does not report to a specific minister. It is an independent body, operating at arm's length from ministers and is free to publish any advice that it issues.. As well as the Department of Health (DH) is the third main policy-making government department that is involved with food safety regulation.

The main tasks of the FSA are as following:

1 The agency should advise ministers on all matters relating to food safety, food standards, nutrition, and public health;

2 It should be a statutory non-departmental public body with extensive powers, reporting to Parliament through Health Minister;

3 It should be governed by a Commission that includes representatives from Scotland, Wales and Northern Ireland;

4 Arrangements should be put into place in Scotland, Wales, and Northern Ireland to assess policy and legislation emerging from the UK Agency and the EC from a territorial perspective and to initiate work on particular issues;

5 The agency should develop policy, propose, and draft legislation and educate the public on relevant issues;

6 It should be responsible for co-coordinating, monitoring, and auditing local authority enforcement activities,

7 It should co-ordinate all research into food safety, nutrition, and consumer protection;

8 Funding for the agency should be via the DH.

Following consultation (which was predominantly supportive of these recommendations), the White Paper “The Food Standards Agency: A Force for Change” was published in January 1998 (The Food Standards Agency, 2007). This set out the basis for the independent body with a remit to represent consumers’ interests and to rebuild their trust. The White Paper expressed the need for a food standards body to “put an end to the climate of confusion and suspicion about the way that food safety and standards issued have been handled” (The Food Standards Agency, 2007).

It must be mentioned, that the main objective of the FSA is “to protect public health from risks which may arise in connection with the consumption of food (including risks caused the way in which it is produced or supplied) and otherwise to protect the interests of consumers in relation to food” (The Food Standards Agency, 2007).

Other government departments, namely the DH and DEFRA, also have an impact on the food safety policies. DEFRA, which replaced MAFF in June, 2001, has its principal objective “to promote a sustainable, competitive and safe food safety chain which meets consumers’ requirements’ (Department for Environment Food and Rural Affairs, 2007). The DH has an overall aim of improving the health and well-being of the people of England, to be achieved by:

1 supporting activity at national level to protect, promote, and improve the nation’s health;

2 securing the provision of comprehensive, high quality care for all those who need it,

regardless of their ability to pay or where they live;

3 securing responsive social care and child protection for those who lack the support they need.

The FSA has concordats with a range of government departments including DEFRA and the DH. These are designed to facilitate effective co-operation; they are not legally binding and cannot be used to prevent the FSA from exercising its powers to protect the public, or to publish its advice to ministers.

The FSA is currently influenced in its policy-making by 18 scientific committees set up to identify and evaluate a range of issues relating to a food safety. Committees set up by the FSA are established under schedule 2 of the Food Standards Act 1999. The FSA must take into account the advice given by scientific committees. The committees are primarily responsible for assessing risks posed by the issues that fall within their terms of reference and report back to one or more of the three government departments or agency.

Today, the DH, DEFRA, and the FSA all have written statements setting out how risk assessments are to be completed within their department. The FSA has published a general written statement outlining their approach to risk. This does not contain detailed information about how assessments are to be carried out, but notes the general principles that are to be adopted (The FSA, 2007):

- 1 risk assessments are to be based upon “best scientific advice”,
- 2 a precautionary approach is to be adopted: and
- 3 information used within risk assessments should be accessible to the public.

If the risk assessment is the analytical, scientific version of risk analysis, risk management can be seen as the policy-based portion process. Risk management can be defined as “the process of weighing policy alternatives to accept, minimize or reduce assessed risks and to select and implement appropriate options” (The FSA, 2007). The process involves political, socio-economic, cultural and technical issues, as well as public perceptions of risk. In short, risk management is the process of reducing identified risks to a level that can be accepted by society. After a hazard is identified in the risk assessment phase, risk managers apply a variety of strategies to evaluate, monitor, minimize or prevent that risk.

Risk management is therefore undertaken by relevant government departments. The FSA’s general statement on their approach to risk notes that their consideration of different policy options will include balancing the likely costs and benefits to everyone concerned, but that “we will always attach the greatest weight to protecting the interests of consumers” (The FSA, 2007). Within the FSA, the head of the lead policy division will convene a meeting with

other relevant divisions to discuss and co-ordinate risk management and communication. Wherever the risk is uncertain, a precautionary approach will be taken. This approach is also followed by DEFRA and the DH.

Formalized internal communication procedures between the three government bodies (DH, FSA and DEFRA) are set out within relevant concordats covering issues where more than one department may be involved. These establish clear roles and responsibilities for each department, although they do not go so far as to identify particular members of staff that have particular responsibilities. The concordats state that in promoting effective communications between departments, regular formal and informal contact should be maintained and consultations should be undertaken where necessary.

Where the agreed risk management option and communication option may require the co-operation of local authorities in implementing or monitoring the effectiveness of actions taken (for example, in ensuring that food products are withdrawn from sale), the FSA notes that the most appropriate method of communication with local authority officers is through the Food Hazard Warning System. Food Hazard Warnings are issued electronically by the FSA to local authorities, together with an FSA press release that can be used locally. Other stakeholders are contacted by e-mail or fax (including trade associations, consumer groups, etc).

The FSA is a UK wide body, providing advice on food safety and standards, not only to the UK government in London, but also to the devolved authorities in Scotland, Wales, and Northern Ireland. Where the Agency is called on to advise one of the devolved authorities, it is able to seek expert advice from its committees in the same way that it does for UK-wide issues.

UK researchers are involved in a wide range of scientific and technological collaborations with their international counterparts, ranging from individual scientist-to scientist interactions to large team based projects and programs across many countries. These initiatives can sometimes be quite informal and at other times more formal. They can be based on signed agreements or memoranda of understanding between research institutions, government agencies or departments. The European Union's Framework Programmes act as the primary funding mechanism for collaborative research and development projects in science, technology, and engineering.

Overall, it can be admitted, that the FSA actively cooperates with the EFSA (European Food Safety Authority). EFSA, generally, publishes the opinion on their safety assessment of the application for consideration by member states using comitology procedure. It is not clear, how this work in practice, but it should reduce duplication for the company, as they only need submit one application now, as well as for member states in conducting safety assessments. The UK's

position is that the FSA will consider the opinions published by EFSA and, where appropriate, will refer to the relevant scientific advisory committee for further advice if required.

### **2.3.2. Institutional regulation of food safety in France**

In France, food safety regulation is embedded in a larger system of “health security of products destined for human consumption” formalized by the Public Health Code in 1998 ( Agence Francaise de Securite Sanitaire des Aliments, 2008). Health security, focused on the regulation of products and activities, may be defined as “the set of decisions, programs and actions aiming to protect the population against all dangers and risks considered as escaping the control of individuals and defined on this basis as coming under the responsibility of and regulation by public authorities”.

Since 1998, France’s food safety regulatory system has been characterized by as institutional separation of assessment and management. The principal public institution tasked to assess food and feed risk is AFFSSA (*Agence Francaise de Securite Sanitaire des Aliments*, the French Food Safety Agency, which opened its doors on April 1, 1999). It is overseen by three ministries: that of Agriculture, Economy, and Health. Within each ministry is found a major public institution involved in food risk management. They are respectively: DGAL (*Direction Generale de l’Alimentation*, Directorate General for Food), DGCCRF (*Direction Generale de la concurrence, de la Consommation et de la Repression des Fraudes*, Directorate General for Consumer Affairs) and DGS (*Direction Generale de la Sante*, Directorate General for Health).

The new regulatory system is a product of the well-oiled two-century old French administration integrating assessment sciences and techniques. It has succeeded in improving food safety and in renewing stakeholder and consumer confidence.

France’s national food and feed system is overseen by three ministries: the Ministry of Agriculture, Food, Fisheries and Rural Affairs (MAAPAR), the ministry of Economy, Finance and Industry (MINEFI), and the Ministry of Health and Social Protection.

Since the issue of the 1998 Public Health Code, public health and health security policy have been based upon the principle of an institutional separation between risk assessment and risk management. A number of agencies were created by that law, including the food safety agency. It must be mentioned, that the most noteworthy feature of the recent food safety reform in France is the concentration of risk assessment duties in an independent public agency with a substantial expert and scientific capacity: AFSA. The ministries of Agriculture and Finance



retain risk management and communication duties. These ministries now oversee AFSSA, along with the Health Ministry, which also holds management and communication roles. The three supervising ministries use joint referral to request opinions from AFFSA on board or specific food safety questions. There is no single body tasked specifically with risk evaluation.

The French Food Safety Agency AFSSA, which came into being on 1 April 1999, plays the central role in the assessment of food and feed risks. The Agency is tasked with assessing health and nutritional risks that may be associated with food or animal feed. AFFSSA contributes “to ensuring the safety of food, from the production of raw materials through to distribution to the final consumer”. The Agency has a wide area of competence, covering all sectors: animal and plant products, drinking water, human food, and animal feed. It assesses the nutritional and health risks which may be posed by food intended for human or animal consumption, including water for human consumption. Additionally, the Agency is tasked to assess the risks from different products whose use may have consequences for food safety: plant protection products, veterinary medicines, antiparasitics, fertilizers and soil conditioners, materials in contact with food and feed packaging. It also assesses the risks posed by animal diseases or infections.

Its functions involve assessment, research, and scientific and technical support to public authorities and policy-makers. AFSSA is overseen by the ministries of Agriculture, Finance and Health. This public institution is therefore embedded in a state system, but tasked with providing independent expertise. The agency assures expertise through both internal recourses (scientists, laboratories) and external expert panels. The expert panels, renewable every three years, do not include scientists from the private sector; despite the specialized knowledge such personnel could contribute. This decision was made to preserve the credibility and perceived neutrality of the Agency’s assessments. Stakeholders from industry and civil society are represented on the Administrative Board. Also of note is AFSSA’s contribution of research and expertise functions: this means that expertise is founded upon a significant research activity and risk assessment can be performed internally.

A number of smaller bodies play complementary roles in risk assessment. The Health Monitoring Institute is primarily concerned with surveillance and monitoring of public health. However, the Institute also participates in some food risk assessment missions, e.g. through collaboration with AFFSSA in working groups or expert panels. The Institute is supported by Interregional Epidemiological Cells. This may be activated by the state’s decentralized health administration to perform investigations or risk assessments.

The National Committee for Public Health Protection (CNSS) was created in 1998 as a

coordinating body for the public health, product and health security agencies and to perform analysis of public health events. Working groups contributed directly to the food safety assessment system through assessing e.g., dioxin exposure. This committee was subsequently dismantled and replaced by a National Committee on Public Health (CNSP).

The Commission on Biomolecular Engineering, which provides an opinion on each GMO research proposal, performs health and environmental risk assessment in the domain of voluntary dissemination of GMO. Unusually, its membership includes life scientists, representatives of the socioeconomic sphere and civil society.

Food risk management is carried out by a three-part central administration mandated to negotiate Community or international regulation, to coordinate food safety activities between French ministries, to formulate national policy and to evaluate its application.

The directorate General for Food (DGAL, Agriculture ministry) is tasked with surveillance of the quality and the safety of food at all points in the food chain, as well as surveillance of the health of animals and of plants and with their production. It contributes to regulations concerning the safety of agricultural and food products, as well as hygiene at the stages of production, transformation, storage and distribution of such products (in collaboration with the Finance and Health Ministries). Regulatory areas covered in collaboration with the Ministry of Ecology include products, health, feeding, and protection of animals and animal identification and traceability, phyto-pharmaceutical products and fertilizers, applications of genetic engineering.

The Directorate General for Consumer Affairs (DGCCRF, Finance Ministry) deals with safety, quality, and fraudulent practice regarding consumer products or services in all sectors: composition, additives, authorized processing, consumer labeling and commercial or marketing behavior. The Directorate's mission is consumer protection through assuring the basic quality of services or products that consumers have a right to expect (before consideration of marketing claims). It participates in formulating regulations defining minimal standards to be met by products or services of a given category in order to be commercialized. This regulatory activity is focused on the agro-food sector and consists mainly of transporting European directives into French Law and following up international standards (Codex alimentarius).

The Directorate General for Health (DGS, Health ministry) has responsibilities in the following areas: responding to population health needs, improving the quality of health services and reinforcing public health and health security. Its traditional food safety role concerns the regulation of drinking water. The Water Bureau draws up technical rules concerning safety perimeters around water connection points, approval of water treatment products and processes

and the design and upkeep of public and private water distribution networks. Within the Sub Directorate for Risk Management, a Food Bureau created in 2002 has not been completed. By 2005, only 6 out of an expected 12 jobs had been funded (compared with the corresponding bureau in the directorate General for Food which has 180 agents).

Here we need to distinguish several levels of communication observed in the food risk analysis system. First is the communication internal to the system, by which risk managers address a question to expert assessors and the latter address it. This is labeled the referral process. Second is another type of communication internal to the system, by which network actors exchange scientific information. Third is the communication taking place between system actors and those placed outside: stakeholders and the public. The first level of communication is the most specified and elaborate: it has been the object of quality assurance development by AFSSA. The complexity of the health security system and the inherent difficulties that it creates for network communication, are reflected in the second level. As for the third level, it is not surprising in France to learn that this is perhaps the weakest and least elaborated. Identified stakeholders (food producers and professionals, consumer representatives) do have points of access within the first two levels of communication. Public information about health and nutrition is disseminated. However, within France's food safety system, consultation and deliberation involving representatives of civil society are relatively little developed.

A referral generally is initiated by one supervising ministry and formally must be co-signed by the other two. As experience shows, there is not always an effective joint referral development process among the ministries and the triple signature is obtained in a routine manner. Often the referring ministry will specify the deadline by which an AFSSA opinion is desired, without necessarily specifying why.

Internal communication: Network Exchange. The food risk assessor, AFSSA, relies on a network of 12 laboratories across the French territory. The Department of Laboratory Planning and Review encourages exchanges and collaborations among these labs. Day-long seminars are organized in order to foster dialog between scientific teams.

The Agency also maintains relationships with other expert agencies concerned with assessment: with the pharmaceutical safety agency AFSSAPS (on questions involving the slim border between medicines and food products), with the National Institute for Public Health Surveillance (with whom some external experts are shared in common), etc.

External Communication: Information, Dialogue, Participation. The Public Health Code creating AFSSA and the National Institute for Public Health surveillance obliges these agencies to publish an annual report and make it available to all comers (on the Internet and by provision

of print copies upon request). All French ministries must publish a similar report in the goal of fostering transparency and understanding of state action; the annual reports of the three ministries involved in food safety are thus accessible.

Moreover, the food safety actors disseminate the results of their assessment, expertise or control activities on a regular basis. Examples include the publication by AFSSA of all its opinions and scientific reports or expert statements, placing opinions on the Internet as soon as they have been handed to those at the source of the referral. Similarly, DGAL publishes the results of controls as they become available. DDASS reports on the quality of drinking water were distributed in the previous year with the annual bill to consumers.

The actors involved in the French food safety system maintain tight relations with their European and international counterparts. In what follows, we focus on international relations among food safety actors rather than procedures of transposing extra-national regulation into national law.

The Managing Director of AFSSA is the French representative to the European Food Safety Authority (EFSA) Advisory Forum. According to the AFSSA Annual Report, the Advisory Forum principally serves to allow information to be exchanged by the national agencies while awaiting effective risk assessment to be exchanged by the national agencies in co-operation with EFSA.

AFSSA participates in numerous international working parties and cooperative ventures, as well as international exchanges of research results. The Agency has been a partner in several European projects on diagnostic and detection methods. The identification of threats and alerts cannot be bounded by national borders. The National Institute for Public Health Surveillance participates in the development of European surveillance systems and international efforts to harmonize monitoring practices. In order to build a basis for comparing the health European populations, the Institute participates in collecting human consumption data, etc.

The Directorate General for Consumer Affairs participates in community and international meetings whose goal is to develop food safety regulations regarding, e.g. nutritional or medical claims including “functional food”. On a global level, the Directorate is involved in Codex Alimentarius working parties on, e.g., quality standards for product categories.

### 2.3.3. Institutional regulation of food safety in Germany

Over the past decades, the field of food safety regulation has undergone fundamental changes in Germany. The latest and most elementary change was caused by the outbreak of BSE (Bovine Spongiform Encephalopathy) in the winter of 2000 and the ensuing political crisis within the responsible regulatory institutions, as in most other countries investigated in this volume, this led to the separation of risk assessment and risk management. However, unlike many other countries (although similar to the EU), Germany adopted a functional as well as institutional separation of these two main elements of risk regulation: corresponding to the scientific and political aspects of risk regulation, two new federal agencies were established that were to be better suited to manage food safety issues as well as to be compatible with EU structures: The Federal Agency for Consumer Protection and Food Safety (BVL) and the Federal Institute for Risk Assessment (BfR). This separation is widely considered in Germany to be a landmark in the restructuring of consumer health protection. However, there is a considerable debate about the actual institutional implementation of this concept in Germany.

Such debates frequently have their roots in the federal structure of Germany's political system, which makes its impact on food safety issues in various ways. In the context of restructuring, a certain process of centralization does take place. In fact, food safety issues have been centralized to an extent previously unknown in Germany. This state-wide centralization served to harmonize food safety controls on the level of the *Länder*, by introducing common standards - a development which all parties involved consider positive for promoting food safety. But persistent problems in co-ordination between the federal and the state level remain. Deficits were found to occur in the implementation of food safety regulation, which is still mainly in the responsibility of the sixteen *Länder*, which means that there are sixteen different ways of handling and controlling food safety issues.

Here we present an outline of the legislative framework for the regulation of food with regard to federal government, but also in relation to the 16 *Länder*. Due to the federal structure of the Germany political system interfaces especially between the Federal level and the different *Länder* result with corresponding problems of co-ordination, communication, and common standards. In Germany, the contact of the EU is generally the federal government and in the case of food safety, the Federal Ministry for Food, Agriculture and Consumer Protection (BMELV). In turn, the Ministry advises the *Länder* to adopt EU laws pertaining to food safety and to control appropriately their implementation, taking into account not only the EU guidelines but

occasionally also guidelines established by the federal government. One of the reasons for this is that in the spirit of precautionary consumer protection, federal guidelines can be more stringent than EU legislation. However, the federal government has no influence over the actual implementation of the law, but also for the control of compliance. If the European Commission demands data on a certain topic, the federal government needs to contact each Land in turn and request the required information. It comes as no surprise that the Federal Republic of Germany frequently lags behind in the implementation of EU legislation and in the provision of requested data.

The legal framework for the regulation of food safety in Germany is established by the framework of the law on food, consumer goods, and feed. This law, which was adopted only very recently has been enacted mainly to transpose the requirements of the EU General Food Law into national law. The adoption of this new framework law therefore complements a number of revisions of the German food safety system undertaken since the year 2001. Important innovations of the new law are that food and feed are now treated in one single legal framework (thus transposing the principle of ensuring food safety from the farm to the fork) from the EU “General Food Law” into national level and that the definition of “food” is now set much higher than before. According to the new law, food is defined as all the substances or products which are destined for human consumption or which can rationally be expected to be consumed by humans. This implies that from a legal perspective, a distinction is no longer made between basic food products and products to be consumed for pleasure and that a large number of products consumed by humans now fall under the definition of food, unless they are one of the products explicitly excluded from this definition, such as feedstuffs and pharmaceutical products.

The conduct of risk assessment is the responsibility of the Federal Institute for Risk Assessment (BfR), which was established on 1 November, 2002. The BfR is a federal agency in the responsibility of the BMELV and currently situated at two locations in Berlin. As mentioned above, it was formed from the former Federal Institute for Consumer Protection and Animal Health Care (*BgVV*). The main task of the Institute is to establish scientific opinions on questions related to food safety and consumer protection. The BfR is furthermore charged with the communication of risks occurring within the field of its mission and the results of its scientific work to the general public. It can independently take up subjects in relation to food safety and consumer protection to conduct research. Like other national food safety authorities, the institute is also part of the European framework of the authorization and regulation of genetically modified food and feed and is thus asked to either conduct risk assessments on GMO

products or forwarded applications to EFSA. The Institute also provides scientific advice both for the Ministry and the Federal Agency on Consumer Protection and Food Safety (BVL), which is responsible mainly for questions of risk management. The BfR works under the oversight of the Ministry to which it is obliged to report on its activities, but is independent in the establishment of its scientific opinions. Members of the Ministry are allowed to attend meetings of the top executive officers of the institute and have the right to speak. The Ministry can use its influence to a certain degree to steer the scientific work of the BfV.

The BfR is requested to cooperate with the European institutions of food safety regulation, particularly the European Food Safety Authority (EFSA). It is also a member of the Advisory Forum of EFSA (unlike the German risk management agency BVL), where the food safety authorities of the member states are represented. It is furthermore required to cooperate with other scientific organizations on the national and international level and to coordinate the exchange of scientific information in the field of its mission. Finally, the Institute has a number of specific functions prescribed by case-specific legislation, especially in the fields of plant protection, chemicals, novel foods, and the handling of dangerous goods.

In Germany risk management in food safety on the federal level is in the hands of the Federal Ministry for Food, Agriculture and Consumer Protection (BMELV) and the newly created the Federal Agency for Consumer Protection and Food Safety (BVL). Due to the federal structure of Germany's political system, these institutions have to cooperate closely with the respective authorities and agencies of the 16 *Länder*.

Since its creation in the year 2001, the BMELV has been charged with overall responsibility for consumer protection, including food safety. These newly acquired tasks were taken over not only from the former Ministry for Food, Agriculture and Forestry, but also in parts from the Federal Ministry of Health and Social Security and the Federal Ministry of Economics and Technology. The tasks of the BMELV consist of precautionary consumer protection, quality assurance, as well as food production with an eye to ecology and animal protection.

An important role for the conducted of risk management is played by the Federal Agency for Consumer Protection and Food Safety (BVL). Like the BfR, it is successor institution of the former Federal Institute for Consumer Health Protection and Veterinary Medicine (BgVV) and was created by a section of the framework law on the re-organization of consumer protection of August 2001. It is defined as an independent agency for the conduct of risk management and authorizations acting within the field of mission of the Ministry.

One of the main tasks of the BVL is to offer support for the preparation and conduct of

monitoring programmes in the different German Lander and to coordinate the processing, summarizing, documentation, and reporting of data gathered through such monitoring programmes. In accordance with the relevant EU legislation, the *Lander* submits data and reports to the BVL on inter alia the occurrence of zoonoses or in the framework of the national control programme on the animal feed. On the national level, the BVL is responsible for crises management, including crisis prevention. In this context, it is the declared objective of the Agency to replace the principle of crises reaction by prevention, i.e. to manage emerging risks before the occurrence of crises through quick and effective exchange of information. In addition to serving as the interface between the federal government and the states, the BVL also coordinates the flow of information between the EU, the Federal government and the *Lander* in the areas of licensing and approval procedures, as well as food monitoring, risk assessment of the genetically modified organisms, and crisis management. It is also part of the European Rapid Alert System and involved in SAFEFOODERA, a European network between food safety authorities of 17 European countries (most of them EU member states), the Basque country a number of associated parties, which aims at developing networks for the quick exchange of information and the early detection of emerging risks.

The communication of risks consists of two main components. Firstly, the internal communication between different actors involved in the conduct of food safety regulation, which in the German case is complicated by the existence of two independent agencies and the Federal Ministry and the necessity of coordinated communication between the federal level and the *Lander*. Secondly, the external communication is responsible governmental actors to scientific communities, stakeholder organizations, and the wider public. This section will first discuss arrangements in place to ensure communication within the system of food safety regulation before addressing the question of external communication.

With regard to internal communication, the three main actors within food safety regulation on the federal level - the BfR, BVL, and the Ministry - have established specific structures and working procedures to ensure a co-ordination of information flows. Internal communication within the BfR's risk assessment unit is coordinated by a specific unit on clearing and internal co-ordination within the risk Communication of the BfR. The BVL plays a vital role as a communication "hub" between the federal and state level, in particular via its co-ordinating function for the various working groups and by serving as a platform of diverse co-ordinating bodies.

As already stated, EU legislation supersedes national legislation of the member states and legal acts of the European level are present at various points of the system of food safety



regulation. This influence is particularly strongly felt in the field of implementation and food controls. The adoption of the European “General Food Law” has had a significant impact on the overall organization of food safety regulation in Germany, as it was one of the main reasons for the establishment of the new framework law on food and feed regulation in Germany.

Co-ordination of the BfR are represented in a number of international institutions which aim at co-operation in the scientific assessment of risks posed by food items, including the joint FAO/WHO Expert Committee on Food Additives (JECFA), a FAO/WHO Joint Expert Committee and, of course, EFSA. Other relevant institutions with a connection to the BfR include the international Programme on Chemical Safety (IPCS) and the International Agency of Research on Cancer (IARC). Further, representatives of the German agencies participate in diverse Codex alimentarius Commissions, such as the Codex committee of Food Additives and Contaminants, as well as in WTO panels. In some fields, such as toxicology, these international institutions are of great importance for national regulators, for example, JECFA also carries out scientific risk assessments, in addition to EFSA and national food authorities. Co-operation between EFSA and the German agencies flows primarily through the Advisory forum of EFSA, in which the BfR represents Germany. Personal links between German agencies and the EFSA are rather rare, as the vast majority of EFSA Panel Members are from academia and only about 20% from national agencies. An exception is the Head of the Department on “Coexistence and GMO-Monitoring “at the BVL, who is a member of EFSA’s scientific panel on genetically modified foods, furthermore, lower-ranked members of the BfR serve on various EFSA sub-committees.

#### **2.3.4. Institutional regulation of food safety in Sweden**

Although the combination of market economy, a parliamentary political system, and a welfare state is hardly unique to Sweden, there are several specific features pertaining to the role of the state and the public administration in government. Many of these features have a historic origin. In Sweden, feudal institutions were never as strong as in other European countries. The country has not been at war or under occupation by a foreign power during the modern period. A centralized state has been in existence for a very long period of time, ruling relatively few big cities and a vast, relatively sparsely countryside, in a land in which the tradition of civil society is strong. Swedish government is a hybrid of two traditions that combines two principles that at first might look contradictory: local self-government through municipalities and a strong

centralized state, including professional elite of regulators sharing an ideal of rational planning based on scientific expertise.

The principle of self-government means that many vital issues regarding the public sector (for example schools, social care, public health, energy, water, public transport, land-use and housing or environment) are delegated to municipalities and countries. The country administrative boards represent the state, its regulation and policies and their mandate is to secure compliance with and implementation of national regulation and policies.

Although the organizational structure as well as some remits of the National Food Administration has changed since its founding in 1972, a remarkable continuity in its administrative operational routines is to be state. At the beginning of the 1990s the Administration was reorganized in order to establish less hierarchical organizational structures, as flat structures were a trend at that time. Another major reorganization in the year 2000 took place to follow international trends and to accord with the new risk analysis concept of the European Union (EU). This reorganization was not driven by the NFA itself but was due to the introduction of a risk-based approach in the food safety area towards the end of the last century and accelerated by Sweden's EU membership.

The application of risk analysis principles in food safety work was promoted by FAO and WHO by jointly organizing a series of expert consultations on the different components of risk analysis - risk assessment, risk management, and risk communication. The recommendations from these consultations have been used as the starting point for the introduction of risk analysis principles into the Codex Alimentarius system. These include the concept of a functional separation of risk assessment and risk management in order to ensure the scientific integrity of the risk assessment process.

One reason for the general acceptance of this new approach which constructed a paradigm shift within international food safety policy was the advent of the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement). This Agreement requires WTO Member states to base their regulatory measures related to food safety on scientific risk assessments, taking into account assessment procedures and techniques developed by the relevant international organizations – the Codex Alimentarius Commission (CAC) in the case of food safety. However, Article 5.7 of the SPS agreement allows Member States to take provisional measures where relevant scientific evidence is insufficient (The WTO, 2008).

The reorganization of the NFA in the year 2000 led to a new structure that took account of the new concept of risk analysis by forming different departments responsible for risk

communication, assessment, management and control. Further changes with respect to the Swedish food safety policy were brought about with Sweden's accession to the European Union in the 1995. Legal Community provisions had to be incorporated into the national food legislation, which is now essentially harmonized with the respective regulations stipulated throughout the EU. The NFA takes an active part in developing new legislation in co-operation with other EU Member states. EC Directives are transposed into NFA Ordinances and published in the NFA's own Code of Statutse, LIVSFS (previously SLVFS). EC Regulations are directly applicable in Sweden as published in the official journal of the European Union.

The rationale underlying the Swedish food legislation is that those who produce process and trade in food, i.e. framers, fishermen, slaughterhouse, food processors, wholesale and retail traders and caterers bear the primary responsibility for food safety. It is their duty to ensure that the food they produce and handle is safe and satisfies the relevant requirements of food law. Food legislation is made at three levels (The National Food Administration in Sweden, 2008):

- 1 The Food Act, issued by the Swedish parliament and in force since 1972, is a frame law, containing definitions and principles concerning food composition, handling, labeling, and the offering of food for sale, personnel hygiene, food premises, supervision/control, penalties and appeals. It also empowers the government or an agency appointed by the government, to issue regulations on food;

- 2 The Food Decree issued by the government has also been in force since 1972. It develops the rules of the Food Act in some greater detail and gives the National Food Administration the power to issue further regulations in the food area and to approve food premises in certain types of establishments. The Decree also appoints supervisory authorities for all kinds of establishment handling food;

- 3 Ordinances issued by the national Food Administration contain detailed regulations on *inter alia* food standards, labeling, food handling, additives, contaminants (pesticide and veterinary drug residues, heavy metals, mycotoxins etc), supervision and internal control, food premises, personnel hygiene, drinking water, veterinary food control, expert and import control, food control laboratories and material for food contact use.

The authority of the NFA to issue legislation is primary laid down in the Food Act and the Food Decree. The Food Act complements the EC Regulations. It also sets out the food control authorities and contains provisions on penalties and appeals.

The NFA's main objectives according to a Government Decree are to perform its obligations in the interests of the consumers for safe foods of high quality, honesty in food handling, and the promotion of a healthy diet among the population. The administration has

committed itself to scientific competency in terms of assessment, management, and control of risks to human health posed by food, as well as how those risks are communicated to the consumer. The political and societal evaluation of issues pertaining to food risks is not part of their mandate. In the execution of its mandate the NFA uses a preventive and comprehensive approach, covering environmental protection measures, and education and information activities. The Administration works in close co-operation with other governmental agencies, such as those handling animal health and feed, pesticide registration, infectious disease control and environmental protection. Despite institutional rearrangements and policy shifts resulting from Sweden's membership in the European Union, the NFA's essential regulatory practices principally have remained stable over the years. These refer to expert-based scientific approaches to risk assessment and management, the issuing of clear-cut regulatory decrees, as well as information and advice to the public with regard to food and health aspects.

The risk analysis process at the NFA is conducted according to the recommendations and definitions of the FAO/WHO document on Application of Risk Analysis to Food Standard Issues (The NFA, 2008). The document recommends that scientific risk assessment should be basis for risk management decisions involving health and safety aspects of food standards. An important principle in this regard is the functional separation of risk assessment from risk management, while recognizing the interactive elements that are essential for a pragmatic risk analysis approach. Risk assessment is the process to quantitatively or qualitatively estimate and characterize risk. Risk management comprises the selection and implementation of regulatory intervention measures and control activities to assure an appropriate level of protection.

The functional separation between assessment and management at the NFA was achieved by the reorganization of the authority into five departments with well-delineated responsibilities. Risk assessment is carried out by the Administration's scientific staff in the R&D department, supported by external scientific advisors and two advisory committees. Risk assessment is a scientific process consisting of the following steps: 1) hazard characterization; 2) hazard characterization; 3) exposure assessment, and 4) risk characterization. Based on this definition, the following risk assessment stages are adhered to by the NFA.

The aim of the Research and Development Department is to broaden the knowledge base for decision-making in food related matters. Most of the scientific research work within the Administration is aimed at the direct support of the Food Standards Department responsible for risk management and regulation.

Prior to the NFA's reorganizations in 2000 and the establishment of the Food standards and Food Control Departments, there was no formal distinction between these activities within

the risk analysis process. Risks primarily were regulated by authority professionals who also worked in the field of food control and who had employed managerial, controlling and scientific expertise on the issue in question. These experts' double function in food control and risk management was not felt to be a problem in Sweden. When the Administration was reorganized in terms of functional separation, a number of experts charged with food control activities formed the staff of the newly established Food Standards Department and became risk managers. Those managers usually have a natural scientific background in, for example, biology or chemistry and thus one and the same time risk manager is in the position to deal with different kinds of risks. Since the reorganization, the risk management department also includes legal experts who are specialized in regulation concerning, for example, the Swedish ordinances. Diversified competence is a keyword in the Administration, as experience with different functions is understood to lead to a more holistic view, even when the work roles are clearly separated.

The establishment of the new departments, however, does not seem to have counteracted co-operation and communication across organizational boundaries, which generally is acknowledged as an essential component of risk analysis. Quite the reverse, as a result of their similar professional background, risk managers communicate easily with risk assessors in the R&D Department. The long history of the NFA promoted the development of a culture of well-established formal and informal communication procedures between the different units and expert competencies. This also has become a main feature of the NFA's operational performance.

Sweden, which is divided into 21 country administrative boards and 289 municipalities, has a combination of central and local enforcement. The National Food Administration is responsible at the national level for enforcing the Food Act and regulations issued under its provisions. Each of the country Administrations is responsible for co-ordinating food control at the regional level, but they usually do not carry out any direct food control work. The local authorities of the municipalities, usually the environment and Health Protection Committees, are tasked with food control at the local level.

Governments and their institutions have the responsibility of communicating to the public and all interested parties when regulating public health risks. On the one hand risk communication describes activities ensuring that messages and measures taken to prevent exposure and adverse human health effects are effectively communicated via information provided in clear and understandable terms, dialogue, and consultation. On the other hand, it is also meant to take account of the concerns and views of the various audiences on matters

relating to the risk under consideration. Communication plays a vital role throughout the risk analysis process in ensuring that risk management strategies successfully reduce risks to human health. Accordingly, frequent iterative exchange between scientific experts and regulators are considered as a precondition for the effective performance of both risk management and risk assessments.

The Nordic council of ministers, in collaboration with Swedish NFA, has initiated a project on risk communication in the food sector. The objective is to establish a basis for further development of risk communication within the risk analysis framework, with particular focus on the development of risk communication tools and guidelines. The project aims at imparting knowledge of what happens in the different stages of the risk analysis process, of the interaction between assessors and managers and how the different interested parties are actually involved in the single stages. Target groups are key personnel without risk assessment, risk management and risk communication and decision-makers.

To the public the NFA is highly visible primarily through the variety of communication channels used to carry out the mandate to inform on food safety and nutrition issues. The Information and Nutrition Department is responsible for internal and external information and recommendations concerning dietary and health issues related to food. It provides a telephone line where consumers can ask direct questions on different food matters. The NFA publishes a range of reports, for example, on results of food controls, ongoing and planned projects, or investigations. These publications are available to print from the website or can be ordered from the Administration. In addition to the compilation of information material, the department is also responsible for the organization of courses and seminars, the Administration's website including a news section and the journal "Our Food". It consists of groups for editorial work, courses, and nutritional data and for diet and health questions.

The work of the National Food Administration is based as far as possible on international co-operation, particularly within the European Union. Work programmes and action plans decided upon within the frameworks of the EU and the Codex Alimentarius Commission essentially steer the Administration's approach to regulation. The NFA participates in working groups of the European Council and under the European Commission. At the Commission level, this work consists of the preparation of proposals for new acts to be submitted to the council and the European Parliament for joint decision and drafts which are enacted by the Commission, respectively. Swedish experts are actively involved in most of the scientific panels of the European Food Safety Authority (EFSA). NFA professionals, furthermore, participate on food control officer meetings and other similar meetings at the European and international level, e.g.

in the forum of Food Law Enforcement Practitioners in Europe. This forum is acknowledged as being a good way to increase mutual understanding and recognition of inspection services. Sweden is also represented on the Scientific Co-operation for Food (SCOOP), as well as in working groups and meetings of CEN, WHO, FAO and other international scientific organizations. Within the Codex Alimentarius the NFA co-operates with the European Commission in several joint meetings and in a number of the Codex subcommittees. The NFA also acts as the Swedish contact organ for Codex.

### **2.3.5. Institutional regulation of food safety in Hungary**

In Hungary food safety institutions have long traditions. Already in 1878, Hungarian statutes dealt with regulations aimed at preventing mass infections caused by food, e.g. with food adulteration cases and the hygienic question of wells and water pipes. The importance of the food safety issue is shown by the fact that the Austrian-Hungarian monarchy was the first to regulate this question in the Central European region. The handling of responsibility for food safety has traditionally been health and control of plant protection. This structure and specially the high degree of fragmentation in the recent food safety system, is mainly a consequence of the suggested historical tradition.

However, the food safety system that was in operation until recently had been set up a period when there were considerably fewer kinds of food and significantly less players in the food production and distribution system. Since the political transition of 1990, the Hungarian economy has opened up and the kinds of food products available to consumers have multiplied. The number of production firms (especially small ones) has also increased significantly. In addition, accession to the EU required a switch from the former food inspection system (based on the strict inspection of products and pre-authorization of import) to a new system that lays emphasis on the regulation of the whole food production process and self-control on the part of the producers. The above changes required considerable efforts of adoption from all involved actors, but primarily from the food safety institutions.

In the current Hungarian system, risk assessment, risk management, and enforcement responsibilities are divided among a number of institutions overseen by several ministries. Their activities overlap and their responsibilities are not clearly delineated. Three ministries play key roles: The Ministry for Agriculture and Rural Development, which represents producer interests, the Ministry of Health, which represents public health interests, and the Ministry of Youth, Family, Social Affairs and Equal Opportunities, which oversees the General Inspectorate for

Consumer Protection representing consumer interests.

In 2003 the coming EU accession made necessary the establishment of the Hungarian Food Safety Office (MEBIH), which was assigned the principal task of independent risk assessment, risk communication, co-ordination of the activity of numerous organizations, and the role as national contact-point for EFSA and other relevant EU organizations. However, ministries and institutions involved in food safety have not been interested in the establishment of a strong and efficient new food safety organization and they have been successful in ensuring the creation of a body lacks authority and recourses to fulfill its mission. Accession to the EU was the main reason for changing the regulatory system. The EU had already decided that “reactive” official food control based on the inspection and sampling was not effective enough. It therefore advocated a new type of proactive food control, which lays emphasis on the control and regulation of the whole food producing process. In Hungary the transformation of the system began at the time of EU accession and may take a long time to complete, since the new system demands greater responsibility and forthrightness from the actors in the market and presumes robust consumer protection. Since none of these preconditions are fulfilled yet in the Hungarian context, in the interim period, risks are expected to increase.

In Hungary, today a number of ministries as well as authorities and institutes operating within their framework are involved in performing task of risk assessment and risk management related to food safety, among them the Ministry of Health, the Ministry for Agriculture and Rural Development, the Ministry of Youth, Family, Social Affairs and Equal Opportunities, the Ministry of Economy and Transport, the Ministry of Environmental Protection and Water Management and the Ministry of Finance. In the following section, we shall survey the division of responsibilities and tasks among the various institutions.

Act CLIV/1997 on Public Health states that it is the health authorities’ task to “monitor and analyze the state of health of the population and the risk factors impacting on it” (Act CLIV of 1997 on Health, Chapter III, Public Health, Article 36, p.19). With regard to health risks related to food, the Act entitles the Minister of Health “to develop decrees defining permissible levels, which insure the protection of public health” (Act CLIV of 1997 on Health, Chapter III, Food and Nutritional Health, Article 48, p.24).

Nevertheless, quantitative risk assessment, as specified in international guidelines, is seldom performed in Hungary, since this would require an integrated database, which is not available here. Today, databases - like the whole system - are very fragmented. In some areas, so-called qualitative risk assessment is carried out, where the specific contaminants and their maximum acceptable level in food is identified. However, risks of contaminants below this level



are not quantified, nor are their impacts on vulnerable target groups investigated. Therefore, even prior to EU accession, the vast majority of admissible levels were defined on the basis of WHO/FAO recommendations. There are, of course, some exceptions, particularly in areas where authorization of certain products or activities is still required. One example is the authorization of plant protection substances; risk assessment in Hungary focusing on the hazards associated with the application of such substances meets international standards.

Before EU accession, the preparation of regulation related to food safety was the task of various departments of the Ministry of Agriculture, the Ministry of Health and the Ministry for Economy and Transport. The Minister of Agriculture (in consultation with other ministers) is entitled to regulate food labeling, official food control, bottling and distribution of drinking water and mineral water, the food-hygienic conditions of food processing and distribution, the mandatory prescriptions of the Codex Alimentarius Hungaricus and quality certification of special agricultural products and foodstuffs, among others. The Minister of Health is the prime official in charge of regulating the hygienic conditions in catering, the maximum level of microbiological, chemical and radioactive combination of foodstuffs and prescriptions for special dietary foods and food supplements. The Minister of Economy is the prime official responsible for regulating the conditions of the distribution of foodstuffs and the processing of catering products the new decrees covering the above areas, together with the Food Acts of 2003, entered into force on 1 May 2004, the date of accession.

As indicated earlier, communication and collaboration among various food safety institutions need to be improved. A considerable part of MEBIH's activities prescribed by Government Decree 66/2003 serves the communication among the institutional actors of food safety. MEBIH is also in charge of the communication between the Hungarian authorities and the contact points of other Member States, as well as EFSA.

Regarding controlling activities, the Food Act of 2003 orders that the work of various food inspectorates should be coordinated by MEBIH. The law prescribes the reconciliation or harmonization of inspection plans and methods, the organization of concerned, joint inspections if necessary and the exchange of inspection experience and reports. Based regulations passed since EU accession contains elements providing that the general public be informed about relevant food safety issues and problems. The websites and publications of the Ministries of Agriculture, Social Affairs and Health should contain more information of interest to the public concerning official activities related to food safety.

Before 1993, the beginning of negotiations on EU accession, two laws regulated food safety in Hungary: The Food act of 1976 and its subsequent amendments and BkM Decree 12/1977 on

the implementation of Food Act ( The European Food Safety Authority, 2008). Between 1993 and 2003, the country essentially carried out the legal harmonization necessary for accession. For example, it adopted about 80 different-level regulations pertaining to animal products. By 2003, negotiations on EU accession were concluded. Since accession, the Regulations enacted by the EU enter force automatically in Hungary. Accordingly, EU Regulation 178/2002 also came into force in Hungary on May 1, 2004. As a result, the items regulated by the EU had to be cancelled from the food Act. Before EU accession, WHO/FAO recommendations formed the basis of food safety regulation in Hungary. Authorities specified permissible levels on the basis of WHO/FAO, OECD and EU recommendations, domestic food consumption and other behavioral characteristics (e.g. customary use of plant protection products). Since accession, EU permissible levels are in force with the exception of some areas in which Hungary has been granted derogation or where EU levels have not been set.

Hungary has been actively involved in the work of Codex Alimentarius since the latter's inception. The Hungarian National Codex Alimentarius Committee, which is the leading authority in this field, was functioning until 2003 without a regulatory background. Since 2003, its activity has been regulated by act LXXXII/2003 (Food Act). Interaction between EFSA and relevant Hungarian organizations involved in risk assessment activities is mediated by MEBIH. Such interaction is still only preliminary state.

### **2.3.6. Institutional regulation of food safety in Lithuania**

The State Food and Veterinary Service (SFVS) develops and implements the Government's policy in food safety and quality as well as in animal health and welfare. The SFVS is accountable to the Government of the Republic of Lithuania. The SFVS as an inspection body is accredited to carry out inspections in the field of safety, hygiene, traceability, and labeling of food and feeding stuff in the areas of processing, packaging, distribution, wholesale and retail.

State Food and Veterinary Service was established in the year 2000, after reorganizing State Veterinary Service and its subordinate institutions, State Hygiene Inspection under the Ministry of Health and the State Quality Inspection under the State Service for Competition and Protection of Consumer Rights. The State Food and Veterinary Service overtook the functions of the above-mentioned institutions and executes food control on all food handling stages. The State Food and Veterinary Service is headed by the director - Chief Veterinary Officer (CVO),

who is accountable to the Prime Minister. The director has 3 deputy directors. The inner work of SFVS is organized by the heads of departments, who are directly accountable to the director. The main objectives of the SFVS are:

- To ensure monitoring and control of contagious animal diseases, zoonoses and of animal welfare, to eliminate outbreaks of diseases; to apply all the necessary biological measures for prevention from the introduction of contagious diseases and zoonoses into the territory of Lithuania and the EU;
- To ensure food safety and control, to safeguard the interests of consumers, to ensure that the food supplied on the market as well as that intended for export complies with safety, labelling and other mandatory requirements established by the legal acts.

After accession to the European Union (EU) on May 1<sup>st</sup> 2004 Lithuania has been making attempts to consolidate its membership in the EU. Contributing to the goal the State Food and Veterinary Service has been aiming to ensure the basic principles of market supervision, with priorities for the safety of food, protection of consumer rights and the status of a free from contagious diseases country in accordance with the EU and international requirements. Protection of the national interests in the field of animal health and of food safety depends significantly on the performance quality of the institutions related to the activities of the State Food and Veterinary Service (SFVS), in drawing up the positions and a competent participation in the adoption of the EU *Acquis*, and the development of the EU vision. Thus the representatives of the State Food and Veterinary Service nominated to represent the above interests of the Republic of Lithuania within the administrative structures of the EU must ensure an active and fruitful representation of the national interests in the EU, and also the preparation of Lithuania for the forthcoming presidency of Lithuania in the EU in 2013.

Staff members of the SFVS are active delegates of Lithuania in the standing committees and other Comitology bodies: in 2005, 36 persons, who are on the Council and Commission committees and working groups, attended 181 meetings. Lithuania has a special veterinary and food safety attaché at the EU. The task of the Attaché is to facilitate the implementation of the foreign policy of Lithuania in veterinary, phytosanitary, and food safety sectors. The Attaché assists in drawing up and presenting the position of the Republic of Lithuania on veterinary and phytosanitary issues in the European Union institutions, consults on the preparation of positions, drafting of legislation and other issues by establishing both formal and informal contacts with the Health and Consumer Protection Directorate - General of the European Commission and other structural divisions of the EU institutions. In accordance with the established procedure,

when important decisions are taken, the Attaché takes part in the meetings of the EU Council and Commission committees, working groups, conferences, workshops and other events, and in order to ensure timely and adequate exchange of information participates, also in the meetings with the representatives of the EU member states, candidate countries, or members of permanent representations and missions of third countries.

Each year, inspectors from the Food and Veterinary Office of the European Commission conduct audits of the controls performed by the State Food and Veterinary Service. Since 1998, 38 inspection missions have been carried out in Lithuania, during which 368 recommendations were given, mostly during the period of Lithuania's preparation for the EU membership, and nearly all of them have been implemented (State Food and Veterinary Service, 2008). Staff members of the SFVS take annual training during 3-5 month-long structural traineeship at the Health and Consumer Protection Directorate - General of the European Commission.

The Republic of Lithuania is a member of the Potsdam Group of the EU Council for veterinary negotiations with the Russian Federation, the only one of the new EU Member States and has taken an active part in agreeing the model of the unified veterinary certificate for export and preventing illegal transit through the territory of the EU to the Russian Federation. In cooperation with Lithuania a number of bilateral EU-Russian agreements have been developed and signed. The SFVS is a member of different international organizations. Since 1993 Lithuania is a member of the European Commission for Control of Foot-and-Mouth Disease of the International Food and Agriculture Organization (FAO). Back in 1932 Lithuania became a member of the International Office of Epizootics, the task of which is to organize and coordinate the scientifically based ways and measures against contagious animal diseases with an aim of eradicating the diseases through the joint efforts of many nations. Lithuanian institutions are active participants of the *Codex Alimentarius* commission. Lithuania has ratified five conventions of the European Council on the protection of animals. In the meantime, preparations for the ratification of the remaining convention – the European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes, are made.

### 2.3.7. Institutional regulation of food safety in Latvia

Food and Veterinary Service (FVS) is a state administrative institution supervised by the Ministry of Agriculture. FVS organizes and performs official surveillance and control over the food circulation and the field of veterinary medicine prescribed by regulatory enactments. FVS was established on 1 January 2002, by merging of the State Veterinary Service and Sanitary Border Inspection, as well as incorporating food surveillance and control throughout the food chain under the competency of FVS (up to that time, SVS was responsible only for the animal origin food state control and surveillance). In accordance with the increased scope, FVS ensures the internationally recognized public food surveillance principle "from the farm to the table" not only providing for up-to-date, all-embracing state food control but also making use of and asserting the close connection between food surveillance and veterinary surveillance, i.e., between animal health and safe food for the consumers.

FVS functions are the following (FVS, 2008):

- **Food official surveillance.** By controlling food throughout the food chain – provides for distribution of safe food to the consumers all over the country.
- **State Veterinary Surveillance.** By organizing and performing state veterinary surveillance activities – promote and achieve compliance with animal health and welfare rules, draft and maintain the system of control and prevention system of infectious diseases common (dangerous) both for animals and humans.
- **Sanitary Border control.** Performing the control of goods on the outer border of the EU, Sanitary Border Inspection prevents the import of products hazardous to life and health of the consumers and the environment, thus precluding the introduction and spread of plant, animal and human diseases in Latvia and other member states of the EU.
- **Laboratory testing.** Within the framework of state food and veterinary surveillance, provide for the operative and routine laboratory testing.

In order to harmonize the food sector in the country FVS has gathered information and registered all enterprises involved in the food circulation by awarding; each enterprise has been given a registration number. The registered enterprises are included in the register of the enterprises subjected to the FVS surveillance and are available to the public in FVS webpage. It shall be considered that the enterprises that are not registered by FVS are performing illegal activities. The enterprises willing to perform the activities that are linked with meat obtaining, food processing, remaking, freezing, storage, and packaging have to go through approval

procedure, which is the evaluation of the activities performed the company and its ability to ensure the compliance of its activities with the requirements stipulated by the normative regulations confirmed by the approval number issued by FVS. The approved enterprises are allowed to distribute their products in the whole market of European Union without any limitations.

FVS inspectors perform planned inspections of food enterprises every day, which are organized on the bases of FVS inspection plan. The plan stipulates the minimum frequency of the checks for each group of food enterprises performed during a year by evaluating the risk of each group activities; the frequency varies from one time per quarter till one time per two years. Upon receiving the complaints from the consumers, information from any other institutions or in cases of possible risk there are extraordinary checks performed. In order to obtain objective information about food safety and compliance with the hygiene requirements, the inspectors regularly obtain the product samples and send them to the laboratories for the checks. In cases if the enterprises do not follow the requirements of normative regulations, FVS inspectors have the right to apply the following sanctions: the warning, penalty, ban on product distribution, withdrawing the products from the circulation or even the termination of the activities of the enterprise.

### **2.3.8. Institutional regulation of food safety in Czech Republic**

On May 1, 2004, the Czech Republic became a member of the European Union and all EU regulations and decisions apply directly (with many directives still needing to be harmonized into the national legislation). An exporter from a third country must be familiar with Czech food laws and EU's regulations and decisions, which overrule national legislation. The Czech Agriculture and Food Inspection Authority (CAFIA), as one of the supervisory bodies responsible for food safety on the European market, deals with monitoring of EC legislation concerning activities of the authority, issue of non-harmonised area, matters concerning free movement of goods and also co-operates with the Ministry of Agriculture on systematisation of EC legislation in the area of foodstuffs. In co-operation with the Ministry of Agriculture, CAFIA also participates in preparation of inspection missions from the European Commission. These missions are focused on areas such as food hygiene, pesticides, contaminants or GMO (CAFIA, 2008).

Since April 2003, CAFIA experts have been taking active part in meetings of working groups and committees of European Commission and of the Council. Nowadays, approximately 20 CAFIA experts are nominated to these bodies. These experts are in the position of active negotiators and take part in the meetings on behalf of the Czech Republic, comment on matters being discussed and defend stands of the Czech Republic. This activity requires special requirements, language skills as well as orientation in the diplomatic environment. CAFIA ensures relevant training for these experts.

After accessing of the Czech Republic to the European Union, CAFIA quickly adjusted to the new situation. The fact that nowadays CAFIA is successfully integrated in structures of the EU is a result of thorough and long-term preparation of the authority for the accessing to the EU. In the time before the accession and shortly after, CAFIA used to obtain new knowledge from colleagues from foreign countries. At present the authority is in reverse situation and CAFIA experts share knowledge and experience with others. CAFIA experts handed on information concerning, e.g. experience of drawing financial resources from PHARE funds, shared experience with twinning projects in the framework of a workshop in Egyptian Cairo and also introduced the food safety system of the Czech Republic to Chinese and Ukraine experts who are establishing their own systems. CAFIA representatives also took active part in training programme targeted at representatives of Georgian authorities. This co-operation contributes not only to establishing food safety systems in third countries but also to a credit to CAFIA as well.

CAFIA experts also take part in various international conferences and workshops focused on implementation of European food legislation, principles of food inspection, monitoring of pesticides and contaminants, laboratory techniques, free movement of goods, decision-making processes and EU negotiations and a wide range of various special topics. Conferences and another events, which CAFIA representatives take part in, are not only an opportunity to exchange information and professional experience but also to make non-formal contacts with representatives of other supervisory bodies, research institutes, European Commission and other institutions. Preparation and realisation of projects from various programmes of European Commission and EU member states belong to significant activities in the field of foreign relations.

Within the assigned competencies CAFIA inspects foodstuffs, raw material for their production, agriculture products, and tobacco products. The above competences apply to the production, storage, transport, and sale (including imports). Such a comprehensive conception of control allows focusing efficiently on commodities, analytes or places with the highest estimated

number of non-conformances or with the maximum effect of inspection expected. It is therefore referred to as target inspection, whose objective is not only monitoring but protection of economic interests of both consumers and the state – consumer protection from foodstuffs that are risky to human health, falsely labelled, sold despite their expired use-by-date or of unknown origin. The manufacturing and sales conditions form an integral part of the target inspection. The concept and implementation of food inspection is based on a new legislation (especially on the Act No. 110/1997, Coll. on Foodstuffs and Tobacco Products, on the amendment to the Act No. 146/2002 Coll on CAFIA, as amended by later legislation or on the Act No. 552/91 Coll. on State Control, as amended by later legislation) and are in accordance with principles of food inspection applied in countries of the European Union (The Czech Agriculture and Food Inspection Authority).

The term food safety means control of microbiological requirements and contents of contaminants (e.g. chemical substances, additives, pesticide residues, etc.). The term quality control means the control of analytical characteristic features (e.g. the contents of fat and sugar, humidity, etc.), or the control of sensory characteristic features. Product labelling and its adequacy are assessed separately.

When making decision about the target of an inspection, the maximum information available is taken into account. The decision-making criteria for performing an inspection can be of either general and broadly defined applicability (general criteria) or they are based on some specific findings (specific criteria).

The CAFIA inspectors take samples of the individual product lots during the food inspection. Each sampling is documented in a Sampling Protocol that should be signed by the person inspected. Only samples taken by an inspector are delivered to laboratories and are analysed according to the inspection focus. Food samples that are delivered to an inspectorate by a consumer as part of his/her complaint, serve as a suggestion for control, they do not become the subjects of analyses. Further on, analytic and sensory analyses (analyses of quality characteristic features, whose parameters are set in the implementation provisions of Decree No. 110/1997, Coll. issued by the Ministry of Agriculture or described in the declared CSN standard), and the correct labelling and adherence to the date of durability and use-by-date are also assessed.



### **2.3.9. Institutional regulations of food safety in Estonia**

The Veterinary and Food Board (VFB) was established in 2000 as a result of reorganization of the Veterinary and Food Inspectorate (VFI). This reorganization was realized by extending the competence of VFI in accordance with the Veterinary Activities Organization Act, the Infectious Animal Disease Control Act and the Food Act, which all entered into force on 1 January, 2000, stipulating a change of the status of the governmental agency that executes these tasks. Regulation No 12 of the Minister of Agriculture of 16 March 2000 on the reorganization of the Veterinary and Food Inspectorate, confirmation of the statute of the Veterinary and Food Board, the structure and personnel of the Veterinary and Food Board and local offices thereof entered into force on 1 April, 2000 (The Veterinary and Food Board).

The Veterinary and Food Board, a governmental agency carrying out its tasks under the government of the Ministry of Agriculture, functions as a supervising body and sees to that the requirements stipulated by the legislation that governs veterinary, food safety, market regulation, animal welfare and farm animal breeding are followed and executes supervision over fulfillment of these requirements and applies enforcement by state pursuant to the procedures and in the amount prescribed by law. In addition to the mentioned acts, VFB adheres in its professional activities the Trade, Import and Export of Animals and Animal Products Act, the Import and Export Veterinary Control Act, the Animal Protection Act, the Farm Animals Breeding Act, the Organic Farming Act, the Medicinal Products Act, the Common Agricultural Policy Implementation Act, the Feeding Stuffs Act and other legislation laid down pursuant to these acts. The broader objective of VFB is to ensure the consumers the production of safe, healthy, and quality food and raw materials for food to prevent and eradicate infectious animal diseases, to protect people from diseases common to both people and animals and diseases that are spread by animals, but at the same time to protect animals from human activity or inactivity endangering their health and welfare, to ensure productivity of farm animals and increase their genetic value, and to preserve genetic pool and profitability of keeping animals. The tasks of the Veterinary and Food Board are:

- to plan and organize the prevention and control of infectious animal diseases;
- to protect humans from diseases common to both people and animals;
- to grant approval to enterprises involved in handling foodstuffs and persons who determine the quality classes of carcasses; check the safety of raw material for food and food when raw material for food and food are produced, during their preliminary processing,

processing, transportation and wholesale; to execute supervision over organic processing of raw material for food and food;

- to organize laboratory analysis in order to diagnose infectious animal diseases and assess the properties of food, feedingstuffs, hay, straw, medicated feedingstuffs and drinking water; to protect the environment from harmful factors that are the result of keeping animals or infectious animal diseases;

- to issue activity licenses for the provision of veterinary services and control the use of medicinal products and medicated feedingstuffs by veterinarians and animal-keepers manufacturing animal products; to check animals, raw material for food and food, including checks of products of animal origin and agricultural products carrying markings that refer to organic farming, upon their importation to the Republic of Estonia;

- to organize control procedures necessary for the implementation market regulation measures on milk and meat market.

In performing its tasks, VFB uses the services of the Veterinary and Food Laboratory, laboratories authorized in accordance with the Veterinary Activities Organization Act, laboratories that hold an activity license for a veterinary laboratory and laboratories authorized in accordance with the Food Act. Supervision of imports, exports and trade of goods subordinate to veterinary and food control between the Member States is performed by Veterinary and Food Board. In order to discharge the direct function of the previous Board Service of Veterinary and Food Board was attached with Veterinary and Food Board on the 1st of May 2004 and the new department -Department of Trade, Import and Export was created. Since the 1st of May 2004, as Estonia joined the European Union, trade, import and export of animals and animal products is being established by the „Act of Veterinary Supervision of Trade, Import and Export of Animals and Animal Products“, harmonized with the respective legal acts of the European Union. In addition to the above mentioned acts supervision in import-export and trade is being based on Food Act, Infectious Animal Disease Control Act, Veterinary Organization Act, Animal Protection Act and other connected legal acts as well.

## **CHAPTER 3. FOOD SECURITY POLICY AND REGULATION IN GEORGIA**

### **3.1. Overview of food security in Georgia**

Agriculture plays an important role in the Georgian economy. In 2007, the sector contributed over 20 percent of Gross Domestic Product (GDP). Employment in the sector accounts for just over 50 percent of total employment in Georgia. Agricultural land accounts for around 3 million hectares, roughly 2 million of which is pastureland and 1 million arable of which 0.5 million is irrigated (National Statistics Office of Georgia, 2008). Georgian agricultural exports to EU-25 accounted for about €26 million in 2007. The main exports are wine, nuts, and mineral water (NSOG, 2008). Land privatization has only partially been completed (75% remains in state ownership). Agricultural and marketing services also need to be developed. The average size of privatized land parcels is 0.22 hectare resulting in the creation of a large number of smallholdings providing little more than subsistence level incomes to a large part of the rural population. The agricultural sector suffers from poor infrastructure, limited access to credit facilities and the incomplete process of land reform. The government documents to the donor conference stress the importance of the continued reform of the agricultural sector. An agriculture strategy is expected to be adopted soon and a new draft law on additional privatisation of arable land is under consideration (NSOG, 2008).

Regarding veterinary and phytosanitary issues, Georgia has adopted over the recent years a number of new basic laws covering food safety, veterinary, and plant protection issues. However, minimum international standards for food safety are not yet achieved and legislation does not contain risk management components. The sector lacks funding to ensure adequate nationwide food safety structures. The quality of inspection and testing is far from reaching international standards and inspection bodies and laboratories have overlapping responsibilities. Food borne diseases and endemic zoonoses cause public health threats. The lack of slaughterhouses undermines food safety of meat production. Georgia is a member of the World Trade Organization (WTO), Food and agriculture Organization (FAO), World Health Organization (WHO), International Office for Epizooties (OIE) but is not a signatory to the International Plant Protection Convention (IPPC).

The importance of the sector to the Georgian economy, nevertheless, belies a serious crisis of stagnancy. Agricultural/agribusiness production is down 30 to 40 percent from the

levels of the late 1980's. Further, the value of food, drink, and tobacco imports exceeded agricultural sector exports in 1999. In sharp contrast, in the 1980's the value of Georgian food exports to the rest of the former Soviet Union countries exceeded by a factor of 1.7 the value of food imports from other Soviet republics. Over 50 percent of the grain and dairy products consumed are now imported (NSOG, 2008). The consumption of city population is totally relied on the import products.

In recent years a number of changes have occurred that are helping create a better enabling environment for agriculture/agribusiness. The almost complete withdrawal of subsidies, a relatively liberal trade regime, and the freeing of domestic prices for agricultural products are good examples. The interest and commitment of the Minister of Agriculture to restructuring and downsizing of the MOA to meet the needs of a market-driven agricultural sector is another positive step forward.

Most small and medium sized enterprises in Georgia (including agribusiness firms) have been privatized, but a substantial number of the enterprises controlled by the Ministry of Agriculture (MOA) (reportedly over 130) remain to be privatized. Many of these agricultural facilities are old, of a scale that makes them inefficient and non-competitive, and simply not operating. Amid this depressed picture some good, though limited, examples exist of local and foreign companies operating effectively in a range of areas including fruit processing, flour/bakery/macaroni processing, meat processing, potato packing, and egg production and packing. While these enterprises demonstrate the potential of Georgia agro-processing, it is significant that some of these enterprises frequently import raw materials and packaging. A number of international donors, including the World Bank, EU-TACIS, the British DFID, IFC, Germany, the European Commission, Japan and the Dutch provide assistance in the agricultural sector. The European Commission, EU-TACIS, Japan, and the World Bank have been the most active.

The EC provided \$20 million for 2005-2006 years to the Government (NSOG, 2008). The program also included an assessment of the effectiveness of the food security bulletin. In addition, the EC supports a TACIS project whose main aim is to assist the MoA in financial and budget management. The World Bank has concluded a US\$ 32 million Credit for Agricultural Enterprise programme 2005- 2009, under which, with co-financing from other donors, it will set up rural micro-credit organizations, develop agricultural supply systems, facilitate the use of land and machinery as security for credit and generally help to increase the competitiveness of Georgian agriculture (NSOG, 2008). This programme will also give assistance to setting up a food safety capacity. USAID is providing US\$ 23 million over five years to develop demand-

driven market oriented agriculture focusing on export and import substitution produce. This programme, called AgVantage, has ongoing since 2003. In June 2005 a policy component was added to strengthen the policy formulation capacity of the Ministry of Agriculture. The main objective is to formulate a medium and long term agriculture master plan for Georgia and to strengthen the analytical capacity of the Ministry of Agriculture in policy analysis and formulation.

Georgia is one of the 16 countries eligible for the US-financed Millennium Challenge Georgia (MCG, 2008). Under this grant, Georgia has been granted \$ 300 million. Main areas of support were infrastructure development such as roads (\$150 million) and community grants (\$60 million) in the area of water treatment, irrigation, roads and gasification; gas pipeline rehabilitation (\$45million) and enterprise development. The latter focused on the provision of equity funds for processing industries (\$30 million) and the Agriculture Development Component (\$15million) in order to provide grants for agriculture and tourism activities. UNDP focuses mainly on peace building and has limited activities in the agriculture sector. Support is primarily given to the preparation of the Millennium Development Report. In spite of these various financial and technical assistances from donors, they mention that there is too little analysis in understanding the concept of food security. They also regard that communication between the ministries is poor. Besides, the capacity of statistical agencies to design and undertake surveys, tabulate the survey data and to analyze it to its fullest potential for use in the policy making process is limited.

According to the government's Reform and Development Programme for 2004-2009 priority sectors of the country are: economics and energy, transportation and communications, tourism, agriculture, banking and light industry. Despite certain positive developments, Georgia's overall socio-economic situation remains difficult. Rapid and sustainable economic growth and a significant improvement in the population's social situation are still to be achieved. The priority focus should be on extremely impoverished people, as well as other marginalized groups.

In Georgia poverty is estimated based on household consumption expenditure. Two poverty lines are adopted under the Economic Development and Poverty Reduction Program (EDPRP) elaborated by the government in 2003 with the support of the international community and in close cooperation with the non-governmental sector:

- Poverty line at official subsistence level - monthly GEL104-115 per adult, equivalent to a working-age male;
- Extreme poverty line - monthly GEL58-63 per adult, equivalent to a working-age male.

According to the NSOG in 2004 the poverty rate estimated at the official subsistence level amounted to 52%. The poverty rate at the extreme poverty line was 15%. In 2005 the proportion of the population below the poverty line increased to 54.5% and the proportion of the population in extreme poverty to 16.6%. Additionally, poverty indicators differ significantly between urban and rural areas. The poorest regions are Adjara, Samtskhe-Javakheti and Shida Kartli. Urban poverty focuses upon Kutaisi, Batumi, Rustavi, Gori, Zugdidi and several districts in Tbilisi. Higher poverty levels in most cases correlate with geographical isolation and the low intensity of arable land use. Seasonal factors have a significant impact on overall poverty indicators.

Populations living below or above the poverty line rely on very different diets. The population below the poverty line relies mostly on nutritionally cheap calories in their diets. There seems to be no distinctively strong correlation between poverty and hunger in Georgia due to reliance on homegrown food to complement diet and informal social protection mechanisms. The first factor is highly effective in addressing extreme poverty or lack of income to satisfy basic food needs. However, in the longer term, this resource cannot generate cash income necessary to satisfy non-food needs such as education, health care, heating, electricity, etc.

Dietary energy consumption differs across regions. The lowest level of dietary energy consumption is traditionally found in Tbilisi. The level of per capita dietary energy consumption is relatively high in Western Georgia, particularly in Samegrelo. However, it would be misleading to conclude that the situation in Samegrelo is better than elsewhere in Georgia, because the proportion of IDPs (Internally Displaced Persons) is particularly high in this region and surveys do not adequately depict the situation of IDPs.

In the Household Food Economy Assessment conducted in January-February 2004 by the World Food Programme (WFP), it was found that food security problems are more likely manifested by qualitative imbalances in diet and inadequate economic access to food by vulnerable groups at the household level rather than real food unavailability at the national level (The National Statistics Office of Georgia, 2007)

According to the WFP the average calorie intake of rural population is still maintained at 2,490 Kcal/person/day which is much higher than FAO recommended energy requirement for an adult of light physical activity of 2,000 Kcal. It is also higher than the Government's proposed requirement of 2,300 Kcal with climate adjustment. Only the destitute households (approximately 5% of total population) consumed lower than this level (1,736 Kcal) (NSOG, 2008). This means that, in overall, diets are quantitatively adequate in caloric terms. However,

they are qualitatively unbalanced. All groups (destitute, poor, middle) consume a low content of proteins (8% of total calories versus recommended 10- 15%). The destitute and poor households that account for two thirds of total population eat a higher content of carbohydrates (72% versus recommended 55-60%). These two groups are increasing their intake of less nutritious and cheap foods as they cannot afford to produce or purchase the more nutritious food such as meat, fish, and dairy products. It may indicate a deficit of essential micronutrients (vitamin A, iron, and iodine) in the diet which are crucially important for young children, pregnant/nursing women and other vulnerable groups.

In contrast, the diet of the middle group is characterized by a typical dietary pattern of industrialized countries, e.g. very high calories (3,355 Kcal), of which 34% are from fat and 57% from carbohydrates. It may warn us about risks of some diseases usually seen in the developed world such as diabetes and cardio-vascular disorders.

Inadequate economic access to food is reflected in a large share of income that households spend on food. Food accounts for 74% of total annual expenditure (NSOG, 2008). This figure reaches 86% amongst the destitute and 63% in the poor households. The very high food share of income diminishes the household's ability to address other urgent needs such as medical care, heating, transportation, schooling and housing (currently at 7-15% of total expenditure). Additionally, food expenditures compete with farm input requirements (currently at 7-11% of total expenditure), preventing households from investing in their land, maintaining low productivity, and contributing to a vicious cycle of poverty. Many farmers can only afford to cultivate part of their land. Elderly people and the handicapped with no support from relatives are particularly food insecure. A significant number of food insecure people have to borrow food and take loans to cope with the food gap.

While energy consumption is the most widely recognized global indicator of hunger, it fails to capture the critical aspect of food insecurity in Georgia. There are three more sensitive indicators, more reflective of poverty and hunger that need to be developed for use in Georgia: energy consumption specifically of the destitute, the proportion of macronutrients consumed against Recommended Daily Allowances (RDA), and household income allocated to food. Progress against any one of these three indicators will reflect critical achievement in the fight against poverty in Georgia.

Unfortunately, administrative data on nutritional status of children has not been gathered regularly in Georgia so far. The only available source is the Multiple Indicator Cluster Survey (MICS) jointly conducted by the National Statistics Office of Georgia (NSOG), the National Centre for Disease Control and UNICEF in 2005 (NSOG, 2008). The survey suggests that the

proportion of underweight children under five years of age in Georgia is 3.1%. This percentage is not a bad indicator. The 1999 MICS Survey found acute and chronic malnutrition rates to be 2.3% and 11.7%, respectively. The nutritional status among children shows no gender disparity. In 2003 the National Centre for Disease Control and Save the Children's office in Georgia jointly implemented "Survey on Nutritional Status of Children under Five Years of Age in Six Drought Affected Regions". As the survey showed children with moderate and severe signs of acute malnutrition accounted for 0.4% and 1% in 2001 and 2002, respectively. The chronic malnutrition rates were found to be 8.1% to 10.2% for 2001 and 2002, respectively. The results of the survey clearly indicate that even in the drought period, the level of child malnutrition was significantly lower than the levels accepted as the standard threshold by World Health Organization (WHO) criteria for acute (5%) and chronic (20%) malnutrition. This can be explained to a major degree by the food distribution pattern among household members traditionally giving priority to care and nutrition of children and elderly.

Available data on children's nutrition status is generally encouraging, although one should not overlook the problem of micro-nutrients (iodine, iron) deficiency. Iodine deficiency has historically been a serious problem for Georgia, especially for the population of high-mountainous areas. The study conducted in 1996 with UNICEF support revealed varying degrees of iodine deficiency in 64% of children surveyed (UNICEF, 2007).

Solution of Food Security issues in Georgia is the most important socio-economic task. Food security refers to the availability of food for healthy and productive life and one's access to it any time. The main and final target of food security is the elimination of food deficit and hunger in any population groups.

In Georgia the food security situation has substantially alerted after the transition to market economy, due to recession of marketing outlets, appearance of free market, privatization and land reforms. Georgian food complex and its market conditions drastically decreased beginning from 90s. Nowadays the connections between rural producers and urban consumers are faint. Food security of urban population mostly depends on import, while certain part of rural population has solved the issue owing to local production and consumption (75% of rural economy is meant for self consumption).



Table 3.1. Some macroeconomic data of Georgia

|   | 2004    | 2005    | 2006    | 2007    | 2008    |
|---|---------|---------|---------|---------|---------|
| <b>Total population (thousand persons, as of January 1)</b>   | 4,315   | 4,322   | 4,401   | 4,395   | 4,382   |
| <b>Of Which: Urban (%)</b>                                    | 52.2    | 52.2    | 52.5    | 52.5    | 52.6    |
| <b>Rural (%)</b>  | 47.8    | 47.8    | 47.5    | 47.5    | 47.4    |
| <b>GDP in current prices (million GEL)</b>                    | 9,824   | 11,621  | 13,790  | 16,999  | 19,070  |
| <b>Of which: Agriculture</b>                                  | 1,611   | 1,716   | 1,544   | 1,597   | 1,704   |
| <b>GDP in constant 1996 prices (million GEL)</b>              | 6,001   | 6,578   | 7,195   | 8,089   | 8,249   |
| <b>Of which: Agriculture</b>                                  | 1,269   | 1,422   | 1,255   | 1,366   | 1,269   |
| <b>GDP growth index, the previous year =100</b>               | 105.9   | 109.6   | 109.4   | 112.4   | 102.1   |
| <b>Growth index of agriculture, the previous year =100</b>    | 92.1    | 112.0   | 88.3    | 108.8   | 97.9    |
| <b>GDP per capita in current prices (GEL)</b>                 | 2,277   | 2,689   | 3,133   | 3,868   | 4,352   |
| <b>GDP per capita in constant 1996 prices (GEL)</b>           | 1,391   | 1,522   | 1,635   | 1,841   | 1,882   |
| <b>GDP (million USD)</b>                                      | 5,125   | 6,411   | 7,762   | 10,172  | 12,797  |
| <b>GDP per capita (USD)</b>                                   | 1,188   | 1,483   | 1,763   | 2,315   | 2,920   |
| <b>Estimated shadow economy (as % of GDP)</b>                 | 32.8    | 30.5    | 26.9    | 22.2    | 23.7    |
| <b>Unemployment rate (According to ILO strict criteria) %</b> | 12.6    | 13.8    | 13.6    | 13.3    | 16.5    |
| <b>Minimum wage (GEL/month)</b>                               | 20      | 20      | 20      | 20      | 20      |
| <b>Minimum pension (GEL/month)</b>                            | 14      | 28      | 38      | 70      | 70      |
| <b>CPI (1998 = 100)</b>                                       | 152     | 164     | 179     | 196     | 215     |
| <b>Food PI (1998 = 100)</b>                                   | 159     | 180     | 201     | 220     | 245     |
| <b>GDP Agriculture share - %</b>                              | 16.4    | 14.8    | 11.2    | 9.4     | 8.9     |
| <b>Total employed – thousand p.</b>                           | 1,783.3 | 1,744.6 | 1,747.3 | 1,704.3 | 1,601.9 |
| <b>Of which: in Agriculture %</b>                             | 54.0    | 54.3    | 55.3    | 53.4    | 53.0    |
| <b>Average monthly nominal wage (GEL)</b>                     | 156.6   | 204.2   | 277.9   | 368.1   | 551.5   |

Source: The National Statistics Office of Georgia

The impact of world economic crisis on Georgia is clearly shown in the table 3.1. While in 2007 the economy growth rate was a record one – 12.4 %, in 2008 it fell by 2.1 percent. The unemployment rate has increased by 3.2 %. In 2008 the real value added in agriculture fell by 2.1 % as compared to 2007. This circumstance refers more to traditional instability of agriculture, rather than world economic crisis. The tendency of reducing of agriculture share in

national economy still continues. This factor, definitely have a huge affect on the Georgian food security.

As it has been defined, food security implies food availability, food accessibility, and consumption (utilization).

Food availability means the enough food security for country population. Food availability is obtained by domestic production, importing food and using existing stocks in country.

As mentioned earlier, Georgian agriculture is unstable, after growth comes recession. For guaranteed harvest of crop, it is obligatory to conduct certain melioration works along with irrigation.

On the first stage of the agrarian reform the property structure of agricultural lands was significantly transformed. Before the reform only 211 thousand hectare of agricultural area was owned privately by country population – 7% of all land. After the land reform the area increased to 764 thousand hectare, i.e. by 3.6 times. After adopting the law of Georgia “On Agricultural Land Lease” the government leased additional 905 thousand hectare of agricultural area, of which 330 thousand hectare was received by 45,000 individual persons (average 7.3 hectare).

The land reform, as political process, developed rapidly, but results were insufficient from economic point of view. Along with other issues, identification of optimal land area is not resolved, reasoning from different sizes of land plots. After land reform and privatization, land distribution took place in Georgia – 1.25 hectare on each household is very small area from technical and economic efficiency point of view. Such a plot size is not enough for commercial production. Often the determined area is scattered in different places, which well decreases production effectiveness. On the other hand, the bigger plot is difficult for farmer to manage, because lack of sufficient working capital for hiring additional workers or/and purchasing of necessary tools and equipment. In the given conditions, small farms are at advantage, as long as they are fully cultivated, while big areas are unused because of lack of working capital. Only 10% of farmers are able to acquire main production tools and equipment.

Table 3.2. Main agricultural production in Georgia

| <b>(Thousand tons)</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2008<br/>%<br/>2004</b> |
|------------------------|-------------|-------------|-------------|-------------|-------------|----------------------------|
| <b>Wheat</b>           | 185.8       | 190.1       | 69.7        | 74.9        | 54.6        | 29.0                       |
| <b>Maize</b>           | 410.6       | 421.3       | 217.4       | 295.8       | 305.9       | 75.0                       |

|                              |       |       |       |       |       |      |
|------------------------------|-------|-------|-------|-------|-------|------|
| <b>Haricot beans</b>         | 16.4  | 23.0  | 7.6   | 10.5  | 10.1  | 62.0 |
| <b>Sunflower seeds</b>       | 22.3  | 22.3  | 12.3  | 16.1  | 10.5  | 47.0 |
| <b>Vegetables</b>            | 400.5 | 436.7 | 179.7 | 190.3 | 181.3 | 45.0 |
| <b>Potatoes</b>              | 419.5 | 432.2 | 168.7 | 229.2 | 139.2 | 33.0 |
| <b>Meat</b>                  | 104.1 | 104.7 | 78.9  | 69.4  | 44.9  | 43.0 |
| <b>Milk</b>                  | 749.7 | 755.7 | 606.0 | 624.7 | 640.9 | 85.0 |
| <b>Eggs (million pieces)</b> | 496.6 | 504.6 | 249.2 | 438.1 | 441.1 | 89.0 |

Source: The National Statistics Office of Georgia

In 2008, as compared to 2007, both sown areas of wheat and vegetables have significantly decreased, while the sown areas of haricot beans, potato and sunflower remained practically at last year's level. As compared to the previous year, wheat yield has decreased, which, along with decrease of the sown area, led to decrease of wheat production. Due to decrease of yield, the potato, sunflower, haricot beans and vegetables production has also decreased.

As compared to the previous year, the meat production has decreased as well – by 35% (mostly due to reduction of pig meat production, which is a result of the spread of pig diseases). Milk and eggs production have increased by 3 and 1 percent respectively.

After disintegration of centralized planned economy, processing companies, food production and its export markets significantly decreased, led to drastic downfall of the workforce in this industry. In recent years average 42% of able-bodied population was employed by mentioned industry. More than half of GDP share was made up by agriculture and food industries.

Table 3.3. Food industry main indices

|   | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
|---|-------------|-------------|-------------|-------------|
| <b>Number of working enterprises</b>            | 2,161       | 1,708       | 1,242       | 1,241       |
| <b>Employment – persons</b>                     | 23,835      | 22,796      | 20,745      | 18,384      |
| <b>Employment rate - % of total employment</b>  | 1.4         | 1.3         | 1.2         | 1.1         |
| <b>Production ( thousand GEL)</b>               | 845,697     | 924,608     | 1,113,341   | 1,004,554   |
| <b>Capital at the end of year (million GEL)</b> | 624.3       | 296.2       | 424.5       | 390.8       |

The National Statistics Office of Georgia

Unfortunately, the trend of downsizing in food industry, with its labor force, is still observed. In 2008, as compared to 2005, number of enterprise reduced by 919 entities and number of employment by 5,451 persons (33%). Most concerning is the employment decrease, in 2008 employment rate in food industry has formed 1.1 percent of total employment.

Table 3.4. Food industry production in 2004-2008 in Georgia

| Products                               | Meas. unit | 2004      | 2005      | 2006      | 2007      | 2008*     | 2008 %    |         |
|--|------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
|  |            |           |           |           |           |           | 2004      | 2007    |
| Sausages                               | Tons       | 1554.3    | 1866.5    | 3370.6    | 5364.1    | 872.2     | 5.6 times | 160     |
| Fruit juices                           | Tons       | ...       | ...       | 2835.0    | 8920.2    | 4275.8    |           | 48      |
| Canned vegetables                      | Tons       | ...       | ...       | ...       | 231.7     | ...       |           |         |
| Canned fruits (including citrus)       | Tons       | 1098.2    | 1347.7    | 439.8     | 1023.0    | ...       |           |         |
| Processed nuts                         | Tons       | 957.2     | 3932.9    | 6752.9    | 6652.6    | 2695.5    | 2.8 times | 40      |
| Vegetable oils                         | Tons       | 106.3     | 104.9     | ...       | 1972.3    | 3966.4    | 37 times  | 2 times |
| Margarine and similar products         | Tons       | ...       | ...       | ...       |           |           |           |         |
| Butter (domestic production)           | Tons       | ...       | ...       | 1355.7    | 1222.3    |           |           |         |
| Packed butter (purchased raw material) | Tons       | 232.7     | 421.2     | 172.8     | 280.0     | 28        | 12        | 10      |
| Cheese                                 | Tons       | 63.1      | 36.7      | 47.1      | 136.4     | 171.1     | 2.7 times | 125     |
| Yoghurt, sour milk and cream products  | Tons       | 1030.7    | 1463.6    | 1501.5    | 3034.5    | 4256.6    | 4 times   | 140     |
| Cottage cheese                         | Tons       | 348.6     | 522.1     | 724.0     | 1115.2    | 1260.5    | 3.6 times | 113     |
| Sour cream                             | Tons       | 1089.3    | 1557.6    | 1939.0    | 2619.0    | 2847.1    | 2.6 times | 109     |
| Ice cream and other grocery ice        | Tons       | 3255.9    | ...       | 3629.6    | 4088.2    | 3369.9    | 103       | 82      |
| Wheat flour                            | Tons       | 140,688.0 | 195,754.1 | 307,454.3 | 361,223.3 | 245,150.9 | 174       | 68      |
| Maize flour                            | Tons       | ...       | ...       | —         | 97.1      | 119.8     |           | 124     |
| Bran, screen fines                     | Tons       | 46,842.9  | 67,928    | 99,234.7  | 111,352.3 | 77,924.0  | 166       | 70      |

|  |         |           |          |           |           |          |           |           |
|--|---------|-----------|----------|-----------|-----------|----------|-----------|-----------|
| <b>and other corn processing reminder</b>                        |         |           | .0       |           |           |          |           |           |
| <b>Bread and bakery</b>  | Tons    | 100,126.2 | 92,937.6 | 83,898.7  | 82,442.8  | 60,731.7 | 61        | 74        |
| <b>Pastry</b>  | Tons    | 272.4     | 331.1    | 564.4     | 815.9     | 1,566.1  | 5.7 times | 190       |
| <b>Sugar</b>   | Tons    | ...       | ...      | 122,425.2 | 133,864.0 | 71,605.4 |           | 53        |
| <b>Confectionery</b>   | Tons    | 287.1     | 348.2    | 91.1      | 68.7      | 168.0    | 58        | 2.4 times |
| <b>Macaroni</b>  | Tons    | 746.9     | 578.1    | 774.8     | 993.2     | 2,006.6  | 2.7 times | 2 times   |
| <b>Coffee, caffeine free or roasted</b>                          | Tons    | 483.2     | 758.0    | 1203.8    | 795.6     | 495.5    | 66        | 62        |
| <b>Tea</b>   | Tons    | 3,373.8   | 2,477.7  | 3,481.6   | 1,888.2   | 2,256.0  | 67        | 119       |
| <b>Vinegar</b>   | Th. DaL |           |          |           |           |          |           |           |
| <b>Mayonnaise</b>  | Tons    | ...       | ...      | ...       | 333.9     | 575.3    |           | 170       |
| <b>Mustard</b>   | Tons    |           |          |           |           |          |           |           |
| <b>Alcoholic beverages</b>                                       | Th. DaL | 425.3     | 577.7    | 776.5     | 667.6     | 783.0    | 184       | 117       |
| <b>Brandy (cognac)</b>   | Th. DaL | 193.0     | 226.6    | 151.6     | 86.7      | 175.6    | 91        | 2 times   |
| <b>Spirits</b>   | Th. DaL | ...       | ...      | 370.5     | 258.9     |          |           |           |
| <b>Sparkling wine (Champaign)</b>                                | Th. DaL | ...       | ...      | ...       | 162.2     | ...      |           |           |
| <b>Wine and wine materials, natural (without sparkling wine)</b> | Th. DaL | 2,620.2   | 3,906.0  | 2,117.8   | 1,437.9   | 1,118.9  | 43        | 78        |
| <b>Beer</b>  | Th. DaL | 4,761.5   | 5,863.7  | 7,337.4   | 7,086.9   | 5,241.3  | 110       | 74        |
| <b>Mineral water</b>   | Th. DaL | 8,176.0   | 11,300.4 | 7,823.7   | ...       | 11,577.4 | 142       |           |
| <b>Soft drinks</b>   | Th. DaL | 9,179.7   | 12,499.6 | 16,437.4  | 18,277.4  | 14,065.8 | 153       | 77        |
| <b>Bottled water</b>   | Th. DaL | 1,349.9   | 1,712.7  | 1,342.5   | 1,434.7   | 1,879.3  | 139       | 131       |
| <b>Tobacco goods</b>   | Mln ps  | 2,808.2   | 1,820.4  | 3,791.3   | 4,873.9   | 5,156.0  | 183       | 106       |

Source: The National Statistics office of Georgia

Food production table shows that in 2008, as compared to 2007, juice production declined by 52%, sugar – by 47%, bread and bakery – by 26%, beer – by 25%, wine – by 22%, wealth flour – by 18%. Presumably, wheat flour production decrease is a result of reduction not only the local crops, but also the imported wheat amount.

In the same time, as compared both to 2004 and 2007 years, production of vegetable oils, macaroni, sausages, cottage cheese and sour cream substantially increased.

Table 3.5. Officially registered food imports and exports

|                                       | 2005                    | 2006  | 2007  | 2008  | 2005                  | 2006 | 2007  | 2008  |
|---------------------------------------|-------------------------|-------|-------|-------|-----------------------|------|-------|-------|
|                                       | Imports (Thousand Tons) |       |       |       | Imports (million USD) |      |       |       |
| <b>Wheat</b>                          | 319.4                   | 580.6 | 559.9 | 338.8 | 45.1                  | 99.1 | 139.2 | 108.9 |
| <b>Wheat flour</b>                    | 203.3                   | 110.4 | 126.6 | 163.7 | 45.3                  | 29.7 | 45.9  | 74.5  |
| <b>Potato</b>                         | 5.1                     | 23.8  | 52.4  | 32.3  | 1.0                   | 4.3  | 12.2  | 6.0   |
| <b>Rice</b>                           | 8.0                     | 11.9  | 13.1  | 8.6   | 1.8                   | 3.4  | 5.5   | 5.1   |
| <b>Sugar</b>                          | 300.9                   | 191.2 | 252.8 | 158.0 | 78.2                  | 65.6 | 90.5  | 66.0  |
| <b>Meat (except poultry)</b>          | 9.0                     | 15.9  | 17.1  | 18.6  | 7.3                   | 19.5 | 24.1  | 33.5  |
| <b>Poultry</b>                        | 18.6                    | 15.4  | 26.9  | 36.0  | 13.8                  | 22.2 | 36.3  | 44.8  |
| <b>Fish (including canned)</b>        | 14.9                    | 18.7  | 20.9  | 22.6  | 11.6                  | 26.9 | 33.9  | 38.2  |
| <b>Concentrated milk, milk powder</b> | 8.7                     | 7.4   | 6.8   | 6.2   | 11.6                  | 11.5 | 14.7  | 14.9  |
| <b>Butter</b>                         | 5.4                     | 5.7   | 3.0   | 1.6   | 7.7                   | 10.3 | 7.1   | 6.5   |
| <b>Eggs (million pieces)</b>          | 86.2                    | 44.6  | 32.8  | 22.1  | 4.3                   | 4.2  | 3.0   | 2.6   |
| <b>Vegetable oil</b>                  | 27.6                    | 29.3  | 28.2  | 28.7  | 22.9                  | 24.2 | 30.8  | 48.7  |
| <b>Margarine</b>                      | 11.2                    | 12.3  | 12.5  | 13.0  | 6.5                   | 9.6  | 11.7  | 16.2  |
| <b>Vegetables</b>                     | 25.5                    | 74.5  | 109.4 | 89.9  | 4.5                   | 17.9 | 32.9  | 23.7  |
| <b>Fruit</b>                          | 12.4                    | 20.8  | 22.8  | 24.3  | 4.5                   | 8.6  | 12.5  | 12.9  |

Source: The National Statistics office of Georgia

|                      | 2005                    | 2006 | 2007 | 2008 | 2005                  | 2006 | 2007 | 2008 |
|----------------------|-------------------------|------|------|------|-----------------------|------|------|------|
|                      | Exports (Thousand Tons) |      |      |      | Exports (million USD) |      |      |      |
| <b>Wheat</b>         | 36.7                    | 38.5 | 26.7 | 9.3  | 5.1                   | 6.6  | 6.9  | 3.2  |
| <b>Sugar</b>         | 91.6                    | 57.0 | 68.8 | 15.2 | 29.7                  | 18.8 | 28.9 | 7.8  |
| <b>Vegetable oil</b> | 0.0                     | 0.1  | 1.1  | 0.8  | 0.0                   | 0.0  | 1.4  | 1.3  |

|                                     |       |      |      |      |      |      |      |      |
|-------------------------------------|-------|------|------|------|------|------|------|------|
| <b>Vegetables</b>                   | 3.0   | 4.0  | 1.8  | 5.3  | 1.1  | 1.2  | 0.9  | 1.4  |
| <b>Fruit</b>                        | 47.7  | 40.6 | 60.9 | 60.1 | 76.9 | 61.7 | 72.2 | 43.5 |
| <b>Mineral water</b>                | 119.5 | 68.6 | 58.6 | 63.1 | 32.5 | 24.0 | 25.4 | 31.0 |
| <b>Soft drinks (million litres)</b> | 66.0  | 71.4 | 73.2 | 15.4 | 20.4 | 23.0 | 29.4 | 7.9  |
| <b>Wine (million litres)</b>        | 41.7  | 15.2 | 9.7  | 11.3 | 81.8 | 41.9 | 30.9 | 40.2 |

Source: The National Statistics Office of Georgia

Thus, drastic decrease in local food production during recent years led to more than 50% imported food products on the whole food market nowadays. In 2008 the import of food and agricultural products made up \$942 million, having exceeded the 2005 position by \$350 million.

It is worth to mention, that CIS countries share formed 59% of Georgia foreign trade of food and agricultural products in 2008. Ukraine formed 46% of trade with CIS countries, Russia – 23%, Azerbaijan – 11%, Kazakhstan – 8%.

In regard to imported food in 2008, the wheat import reduced by 39% as compared to 2007, wheat flour import increased by 29%, as well as meat import – by 24%. This is a result of production decrease of mentioned products in the country. Import of concentrated milk, milk powder and eggs reduced, because of increase in local production. Vegetable oil import remained the same, but sugar and potato import reduced substantially – by 38% each.

Access to food implies that all households and all individuals in those households have enough resources to obtain adequate and safe food to lead a healthy life. Income, own production and transfers are determinants of access, as well as food prices.

Food products form 70% of Consumer Basket in Georgia, 30% are other commodity goods and services. These are typical characteristics of low income economy.

In 2004-2008 income from employment has the highest share in the per capita average monthly income, as at the level of the whole country, as in urban and rural areas. It should be noted that in 2004 the shares of the non-cash income (i.e. self-production of goods, mostly, food) and the income from employment were quite close.

In 2008 average monthly cash and non-cash income of households compounded 541.8 million GEL, of which 381.5 million GEL was cash inflows and transfers. Out of this amount 58%, i.e. 220.8 million GEL was obtained from employment and self-employment

Table 3.6. Average monthly per capita income and other inflows (property disposal, borrowing)

| <b>Georgia</b>                                   | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
|--|-------------|-------------|-------------|-------------|-------------|
| Income and other inflows in current prices (GEL) | 88          | 92          | 103         | 115         | 146         |
| Of which: Income                                 | 75          | 81          | 90          | 101         | 126         |
| Other cash inflows                               | 13          | 11          | 13          | 14          | 20          |
| Income structure (%)                             | 100         | 100         | 100         | 100         | 100         |
| From employment                                  | 37          | 42          | 44          | 47          | 47          |
| From selling agricultural production             | 12          | 11          | 10          | 7           | 7           |
| Transfers  | 18          | 20          | 22          | 25          | 27          |
| Property income                                  | 1           | 1           | 0           | 1           | 1           |
| Non-cash income                                  | 32          | 26          | 24          | 20          | 19          |
| <b>Urban areas</b>                               |             |             |             |             |             |
| Income and other inflows in current prices (GEL) | 82          | 95          | 106         | 125         | 165         |
| Of which: Income                                 | 68          | 81          | 92          | 110         | 141         |
| Other cash inflows                               | 14          | 14          | 14          | 15          | 24          |
| Income structure (%)                             | 100         | 100         | 100         | 100         | 100         |
| From employment                                  | 61          | 63          | 65          | 66          | 66          |
| From selling agricultural production             | 2           | 1           | 1           | 0           | 1           |
| Transfers  | 24          | 25          | 27          | 27          | 27          |
| Property income                                  | 2           | 2           | 1           | 2           | 1           |
| Non-cash income                                  | 12          | 9           | 7           | 5           | 5           |
| <b>Rural areas</b>                               |             |             |             |             |             |
| Income and other inflows in current prices (GEL) | 87          | 90          | 100         | 105         | 128         |
| Of which: Income                                 | 78          | 81          | 88          | 92          | 112         |
| Other cash inflows                               | 9           | 9           | 12          | 13          | 16          |
| Income structure (%)                             | 100         | 100         | 100         | 100         | 100         |
| From employment                                  | 18          | 21          | 22          | 24          | 23          |
| From selling agricultural production             | 21          | 20          | 18          | 16          | 14          |
| Transfers  | 13          | 16          | 18          | 22          | 28          |
| Property income                                  | 0           | 0           | 0           | 0           | 0           |
| Non-cash income                                  | 48          | 43          | 41          | 38          | 35          |



Consumer (food) prices' index (CPI) measures average changes of prices, which are paid for fixed consumer basket of goods and services. CPI is the only indicator which calculates inflation rate in the country.

In 2008 Consumer prices' average annual index increased with 10% as compared to 2007. Also food and soft drinks prices' average annual index increased with 12%. It should be noted significant growth of prices on bread – 22%, wheat flour – 30%, sunflower oil – 45%, milk – 26%, cheese – 19%, pork – 49% in 2008, as compared to 2007. Prices declined on maize flour and potato, as a result of good yield of these products in 2007.

In 2008 bread price was higher than country average index in Batumi by 8%, in Kutaisi and Gori – 2% each, and the wheat flour price was higher in Tbilisi by 11%.

Table 3.7. Average food prices in Georgia and 5 cities (GEL/kg x 100, retail price)

| Product         | Georgia |      |      |      |      |      | Tbilisi |      |      |      |      |      |
|-----------------|---------|------|------|------|------|------|---------|------|------|------|------|------|
|                 | 2003    | 2004 | 2005 | 2006 | 2007 | 2008 | 2003    | 2004 | 2005 | 2006 | 2007 | 2008 |
| Bread           | 79      | 95   | 95   | 96   | 109  | 133  | 85      | 98   | 96   | 95   | 106  | 127  |
| Potatoes        | 57      | 49   | 54   | 76   | 89   | 86   | 59      | 57   | 61   | 78   | 92   | 90   |
| Haricot Beans   | 166     | 153  | 175  | 278  | 315  | 311  | 162     | 162  | 187  | 301  | 338  | 315  |
| Wheat flour     | 83      | 106  | 99   | 98   | 117  | 152  | 96      | 110  | 112  | 107  | 120  | 150  |
| Maize flour     | 79      | 78   | 95   | 105  | 168  | 159  | 81      | 89   | 116  | 125  | 187  | 169  |
| Beef            | 503     | 514  | 586  | 692  | 682  | 748  | 508     | 546  | 632  | 723  | 716  | 814  |
| Pork            | 506     | 513  | 646  | 724  | 660  | 982  | 550     | 550  | 699  | 752  | 706  | 1023 |
| Chicken         | 480     | 484  | 489  | 659  | 659  | 707  | 472     | 478  | 507  | 623  | 600  | 694  |
| Sunflower oil   | 243     | 242  | 244  | 246  | 290  | 420  | 249     | 258  | 259  | 246  | 292  | 448  |
| Cheese          | 329     | 404  | 419  | 485  | 525  | 627  | 355     | 432  | 461  | 528  | 595  | 722  |
| Milk            | 105     | 111  | 112  | 114  | 140  | 177  | 128     | 138  | 153  | 122  | 128  | 174  |
| Eggs (10 units) | 164     | 187  | 205  | 285  | 249  | 280  | 162     | 187  | 208  | 278  | 238  | 281  |
| Sugar           | 94      | 94   | 100  | 138  | 124  | 118  | 97      | 102  | 109  | 147  | 132  | 123  |
| Product         | Kutaisi |      |      |      |      |      | Batumi  |      |      |      |      |      |
|                 | 2003    | 2004 | 2005 | 2006 | 2007 | 2008 | 2003    | 2004 | 2005 | 2006 | 2007 | 2008 |
| Bread           | 73      | 84   | 84   | 85   | 106  | 135  | 79      | 96   | 96   | 100  | 114  | 144  |
| Potatoes        | 59      | 45   | 51   | 76   | 93   | 90   | 52      | 45   | 54   | 73   | 83   | 80   |
| Haricot Beans   | 171     | 139  | 148  | 269  | 329  | 298  | 172     | 151  | 188  | 277  | 274  | 329  |
| Wheat flour     | 80      | 107  | 106  | 98   | 118  | 155  | 75      | 96   | 85   | 93   | 101  | 140  |
| Maize flour     | 63      | 58   | 74   | 88   | 142  | 120  | 82      | 74   | 86   | 82   | 116  | 116  |
| Beef            | 492     | 492  | 592  | 714  | 698  | 749  | 516     | 503  | 541  | 685  | 675  | 718  |
| Pork            | 450     | 450  | 558  | 647  | 611  | 822  | 489     | 502  | 605  | 702  | 571  | 712  |
| Chicken         | 450     | 454  | 475  | 648  | 638  | 720  | 522     | 453  | 421  | 702  | 758  | 752  |
| Sunflower oil   | 258     | 235  | 231  | 251  | 295  | 409  | 232     | 234  | 229  | 224  | 271  | 392  |
| Cheese          | 311     | 358  | 395  | 454  | 500  | 564  | 370     | 441  | 450  | 525  | 566  | 627  |

|                 |               |             |             |             |             |             |             |             |             |             |             |             |
|-----------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Milk            | 100           | 100         | 102         | 137         | 192         | 244         | 100         | 102         | 100         | 100         | 106         | 128         |
| Eggs (10 units) | 158           | 180         | 195         | 297         | 253         | 279         | 178         | 200         | 209         | 294         | 251         | 269         |
| Sugar           | 91            | 94          | 98          | 136         | 122         | 118         | 94          | 88          | 97          | 132         | 122         | 113         |
| <b>Product</b>  | <b>Telavi</b> |             |             |             |             |             | <b>Gori</b> |             |             |             |             |             |
|                 | <b>2003</b>   | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
| Bread           | 70            | 99          | 100         | 100         | 111         | 126         | 78          | 97          | 97          | 94          | 108         | 135         |
| Potatoes        | 59            | 54          | 52          | 85          | 89          | 86          | 54          | 50          | 46          | 70          | 87          | 75          |
| Haricot Beans   | 157           | 174         | 177         | 283         | 321         | 343         | 151         | 130         | 169         | 243         | 295         | 268         |
| Wheat flour     | 74            | 95          | 89          | 93          | 120         | 153         | 87          | 126         | 108         | 102         | 121         | 161         |
| Maize flour     | 85            | 86          | 93          | 116         | 194         | 185         | 105         | 100         | 118         | 118         | 198         | 199         |
| Beef            | 486           | 525         | 613         | 669         | 685         | 744         | 508         | 479         | 538         | 637         | 630         | 676         |
| Pork            | 506           | 542         | 735         | 776         | 731         | 1094        | 550         | 527         | 669         | 742         | 667         | 1036        |
| Chicken         | 475           | 599         | 555         | 848         | 805         | 763         | 434         | 453         | 486         | 576         | 584         | 635         |
| Sunflower oil   | 243           | 249         | 272         | 262         | 297         | 423         | 223         | 226         | 224         | 247         | 291         | 416         |
| Cheese          | 312           | 363         | 363         | 413         | 479         | 593         | 290         | 361         | 348         | 396         | 433         | 555         |
| Milk            | 77            | 94          | 93          | 108         | 160         | 184         | 91          | 90          | 95          | 102         | 112         | 121         |
| Eggs (10 units) | 155           | 178         | 210         | 277         | 258         | 287         | 164         | 186         | 203         | 283         | 247         | 282         |
| Sugar           | 91            | 88          | 96          | 139         | 120         | 118         | 99          | 93          | 97          | 136         | 121         | 118         |

Source: The National Statistics Office of Georgia

Table 3.8. Average monthly per capita consumption expenditure

| <b>Georgia</b>                               | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
|--|-------------|-------------|-------------|-------------|-------------|
| Expenditure in current prices (GEL)          | 88          | 92          | 99          | 108         | 129         |
| Consumption expenditures' compound – percent | 100         | 100         | 100         | 100         | 100         |
| Food   | 63          | 59          | 59          | 55          | 53          |
| Other (nonfood) goods                        | 10          | 10          | 9           | 10          | 9           |
| Healthcare                                   | 5           | 6           | 6           | 7           | 8           |
| Education, culture and recreation            | 2           | 2           | 3           | 3           | 3           |
| Other services                               | 20          | 23          | 23          | 25          | 27          |
| <b>Urban areas</b>                           |             |             |             |             |             |
| Expenditure in current prices (GEL)          | 90          | 98          | 102         | 118         | 114         |
| Consumption expenditures' compound – percent | 100         | 100         | 100         | 100         | 100         |
| Food   | 53          | 49          | 49          | 48          | 46          |
| Other (nonfood) goods                        | 12          | 12          | 11          | 9           | 8           |
| Healthcare                                   | 5           | 6           | 7           | 8           | 9           |
| Education, culture and recreation            | 3           | 3           | 3           | 5           | 4           |
| Other services                               | 27          | 30          | 29          | 31          | 33          |
| <b>Rural areas</b>                           |             |             |             |             |             |
| Expenditure in current prices (GEL)          | 86          | 85          | 96          | 98          | 117         |
| Consumption expenditures' compound – percent | 100         | 100         | 100         | 100         | 100         |
| Food   | 73          | 70          | 69          | 65          | 62          |
| Other (nonfood) goods                        | 8           | 8           | 8           | 11          | 10          |
| Healthcare                                   | 4           | 5           | 5           | 6           | 7           |
| Education, culture and recreation            | 1           | 1           | 2           | 2           | 1           |
| Other services                               | 14          | 16          | 16          | 17          | 19          |

Source: The National Statistics Office of Georgia

As the table above shows, per capita average monthly expenditure versus income compounds 88% in 2008, 94% in 2007, 96% in 2006, 100% in 2005 and 2004.

Food expenditure share remains high and in 2008 was 53%, although it decreases as compared to 2007 both in urban and rural areas, with healthcare expenditure increase simultaneously. Expenditures on education are still very low.

In the given period highest percentage in food expenditure structure pertains to bread and bakery and cereals – 22%, and then goes milk and milk products – 19%, meat and meat products – 13%, vegetables – 10%, vegetable oils, sugar and potato – 5% each.

As compared to country average index, expenditures are high in Ajara AR – for bread and cereals – 29%, for milk and milk products – 25%, in Guria expenditures for milk and milk

products are 23%, in Samegrelo-zemo Svaneti and qvemo Kartli for purchasing the same products – 27% and 24% respectively, in qvemo Kartli for meat and meat products – 16%.

Table 3.9. Percentage of food expenditure in consumption expenditure

| Household Characteristics | 2003      | 2004      | 2005      | 2006      | 2007      | 2008      |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Highlands/Lowlands</b> |           |           |           |           |           |           |
| Highlands                 | 74        | 75        | 73        | 71        | 69        | 69        |
| Lowlands                  | 61        | 62        | 57        | 58        | 57        | 56        |
| <b>Georgia</b>            | <b>62</b> | <b>63</b> | <b>59</b> | <b>59</b> | <b>55</b> | <b>53</b> |
| <b>Urban /Rural</b>       |           |           |           |           |           |           |
| Big cities                | 50        | 51        | 46        | 47        | 47        | 46        |
| Small towns               | 62        | 64        | 60        | 59        | 57        | 57        |
| Rural                     | 72        | 73        | 70        | 69        | 70        | 69        |
| <b>Georgia</b>            | <b>62</b> | <b>63</b> | <b>59</b> | <b>59</b> | <b>55</b> | <b>53</b> |
| <b>Quintile Groups</b>    |           |           |           |           |           |           |
| I quintile                | 68        | 71        | 68        | 66        | 69        | 67        |
| II quintile               | 68        | 69        | 68        | 65        | 67        | 65        |
| III quintile              | 66        | 67        | 65        | 63        | 66        | 63        |
| IV quintile               | 63        | 65        | 63        | 63        | 63        | 60        |
| <b>Georgia</b>            | <b>62</b> | <b>63</b> | <b>59</b> | <b>59</b> | <b>55</b> | <b>53</b> |
| <b>Number of Children</b> |           |           |           |           |           |           |
| Childless                 | 63        | 65        | 60        | 60        | 59        | 59        |
| One child                 | 59        | 60        | 55        | 56        | 54        | 53        |
| Two children              | 61        | 61        | 59        | 59        | 60        | 57        |
| Three or more children    | 67        | 69        | 64        | 61        | 60        | 61        |
| <b>Georgia</b>            | <b>62</b> | <b>63</b> | <b>59</b> | <b>59</b> | <b>55</b> | <b>53</b> |

Source: The National Statistics Office of Georgia

As Table 3.9. shows, the food expenditure decreased in the country as compared to previous years, but remains still high in rural area and in vulnerable groups of population. High

share of food expenditure out of total income indicates the low living standard of country population.

Food utilization refers to the actual food consumption (food intake), the ability of the human body to consume and metabolize food, nutritious and safe diets, and adequate biological and social environment and proper health care to avoid diseases to ensure adequate utilization.

Table 3.10. Median "Calorie Intake" of population (kcal/day/per capita)

| <b>Household Characteristics</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Highlands                        | 2780        | 2650        | 2660        | 2440        | 2270        | 2810        |
| Lowlands                         | 2370        | 2430        | 2370        | 2130        | 2120        | 2080        |
| <b>Georgia</b>                   | <b>2390</b> | <b>2450</b> | <b>2390</b> | <b>2150</b> | <b>2130</b> | <b>2110</b> |
| Big cities                       | 2290        | 2300        | 2240        | 1930        | 1980        | 1980        |
| Small towns                      | 2340        | 2300        | 2300        | 2180        | 2200        | 2190        |
| Rural                            | 2530        | 2680        | 2640        | 2460        | 2370        | 2340        |
| <b>Georgia</b>                   | <b>2390</b> | <b>2450</b> | <b>2390</b> | <b>2150</b> | <b>2130</b> | <b>2110</b> |
| Quintile Groups:                 |             |             |             |             |             |             |
| I quintile                       | 1280        | 1320        | 1270        | 1200        | 1140        | 760         |
| II quintile                      | 1990        | 2030        | 1960        | 1810        | 1760        | 1330        |
| III quintile                     | 2460        | 2510        | 2500        | 2160        | 2240        | 1740        |
| IV quintile                      | 3000        | 3160        | 3200        | 2730        | 2710        | 2220        |
| V quintile                       | 3900        | 3890        | 3550        | 3550        | 3280        | 3200        |
| <b>Georgia</b>                   | <b>2390</b> | <b>2450</b> | <b>2390</b> | <b>2150</b> | <b>2130</b> | <b>2110</b> |
| Childless family                 | 2840        | 2890        | 2800        | 2510        | 2490        | 2530        |
| One child family                 | 2210        | 2300        | 2220        | 1930        | 1990        | 1950        |
| Two children family              | 2160        | 2170        | 2170        | 1930        | 1870        | 1810        |
| Three or more children family    | 1910        | 1890        | 1940        | 1650        | 1610        | 1770        |
| <b>Georgia</b>                   | <b>2390</b> | <b>2450</b> | <b>2390</b> | <b>2150</b> | <b>2130</b> | <b>2110</b> |

Source: The National Statistics Office of Georgia

This table shows that in 2008 the median “calorie intake” in both urban and rural areas remained at approximately the same level as in 2007. In rural areas the “calorie intake” is higher than in urban areas, showing better access to food in rural areas.

In Georgia presence of a child in a household is still a serious risk factor: households with two or more children are vulnerable to both poverty and food insecurity.

Quintile groups mean dividing into 20% parts any set of data (e.g. income, expenses and so on). The first quintile group is the poorest; the fifth one is the richest. In the poorest group of population median “calorie intake” level decreases continually, though this trend is observed to some extent in the richest group as well.

According to table 3.1.11. In the diet composition of country population bread and cereals share still remains high – 43%, in Adjara AR – 51%, in Samegrelo and zemo Svaneti – 46%, in Guria and Samtskhe-Javakheti – 45% each, which indicates that most population avoids hunger by utilization of bread products and cereals.

Table 3.11. Diet composition of population

| Region                      | "Calorie Intake" % |             |             |             |             | Food Expenditure % |             |             |             |             |
|-----------------------------|--------------------|-------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------------|-------------|
|                             | 2004               | 2005        | 2006        | 2007        | 2008        | 2004               | 2005        | 2006        | 2007        | 2008        |
| <b>Georgia</b>              | <b>2004</b>        | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2004</b>        | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
| Bread and Cereals           | 44                 | 44          | 47          | 45          | 43          | 22                 | 21          | 20          | 22          | 22          |
| Potatoes                    | 3                  | 3           | 3           | 3           | 3           | 4                  | 4           | 5           | 6           | 5           |
| Meat                        | 3                  | 3           | 3           | 3           | 3           | 11                 | 12          | 14          | 13          | 13          |
| Vegetables                  | 2                  | 2           | 2           | 2           | 2           | 10                 | 10          | 11          | 11          | 10          |
| Milk and Dairy Products     | 11                 | 11          | 12          | 12          | 11          | 19                 | 21          | 21          | 21          | 19          |
| Vegetable oil and Margarine | 8                  | 8           | 9           | 9           | 9           | 3                  | 4           | 3           | 4           | 5           |
| Sugar                       | 9                  | 9           | 9           | 9           | 9           | 5                  | 5           | 5           | 5           | 5           |
| Other                       | 21                 | 20          | 15          | 18          | 20          | 25                 | 23          | 21          | 19          | 21          |
| <b>Total</b>                | <b>100</b>         | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>         | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  |
|                             | <b>Ajara AR</b>    |             |             |             |             |                    |             |             |             |             |
| Bread and Cereals           | 46                 | 51          | 58          | 57          | 51          | 26                 | 27          | 27          | 30          | 29          |
| Potatoes                    | 4                  | 3           | 3           | 3           | 3           | 5                  | 4           | 5           | 6           | 5           |
| Meat                        | 2                  | 1           | 2           | 2           | 6           | 9                  | 8           | 9           | 9           | 11          |
| Vegetables                  | 2                  | 1           | 1           | 1           | 1           | 9                  | 8           | 10          | 9           | 8           |
| Milk and Dairy Products     | 13                 | 13          | 11          | 10          | 12          | 26                 | 30          | 24          | 23          | 25          |
| Vegetable oil and Margarine | 14                 | 9           | 10          | 10          | 10          | 4                  | 5           | 5           | 5           | 7           |
| Sugar                       | 10                 | 11          | 10          | 10          | 8           | 5                  | 6           | 7           | 6           | 5           |
| Other                       | 10                 | 11          | 5           | 7           | 8           | 15                 | 12          | 12          | 12          | 12          |
| <b>Total</b>                | <b>100</b>         | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>         | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  |
|                             | <b>Guria</b>       |             |             |             |             |                    |             |             |             |             |
| Bread and Cereals           | 44                 | 42          | 49          | 44          | 45          | 20                 | 18          | 20          | 20          | 22          |
| Potatoes                    | 2                  | 2           | 3           | 3           | 2           | 3                  | 3           | 4           | 5           | 4           |

|                             |                                   |            |            |            |            |            |            |            |            |            |
|-----------------------------|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Meat                        | 2                                 | 3          | 3          | 3          | 2          | 9          | 11         | 14         | 11         | 9          |
| Vegetables                  | 2                                 | 2          | 1          | 2          | 2          | 8          | 9          | 9          | 10         | 10         |
| Milk and Dairy Products     | 13                                | 14         | 13         | 15         | 13         | 22         | 25         | 24         | 28         | 23         |
| Vegetable oil and Margarine | 7                                 | 8          | 7          | 8          | 7          | 3          | 3          | 3          | 3          | 4          |
| Sugar                       | 9                                 | 9          | 8          | 9          | 9          | 6          | 5          | 5          | 5          | 5          |
| Other                       | 22                                | 20         | 16         | 18         | 21         | 29         | 25         | 21         | 17         | 24         |
| <b>Total</b>                | <b>100</b>                        | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Tbilisi</b>                    |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 41                                | 41         | 45         | 41         | 40         | 25         | 25         | 24         | 24         | 24         |
| Potatoes                    | 4                                 | 4          | 4          | 4          | 4          | 5          | 5          | 6          | 6          | 5          |
| Meat                        | 4                                 | 4          | 4          | 4          | 5          | 17         | 17         | 17         | 16         | 18         |
| Vegetables                  | 2                                 | 2          | 3          | 2          | 2          | 11         | 11         | 12         | 11         | 10         |
| Milk and Dairy Products     | 9                                 | 9          | 9          | 9          | 9          | 14         | 13         | 13         | 13         | 13         |
| Vegetable oil and Margarine | 10                                | 10         | 12         | 12         | 11         | 5          | 5          | 4          | 5          | 6          |
| Sugar                       | 10                                | 10         | 9          | 9          | 9          | 5          | 5          | 5          | 5          | 4          |
| Other                       | 20                                | 20         | 15         | 20         | 21         | 20         | 20         | 19         | 20         | 19         |
| <b>Total</b>                | <b>100</b>                        | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Imereti and Racha-Lechkumi</b> |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 42                                | 43         | 43         | 43         | 42         | 19         | 19         | 17         | 20         | 20         |
| Potatoes                    | 2                                 | 2          | 3          | 3          | 2          | 3          | 3          | 5          | 5          | 3          |
| Meat                        | 2                                 | 3          | 3          | 3          | 3          | 10         | 11         | 14         | 11         | 11         |
| Vegetables                  | 2                                 | 2          | 2          | 2          | 2          | 9          | 10         | 9          | 10         | 10         |
| Milk and Dairy Products     | 12                                | 12         | 16         | 13         | 12         | 20         | 21         | 22         | 24         | 21         |
| Vegetable oil and Margarine | 6                                 | 7          | 8          | 9          | 8          | 3          | 3          | 3          | 4          | 4          |
| Sugar                       | 9                                 | 9          | 9          | 8          | 8          | 5          | 5          | 5          | 4          | 5          |
| Other                       | 24                                | 22         | 17         | 20         | 22         | 32         | 28         | 26         | 22         | 26         |
| <b>Total</b>                | <b>100</b>                        | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |

**Diet composition of population (continued)**

| Region                      | "Calorie Intake" % |      |      |      |      | Food Expenditure % |      |      |      |      |
|-----------------------------|--------------------|------|------|------|------|--------------------|------|------|------|------|
|                             | 2004               | 2005 | 2006 | 2007 | 2008 | 2004               | 2005 | 2006 | 2007 | 2008 |
| <b>Kakheti</b>              |                    |      |      |      |      |                    |      |      |      |      |
| Bread and Cereals           | 48                 | 46   | 46   | 46   | 40   | 19                 | 19   | 17   | 20   | 17   |
| Potatoes                    | 3                  | 3    | 4    | 4    | 4    | 3                  | 3    | 5    | 7    | 5    |
| Meat                        | 4                  | 3    | 3    | 3    | 3    | 10                 | 11   | 14   | 13   | 12   |
| Vegetables                  | 2                  | 3    | 2    | 3    | 3    | 9                  | 10   | 9    | 13   | 12   |
| Milk and Dairy Products     | 7                  | 8    | 8    | 8    | 8    | 20                 | 21   | 22   | 16   | 14   |
| Vegetable oil and Margarine | 7                  | 8    | 9    | 10   | 9    | 3                  | 3    | 3    | 4    | 4    |

|                             |   |            |            |            |            |            |            |            |            |            |
|-----------------------------|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Sugar                       | 8   | 9          | 9          | 9          | 9          | 5          | 5          | 5          | 5          | 5          |
| Other                       | 20  | 20         | 18         | 19         | 24         | 32         | 28         | 26         | 22         | 30         |
| <b>Total</b>                | <b>100</b>                                | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Mtskheta-Mtianeti and Shida Kartli</b> |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 43  | 44         | 46         | 45         | 46         | 21         | 20         | 19         | 21         | 24         |
| Potatoes                    | 2   | 3          | 3          | 3          | 3          | 3          | 3          | 4          | 5          | 4          |
| Meat                        | 2   | 3          | 3          | 2          | 2          | 8          | 11         | 11         | 9          | 9          |
| Vegetables                  | 2   | 2          | 2          | 2          | 2          | 11         | 12         | 13         | 11         | 10         |
| Milk and Dairy Products     | 10  | 12         | 13         | 12         | 11         | 18         | 21         | 21         | 23         | 20         |
| Vegetable oil and Margarine | 9   | 9          | 10         | 11         | 11         | 4          | 4          | 4          | 5          | 6          |
| Sugar                       | 9   | 9          | 9          | 8          | 8          | 5          | 5          | 5          | 4          | 5          |
| Other                       | 22  | 19         | 15         | 17         | 17         | 30         | 24         | 24         | 22         | 23         |
| <b>Total</b>                | <b>100</b>                                | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Samegrelo &amp; Zemo Svaneti</b>       |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 46  | 46         | 50         | 46         | 46         | 23         | 22         | 21         | 23         | 23         |
| Potatoes                    | 1   | 2          | 2          | 2          | 2          | 2          | 2          | 3          | 4          | 3          |
| Meat                        | 1   | 2          | 2          | 2          | 2          | 9          | 10         | 13         | 10         | 10         |
| Vegetables                  | 2   | 2          | 1          | 2          | 2          | 9          | 9          | 9          | 10         | 9          |
| Milk and Dairy Products     | 13  | 13         | 15         | 14         | 14         | 26         | 28         | 29         | 29         | 27         |
| Vegetable oil and Margarine | 4   | 5          | 6          | 6          | 5          | 2          | 3          | 2          | 2          | 3          |
| Sugar                       | 8   | 9          | 8          | 8          | 9          | 6          | 5          | 5          | 4          | 6          |
| Other                       | 24  | 22         | 16         | 19         | 20         | 24         | 20         | 18         | 17         | 20         |
| <b>Total</b>                | <b>100</b>                                | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Samtskhe-Javakheti</b>                 |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 46  | 46         | 50         | 49         | 45         | 21         | 19         | 19         | 22         | 21         |
| Potatoes                    | 4   | 4          | 5          | 6          | 6          | 5          | 5          | 8          | 10         | 9          |
| Meat                        | 4   | 3          | 4          | 2          | 2          | 14         | 12         | 16         | 10         | 10         |
| Vegetables                  | 2   | 2          | 2          | 2          | 2          | 7          | 10         | 9          | 11         | 9          |
| Milk and Dairy Products     | 13  | 13         | 15         | 13         | 11         | 22         | 23         | 23         | 23         | 21         |
| Vegetable oil and Margarine | 5   | 6          | 6          | 7          | 7          | 2          | 3          | 2          | 3          | 4          |
| Sugar                       | 9   | 8          | 10         | 10         | 9          | 5          | 4          | 6          | 6          | 6          |
| Other                       | 17  | 17         | 9          | 12         | 18         | 24         | 24         | 18         | 17         | 20         |
| <b>Total</b>                | <b>100</b>                                | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|                             | <b>Kvemo Kartli</b>                       |            |            |            |            |            |            |            |            |            |
| Bread and Cereals           | 43  | 43         | 48         | 42         | 40         | 26         | 24         | 22         | 21         | 22         |
| Potatoes                    | 3   | 3          | 3          | 3          | 4          | 4          | 5          | 6          | 5          | 6          |
| Meat                        | 3   | 3          | 3          | 4          | 4          | 12         | 12         | 13         | 15         | 16         |
| Vegetables                  | 2   | 2          | 2          | 2          | 2          | 8          | 8          | 11         | 10         | 9          |
| Milk and Dairy              | 14  | 14         | 13         | 14         | 13         | 27         | 28         | 24         | 26         | 24         |



|                                |            |            |            |            |            |            |            |            |            |            |
|--------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Products                       |            |            |            |            |            |            |            |            |            |            |
| Vegetable oil<br>and Margarine | 5          | 5          | 6          | 6          | 8          | 2          | 2          | 2          | 3          | 4          |
| Sugar                          | 9          | 8          | 7          | 8          | 9          | 4          | 4          | 4          | 4          | 4          |
| Other                          | 22         | 23         | 17         | 21         | 21         | 16         | 17         | 17         | 15         | 15         |
| <b>Total</b>                   | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b> |

Source: The National Statistics Office of Georgia

Table 3.12. Food security level assessment ratios in Georgia with regional split<sup>1</sup>

|                                | 1997 |      |      | 1998 |      |      | 1999 |      |      | 2000 |      |      | 2001 |      |      | 2002 |      |      |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                | a    | b    | c    | a    | b    | c    | a    | b    | c    | a    | b    | c    | a    | b    | C    | a    | b    | c    |
| <b>Georgia</b>                 | 0.89 | 0.40 | 0.66 | 0.89 | 0.43 | 0.65 | 0.89 | 0.44 | 0.64 | 0.89 | 0.42 | 0.68 | 0.87 | 0.43 | 0.70 | 0.91 | 0.60 | 0.68 |
| Ajara AR                       | 0.90 | 0.39 | 0.67 | 0.90 | 0.43 | 0.64 | 0.90 | 0.44 | 0.63 | 0.90 | 0.40 | 0.67 | 0.89 | 0.42 | 0.71 | 0.90 | 0.61 | 0.67 |
| Imereti                        | 0.91 | 0.41 | 0.65 | 0.91 | 0.42 | 0.63 | 0.91 | 0.45 | 0.63 | 0.91 | 0.42 | 0.66 | 0.87 | 0.41 | 0.72 | 0.92 | 0.59 | 0.67 |
| Samegrelo & Zemo Svaneti       | 0.88 | 0.38 | 0.60 | 0.88 | 0.43 | 0.61 | 0.88 | 0.40 | 0.59 | 0.88 | 0.43 | 0.69 | 0.85 | 0.40 | 0.69 | 0.92 | 0.60 | 0.65 |
| Guria                          | 0.80 | 0.38 | 0.61 | 0.80 | 0.40 | 0.60 | 0.80 | 0.41 | 0.64 | 0.80 | 0.44 | 0.62 | 0.82 | 0.39 | 0.68 | 0.90 | 0.61 | 0.69 |
| Racha-Lechxumi & qvemo Svaneti | 0.87 | 0.40 | 0.59 | 0.87 | 0.39 | 0.66 | 0.87 | 0.42 | 0.60 | 0.87 | 0.39 | 0.69 | 0.82 | 0.41 | 0.70 | 0.93 | 0.58 | 0.63 |
| Shida Kartli                   | 0.90 | 0.38 | 0.61 | 0.90 | 0.40 | 0.60 | 0.90 | 0.43 | 0.60 | 0.90 | 0.40 | 0.65 | 0.88 | 0.43 | 0.71 | 0.93 | 0.58 | 0.63 |
| Mtskheta-Mtianeti              | 0.89 | 0.41 | 0.66 | 0.89 | 0.42 | 0.67 | 0.89 | 0.45 | 0.65 | 0.89 | 0.42 | 0.69 | 0.85 | 0.44 | 0.68 | 0.92 | 0.61 | 0.68 |
| Kakheti                        | 0.80 | 0.42 | 0.63 | 0.80 | 0.39 | 0.64 | 0.80 | 0.41 | 0.64 | 0.80 | 0.39 | 0.63 | 0.89 | 0.41 | 0.70 | 0.94 | 0.58 | 0.68 |
| Qvemo Kartli                   | 0.90 | 0.40 | 0.66 | 0.90 | 0.40 | 0.62 | 0.90 | 0.42 | 0.63 | 0.90 | 0.40 | 0.65 | 0.87 | 0.42 | 0.68 | 0.91 | 0.61 | 0.64 |
| Samtskhe-Javakheti             | 0.88 | 0.40 | 0.65 | 0.90 | 0.40 | 0.64 | 0.88 | 0.43 | 0.63 | 0.88 | 0.41 | 0.65 | 0.89 | 0.42 | 0.71 | 0.90 | 0.61 | 0.63 |

(continued)

|                                | 2003 |      |      | 2004 |      |      | 2005 |      |      | 2006 |      |      | 2007 |      |      | 2008 |      |      |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                | a    | b    | c    | a    | b    | c    | a    | b    | c    | a    | b    | c    | a    | b    | C    | a    | b    | c    |
| <b>Georgia</b>                 | 0.89 | 0.56 | 0.76 | 0.92 | 0.58 | 0.85 | 0.92 | 0.65 | 0.82 | 0.91 | 0.69 | 0.77 | 0.91 | 0.70 | 0.78 | 0.92 | 0.71 | 0.74 |
| Ajara AR                       | 0.90 | 0.55 | 0.77 | 0.90 | 0.59 | 0.86 | 0.90 | 0.67 | 0.80 | 0.90 | 0.70 | 0.71 | 0.90 | 0.72 | 0.75 | 0.90 | 0.71 | 0.69 |
| Imereti                        | 0.91 | 0.57 | 0.76 | 0.91 | 0.60 | 0.85 | 0.91 | 0.65 | 0.80 | 0.91 | 0.71 | 0.74 | 0.91 | 0.74 | 0.78 | 0.92 | 0.69 | 0.76 |
| Samegrelo & Zemo Svaneti       | 0.88 | 0.55 | 0.74 | 0.93 | 0.59 | 0.84 | 0.93 | 0.66 | 0.83 | 0.89 | 0.72 | 0.76 | 0.89 | 0.78 | 0.76 | 0.92 | 0.72 | 0.72 |
| Guria                          | 0.80 | 0.54 | 0.73 | 0.90 | 0.61 | 0.86 | 0.90 | 0.60 | 0.83 | 0.89 | 0.67 | 0.78 | 0.89 | 0.69 | 0.78 | 0.90 | 0.73 | 0.72 |
| Racha-Lechxumi & qvemo Svaneti | 0.87 | 0.58 | 0.79 | 0.91 | 0.57 | 0.87 | 0.91 | 0.69 | 0.81 | 0.87 | 0.64 | 0.77 | 0.87 | 0.68 | 0.74 | 0.93 | 0.72 | 0.72 |
| Shida Kartli                   | 0.90 | 0.54 | 0.75 | 0.89 | 0.55 | 0.80 | 0.89 | 0.65 | 0.82 | 0.91 | 0.68 | 0.74 | 0.91 | 0.70 | 0.78 | 0.93 | 0.69 | 0.70 |
| Mtskheta-                      | 0.89 | 0.60 | 0.79 | 0.90 | 0.59 | 0.83 | 0.90 | 0.68 | 0.84 | 0.90 | 0.64 | 0.75 | 0.90 | 0.69 | 0.74 | 0.92 | 0.70 | 0.71 |

<sup>1</sup> food utilization-a, food access-b, food availability-c, calculation on these indices are shown in the Chapter 4

|                        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Mtianeti               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Kakheti                | 0.80 | 0.58 | 0.73 | 0.89 | 0.57 | 0.83 | 0.89 | 0.62 | 0.83 | 0.91 | 0.68 | 0.79 | 0.91 | 0.72 | 0.78 | 0.94 | 0.71 | 0.73 |
| Qvemo Kartli           | 0.90 | 0.56 | 0.74 | 0.91 | 0.59 | 0.89 | 0.91 | 0.65 | 0.82 | 0.90 | 0.63 | 0.71 | 0.90 | 0.70 | 0.69 | 0.91 | 0.72 | 0.75 |
| Samtskhe-<br>Javakheti | 0.88 | 0.40 | 0.65 | 0.90 | 0.40 | 0.64 | 0.90 | 0.43 | 0.63 | 0.88 | 0.41 | 0.65 | 0.88 | 0.42 | 0.71 | 0.90 | 0.61 | 0.63 |

Source: The National Statistics Office of Georgia

Food security requires poverty elimination in the country, the strategy of overcoming it should be developed in the following directions:

- ~ Focusing of government policy on economic growth acceleration,
- ~ Identifying poverty causes and considering it in government policy,
- ~ Selecting and implementation of actions, which should have maximum impact on poverty reduction,
- ~ Implementing a set of purposeful measures, which establishes sound connection with economic growth and poverty reduction process.

The first step in poverty study is identification of poverty level.

The formal minimum consumption basket contains 40 food items, which defines daily energy supply for working-able man as 2,300 kcal accepted standard intake.

The poverty indices are set with three different levels:

1. Subsistence minimum
2. Median consumption - 60%
3. Median consumption - 40%

The median consumption 60% and Median consumption 40% are the relative levels, defined as median of population distribution by consumption. The median of population distribution by consumption is the quantity which defines that half of population (50 percent) consumes less than this quantity and another half more than this one.

Poverty indices are measured based on households' total consumption, estimated for adult equivalent to working able man and taking into consideration the joint consumption (joint habitation) effect. Three indicators are measured against abovementioned poverty levels:

- ~ Poverty line
- ~ Poverty depth
- ~ Severity of poverty

The poverty level, or index of the number of poor, shows the share of poor in total population. Poverty Depth Indicator represents the share of distance of poor population from poverty line in the total consumption of the whole population at the poverty level. Indicator of poverty severity shows inequality of poverty among poor families, it covers the depth of poverty and also inequality among the poor.

The GINI coefficient (income concentration indicator) measures the degree of inequality in income distribution. When distribution is equal, GINI is nil, when totally unequal – one.

Table 3.13. Absolute and relative poverty levels (average per year)

|                           | 2000  | 2004  | 2005  | 2006  | 2007  |
|---------------------------|-------|-------|-------|-------|-------|
| Subsistence minimum - GEL | 114.5 | 84.3  | 95.8  | 106.5 | 118.6 |
| Median consumption - GEL  | 111.6 | 114.4 | 116.9 | 126.2 | 126.0 |

Source: The National Statistics Office of Georgia

Table 3.14. Indicators of poverty (per cent)

|                                   | 2000 | 2004 | 2005 | 2006 | 2007 |
|-----------------------------------|------|------|------|------|------|
| <b>Poverty level</b>              |      |      |      |      |      |
| Against 60% of Median Consumption | 22.5 | 24.6 | 24.1 | 23.3 | 21.3 |
| Against 40% of Median Consumption | 10.1 | 10.9 | 10.1 | 9.4  | 9.2  |
| <b>Depth of poverty</b>           |      |      |      |      |      |
| Against 60% of Median Consumption | 7.4  | 8.1  | 7.6  | 7.2  | 6.9  |
| Against 40% of Median Consumption | 3.7  | 3.4  | 3.1  | 2.8  | 2.7  |
| <b>Severity of poverty</b>        |      |      |      |      |      |
| Against 60% of Median Consumption | 3.6  | 4.0  | 3.6  | 3.3  | 3.2  |
| Against 40% of Median Consumption | 1.6  | 1.7  | 1.5  | 1.3  | 1.3  |

Source: National Statistics office of Georgia

According to official statistic data, in 2008 poverty level was 22.1% although expert estimations reach 40%. To poor population belong the most vulnerable groups, such as: unemployed population, pensioners, refugees and displaced people, as well as big part of intellectuals.

Nowadays in Georgia aggravates inequality – small group of people becomes rich, while the others live beggarly. Inequality problem is not always connected to poverty. Income redistribution of richest people to average income population can reduce inequality degree, but poverty level will remain unchanged. Reduction of income level, which does not alter inequality degree, can aggravate situation and make negative impact on poverty level.

The inequality is measured by GINI coefficient, which fluctuates, as mentioned earlier, from 0 (when income distribution is equal) to 1 (while totally unequal). In 2007, against 2004-2006 years, GINI coefficient has not changed in respect of cash incomes and made 0.53, while for total income it was 0.47. The same index was in 2006. With regard to cash expenditures, GINI coefficient is 0.47 and in increased by 0.02 as compared to 2000-2006 years

Table 3.15. Gini coefficient (average per year)

|                      | <b>2000</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> |
|----------------------|-------------|-------------|-------------|-------------|-------------|
| By cash income       | 0.58        | 0.53        | 0.53        | 0.53        | 0.53        |
| By gross income      | 0.52        | 0.44        | 0.44        | 0.47        | 0.47        |
| By cash expenditure  | 0.45        | 0.45        | 0.45        | 0.45        | 0.47        |
| By gross expenditure | 0.43        | 0.41        | 0.41        | 0.41        | 0.42        |
| By gross consumption | 0.39        | 0.38        | 0.39        | 0.39        | 0.41        |

Source: The National Statistics Office of Georgia

Non cash income often plays significant role in the rural area, some households can sustain themselves with own production and spend a little money for other means of subsistence, paying less attention to healthcare and education needs.

So, the poverty overcome in Georgia should be the priority for country's authorities. The poverty is the main cause of food security implementation drawback. The program should be

developed, designed for both: a whole country and regional macro and microeconomic levels. For implementation the program all international organizations in Georgia should be included.

To focus only on food import for food needs satisfaction would be wrong approach.

Georgia's favorable climate and geographic location will facilitate the attainment of the target for improved nutrition. However, specific interventions are required to regain lost markets, improve farming knowledge and skills, and increase access to financial resources, as well as to revise land and agriculture policies.

### **3.2. Major food security regulations in Georgia**

Georgia became the member of the WTO in 2000 and as a member of this organization it took all responsibility to fulfill the obligations and specific commitments that were incorporated in the "Protocol of accession". It must be mentioned, that Georgia complies with all obligations under the WTO Agreement on the application of Technical Barriers to Trade and Sanitary and Phytosanitary Measures from the date of accession without recourse to any transition period.

The EU is Georgia's first trading partner accounting for some 34% of Georgia's total trade (2008). Yet bilateral trade is very small: €640 million in 2003 (figures recalculated for EU 25) (NSOG). Turkey and Russia are Georgia's second and third trading partners respectively, accounting for 15% and 10% of Georgia's total trade. Georgia's other regional trade relations are most significant with Azerbaijan, Ukraine, and Turkmenistan. Trade with the EU has increased significantly between 2000 and 2003. The increase was particularly strong in 2005 with imports from the EU up by 20% over 2002 and exports to the EU up by 11%. The construction of the Baku-Tbilisi-Ceyhan oil pipeline provides a partial explanation of these increases. EU imports from Georgia in 2007 stood at €287 million and EU exports to Georgia amounted to €349 million, with a consequent trade deficit for Georgia of €60 million or 10% of total bilateral trade. Bilateral trade is concentrated in a limited number of sectors. Georgia's main registered exports to the EU consist of energy (oil), base metals, precious stones, and processed agricultural goods. Georgia imports machinery, vehicles, chemicals, and textiles from the EU. The bilateral agreement on trade in textiles lapsed with the accession of Georgia to the WTO in 2000. Since then trade in textiles has been conducted with no quantitative restrictions or surveillance.

Georgia is a beneficiary of the EU's Generalised System of Preferences (GSP) and has requested to benefit from the granting of the special incentive arrangement for the protection of labour rights. The request is currently being assessed by the Commission. The GSP has enabled Georgia to diversify somewhat its exports to the EU and to increase its total preferential exports to the EU significantly. Georgia also benefits from GSP arrangements in its trade with the US, Japan, Canada, Switzerland and Turkey. Georgia has free trade agreements with Armenia, Azerbaijan, Kazakhstan, Russia, Turkmenistan and Ukraine.

While analyzing international institutional arrangements, special attention should be paid to the European Neighborhood Policy (ENP). The European Union conducts relations with different non-member states, which are regulated by the specific agreements and superior acts - the EU primary legislation, covering a single country or number of countries. For instance, the European Economic Agreement (EEA) pertains to non-member countries such as Norway, Iceland, and Lichtenstein. For Georgia, the European Neighborhood Policy is very important; the policy relates to neighbor countries of the European Union (Morocco, Algeria, Tunis, Lebanon, Egypt, Jordan, Libya, Syria, Israel, Palestine, Moldova, Ukraine, Georgia, Armenia, Azerbaijan, Belarus, and Russia). The main aim of the ENP is to ensure the EU security, especially along the borders. To achieve the target, the EU pushes its neighbor countries to harmonize their legislation with the EU and to provide the same level of the security as EU member-states.

Under ENP, the participant countries should bring their legislation in conformity with the EU legislation. It should be noted that the EU legislation in food safety and standards issues is very strict. The major general European Legislation act directly regulating the food safety sphere is the EU regulation 178/2002. The regulation adopted on 28 January 2002 determines the general European rules in food safety sphere thus ensuring the maximum food security. The main purpose of the regulation is to implement the EU policy "from farm to table". The regulation establishes the methods similar to the traceability, Rapid Alarm System (RAS), and emergency measures, partially for the third states as well. The traceability requirements are set by the Article 18, pursuant to which any entry involved in food business should possess the information about the food supplier and supplied output, the buyers of the product and delivered output. The information should be appropriately saved and presented to the official authorities upon request. The main purpose of the traceability is to supervise food production cycle and guarantee that the food including the hazard



component will be easily found. Pursuant to the article 49 of this regulation, the countries recognizing and joining the EU legislation by the relevant agreements shall enjoy the same terms. Pursuant to Article 11 of this regulation, any food or forage imported to the EU market shall meet the requirements those being recognized by the member-states. In worst case, the imported goods shall be at least equivalent or capable to satisfy the special Agreement concluded between the exporter country and EU (if applicable).

Special attention should be paid to the regulation (EC) 852/2004 “On Food Product Hygiene”, dated April 29, 2004 (FSA, 2007). The regulation shares the main values of regulation 178/2002 and its major objective is to achieve the best health conditions for humans. Pursuant to the regulation, Codex Alimentarius, HACCP, and Good Hygiene Practice should be introduced for all food business operators except the primary producers, which are not yet subject to this requirement. However, they are recommended to implement good practice, which preconditions good results. Pursuant to the regulation, the imported food shall be subject to strict inspection to confirm that it has been produced at standards acceptable in EU. Article 10 of the regulation, being based on Article 11 of regulation 178/2002, refers to Article 3-6, which introduce additional regulations, especially the implementation of the good hygiene requirements. The reference is given on regulation number 853/2003 “On Hygienic Rules of Food and Products of Animal Origin”, according to the 6<sup>th</sup> Article of which the reliable information should be available that the goods are imported into EU “through the strict observance of the Articles 11 and 12 of regulation number 854/2004 (April 29, 2004) on special rules to organize the products of animal origin destined for human consumption and the product exporter country and product itself are inserted in list of the countries and products permitted for import.

In addition, the regulation (EC) 852/2004 establishes the strict special and general hygienic requirements obligatory for the third countries. The Articles 5 and 6 of this regulation accentuate the system of Hazard and Critical Control Points and official control, registration and approval. The food producer should possess the control system based on HACCP, permanently cooperate with the official controlling authority, present information, and express the liability of the registration to be done by the competent authority along with the ultimate recognition (approval) of such person.

According to the Articles 11 and 12 of regulation number 854/2004 (FSA, 2007) the products can be delivered in EU only if the country of origin or its part is inserted into the list. The

main attention is diverted on the legislation of the country to be put into the list (attributing to the products of animal origin, veterinary preparation, etc) structure and competence of the authorized agency (independency), qualification of the apparatus, hygiene conditions of the enterprise, documentary inspection procedures, etc. The primary precondition for Georgia to meet all the prescribed requirements is to have the similar ones inside the country.

Pursuant to regulation EC 882/2004 and EEC directive number 93/43, the product delivered from the third countries shall not be allowed into the territory of commonwealth, if the exporter country fails to apply the official system of control. Especially, parts 8 and 9 of the preamble of regulation EC number 882/2004 are worthy to be noted, according to which this restriction shall cover all sorts of food and bio-production (FSA, 2007). The regulation establishes the unified control and harmonized procedures for import. Such tendency evidently confirms that bio-products in South Caucasus countries will face the obstacles along with other products due to nonexistence of the appropriate infrastructure.

The regulation EEC 2092/91 on organic production of the agri-products is deemed very important. Pursuant to the 11<sup>th</sup> part, the inspection and controlling system of the goods imported into EU shall be the similar or equivalent to the European procedures. Regulation number EC 834/2007 replaced regulation EEC 2092/91 thus complicating the import procedures and increasing the barriers. The regulation directly refers to regulation EC882/2007 thus requiring more detailed information about the controlling systems and procedures applied in the third countries. Before 2006, the import from the third countries not included in the list had been still permitted, however, since 2006 such action has been strictly prohibited.

Georgia's law "On food safety and quality" was adopted in 2005. During that period, year 2006 was seen to be a year of the preparatory activities, according to the will and responsibility of the state and via the assistance of the international organizations, it was planned to intensively establish and advance the institutional and human resource potential for food safety supervision. In addition, the educational and informational support was scheduled to be delivered to the food producers, thus bringing them into the strict accordance with the food safety and hygienic standards. Especially risky enterprises were to be covered by the state control at initial stage. The state was to register food production enterprises to provide the comprehensive statistics. The active efforts were to be undertaken to harmonize the applicable legislation and establish the perfect legal fundament.

Pursuant to Law, the Ministry of Agriculture of Georgia had been innovatively restructured in 2006. The policy implementer authority - Food Safety Department - was established in the central apparatus of the Ministry. In addition, the Food safety, Veterinary, and Plant Protection National Service was created under the Ministry. As soon as the changes were enacted, the regulation and control authority of the food safety, veterinary, plant protection and other relevant sectors was assigned to single state institution thus preventing any chance of duplication of functions. This arrangement was considered as a step forward. The Custom Department under Ministry of Finance was assigned to implement the sanitary and phyto-sanitary control at border points. Pursuant to the Euro-regulations applicable in the food safety sphere, the numbers of the legislative and law-subordinated normative acts were developed. The Law "On Biological Agro-Production" was adopted and applied thereof for the establishment of the Georgian standard "On Biological Agro-Production". Numbers of the law-subordinated normative acts were developed thus regulating the food safety, phyto-sanitary and veterinary issues (risk analysis, traceability, control and inspection, labeling, destruction of the poor quality food, other important sectors). The adoption of these acts is seen to be the progressive arrangement thus meeting the EU neighboring requirements. It should be noted that the Food Law has been twice amended - firstly in December 2006, by the initiative of the Georgian Government and secondly in June 2007, by the initiative of the MP group. The approval of the amendments led to postponement of definite articles before 2010. The articles regulating the food safety and quality and covering the state control in food enterprises have been temporarily delayed. Consequently, the scheme of enforcement of the internal control and traceability system within the enterprises has been postponed. The Government has retained solely the function of the food quality monitoring. The state control can be exerted only in special cases, pursuant to the procedures established by the Government.

## CHAPTER 4. RESEARCH METHODOLOGY AND RESEARCH FINDINGS

### 4.1. Research methods

Research methodology is composed of two parts, one describes briefly the survey methodology and the other shows the results of analysis of food security indicators at national and sub national levels to identify food security conditions and food insecure population groups.

As it was mentioned, food security is achieved, when all people at all times have physical, social, and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. By contrast, food insecurity exists when people lack secure access to sufficient amount of safe and nutritious food for normal growth, development as well as for being active and healthy.

To gain a comprehensive picture of the food security situation in Georgia and to develop analysis and policy option of food issues, special survey was organized. In the survey, questionnaires for four categories of stakeholders were identified:

- a) Consumers;
- b) Government regulatory agencies;
- c) Food producers;
- d) NGOs, experts, and foreign donor organizations.

Face to face interviewing method was selecting to be used for primary data collection. Questions were designed as open-ended and pre-specified.

Representatives of each of the stakeholder category were asked questions regarding following areas:

- Government regulation of food security policy,
- Communication policy between stakeholder categories,
- Law enforcement,
- Transparency of the current food security system,
- Availability any source of information concerning food security,
- Main factors effecting food security performance,
- Implementation of the EU and international regulations in Georgia.

In additions, questionnaires for the food producers included questions regarding competence and understanding of regulatory agencies in enforcing food security regulations, main external factors effecting on food security, sources of food security information and training and assistance received from various entities.

Respondents were also asked to outline the multiple opportunities, resources, mechanisms, and tools they think can be used to resolve the identified challenges, mentioning benefits and negative outcomes of each of the alternative solutions.

Specifically, the following key stakeholders were interviewed:

- Consumer interviews were conducted in Tbilisi, Batumi, Kobuleti, Natakhtari, Signangi, Zugdidi. 320 people were selected as a research sample size of consumers. Consumers were randomly selected.
- A total of 20 employees of Georgian Government and Parliament responsible for food security policy were identified for the interview.
- A total of 18 producers (dairies, confectioneries, fruit and vegetable producers, brewery) were identified for interviews,
- There were 9 NGOs, experts and international donor organizations identified for the interview.

All data and information gathered through the interviews were used for development of recommendations and conclusions.

The second part of the methodology includes statistical analysis of the food security situation in Georgia, which is based on the major food security indicators. Major food security factors, such as food utilization, food access and food availability were studied. Their indices were calculated not only on a country level, but on the regional level as well. For the index calculations special formulas were introduced:

Food Utilization Index= Dietary Energy Consumption (Table B.5) / Minimum Dietary Energy Requirement (Table B.6)

Food Access Index= Average monthly income per capita (Table B.3) / Consumer Basket index (The cost of Consumer Basket) (Table B.4)

Food Availability Index= Total Food Production in a year (Table B.1) / Total Food Consumption in a year (Kg/person/year) (Table B.2) <sup>2</sup>

It must be mentioned, that mathematical method, such as double summing up was used during the research to prioritize the food security affecting factors. In addition, correlation-regression analysis was conducted in order to study the impact of the regional food security indicators on the country indicator level.

For these analyses the data were chosen between the periods 1997-2008 years. In the findings separate regression analysis for all three factors, food utilization, food access and food availability is introduced.

## 4.2. Research findings and results

### 4.2.1. Survey findings

Survey reports of the four stakeholder categories follow. Each study report includes results and conclusions.

**Consumers.** Consumers are very important source of information, because they are the final link to the food chain and should know about food security and food quality.

Table 4.1. provides social characteristics of the interviewed consumers. There were 80 people 18-25 years old, 120 were 26-40 years old, 85 - 40-61 years old, and 35 respondents were 61 or older. Majority of them graduated university and have higher education.

Table 4.1. Gender

|        | Frequency | Percent |
|--------|-----------|---------|
| Male   | 170       | 54      |
| Female | 150       | 46      |
| Total  | 320       | 100.0   |

Table 4.2. Age range

|              | Frequency | Percent |
|--------------|-----------|---------|
| 18-25        | 80        | 25      |
| 26-40        | 120       | 38      |
| 41-60        | 85        | 26      |
| 61 and older | 35        | 11      |
| Total        | 320       | 100.0   |

<sup>2</sup> All these tables are represented in the Appendix B

## **Results/Conclusions**

- Majority of consumers are aware of food security concepts, practices and definitions.
- Major of respondents from Georgia evaluated current food security system in their country as being unsatisfactory. Major issues in the system can be grouped into the following categories: 1) ineffective state control and imperfectness of legal framework, 2) lack of information for consumers, and lack of consumer education programs, 3) lack of food security practices observed by food producers, processors, transporters and sellers.
  - About two third of respondents were familiar with international standards.
  - Majority of Georgian agree that application of international standards and regulations in their countries would have mainly positive impacts, with some mentioning negative potential outcomes.
  - Consumers underlined the existing problems as follows: either nonexistence of the regulatory authorities or the stagnation of the existing ones, lack of control over the quality of the imported food products, and lack of awareness and interest of consumers, low income level, high prices, low quality of products, high level of unemployment in the country.

**Food producers.** Study of this category of stakeholders was aimed to identify their knowledge and observation of domestic and export food security regulations, level of competency of regulatory agencies in enforcing food safety regulations, sources of food security information and the benefits and possible negative outcomes in implementation of such a policy.

A proportionate sample of 18 producing companies was chosen from the lists of milk collection centers, dairy, meat and fruit and vegetable processors to represent the food processing industry in Georgia.

Table 4.3. Producers' distribution by type of operation

|                                      | Frequency | Percent |
|--------------------------------------|-----------|---------|
| Dairy Plant                          | 3         | 17      |
| Winery                               | 5         | 27      |
| Meat processing center               | 2         | 12      |
| Tea processing center                | 2         | 12      |
| Milk processing center               | 1         | 5       |
| Fruit and vegetable processing plant | 5         | 27      |
| Total                                | 18        | 100.0   |

### Results/Conclusions

- Majority of producers expresses that there is a lack of confidence in the competence and understanding of staff in regulatory agencies to enforce food security regulations, proper reforms to improve general socio-economic condition within a country. Major problems are: low level of production, insufficient finances, lack of techniques, and low level of household income.

- Majority of respondents surveyed in Georgia are currently exporting or plan to export their products. It stands the reason that most of them should possessed knowledge of export regulations both general and specific to their commodities.

- Majority of producers receive science-based information from NGOs and donor organizations. Government's bodies, industry associations, and consulting companies provided assistance to about a third of interviewed food processors.

- Majority of food processors see issues in adoption and implementation of policy for harmonization of national legislation with international/EU food security standards and regulations. Major challenges include role of government vs. business in development of regulations and standards, inclusion of public in development of standards, development of mandatory regulations, lack of consultancy and trainings from government agencies.

- All food producers clearly see the benefits from adoption of international/EU food security regulations. They expect that it would result better protection of consumer rights, improve agribusinesses' competitiveness in local and export markets, better managements of products safety.

**Members of the Government.** National policy and regulatory systems influence the functioning of all sectors of countries' economies. Members of government serve as the decision-



making and operational mechanisms developing and implementing policy and monitoring compliance. 20 employees from the government were interviewed.

### **Results/Conclusions**

- Majority of government members agree that there are issues in adoption and implementation of policy for harmonization of national legislation with international/EU food security regulations, such as Codex Alimentarius, ISO.

- Majority of regulatory staff prioritize need for separation of responsibilities between different regulatory bodies, necessity for provision of sufficient funds to support ministries in implementing their responsibilities, as well as lack of surveillance system to oversee regulatory agencies in enforcing regulations.

- Most of the respondents think that the most serious communication problem exists between various government bodies. The second weakest points are communication with independent experts, NGOs, and donor organization.

- In order to improve government communication, respondents propose their government to develop one common communication policy between them and other food security stakeholders. Others suggest forming a coordination committee, involving ministry representatives, NGOs, consumer protection organizations, and independent experts to coordinate food security activities.

- Majority of respondents agreed that they and their staffs do not have sufficient knowledge and experience in international food security. They commented that the level of knowledge and experience should be improved as well as additional economic reforms should be implemented. They regard that all factors are equally important for effective food security in Georgia.

- Government officials recommended multiple activities implementation of which they think would assist resolving issues in developing training policy for government officials, independent experts, and agribusinesses.

The recommendations are following:

- ✓ Establishment of the official Coordination Board represented by diverse agencies is considered to be a high priority. The Board will be in charge of analysis of the food security situation in the country.
- ✓ In addition, the national legislation should have been brought in conformity to the European and international standards through consideration of the specific features, economic and social background of the country.
- ✓ As surveys showed, there is the necessity for arrangement of consumer awareness campaigns, including publications of brochures, leaflets, posters, as well as development of an educational web-site, where all training materials and other useful information will be placed.

**NGOs, independent experts, and donor organizations.** The role of NGOs and international donor organizations in the food security regulation is important. They provide technical assistance and capacity building programs in the area of food security to the private and public sectors.

### **Results/Conclusions**

- The majority of surveyed of 9 NGOs, independent experts and international organizations do consider that Georgia faces the problems of implementation of the food security policy in terms of the compliance of the national legislation with international standards. They outlined four common challenges in the area of law enforcement, namely, imperfect supervisory system, inadequate delegation of food security responsibilities among regulatory authorities, as well as lack of sufficient funds to support food security. Besides, they think that statistical analysis of the food security indicators should be improved and presented adequately.

- Majority of respondents view current food security situation in the country as not being transparent.

- Nearly all respondents agreed that there are certain difficulties in the field of government communication policy. They think the most serious communication problem exists between government and consumers. The second weakest point is that policies are not available for stakeholders. Finally, difficulties in communication between various government bodies, as well as with agribusinesses, NGOs, and donor organizations are considered to have equal priority.

- In order to improve government communication system, experts recommend creation of an information exchange system, involving key good safety stakeholders, making science-based

information available to the populace. In addition, they recommend developing a detailed consumer protection system, considering consumers' interests and increasing their awareness. Analysis of European experience of government communication policies and its local adoption, they believe, will facilitate the process.

- It can be concluded from the interviews that the government in Georgia receives more assistance from NGOs, donor organizations, and experts than other food safety stakeholders do.

## 4.2.2. Statistical analysis of the food security indicators in Georgia

### 1. Major statistical indicators

Food security in Georgia was assessed by the main statistical indicators, which are presented below.

**Food deprivation.** One of the major indicators of the food security situation in the country is the food deprivation. It refers to the condition of people whose food consumption is continuously below its requirements. FAO's measure of food deprivation refers to the proportion of the population whose dietary energy consumption is below the MDER (Minimum Dietary Energy Requirement).

Table 4.4. Number of undernourished persons in Georgia (millions)

|                | 1990-92 | 1995-97 | 2003-2005 |
|----------------|---------|---------|-----------|
| <b>Georgia</b> | 2.5     | 1.2     | 0.6       |

Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

Table 4.5. Prevalence of undernourishment in total population (%)

|                | 1990-92 | 1995-97 | 2003-2005 |
|----------------|---------|---------|-----------|
| <b>Georgia</b> | 47      | 24      | 13        |

Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

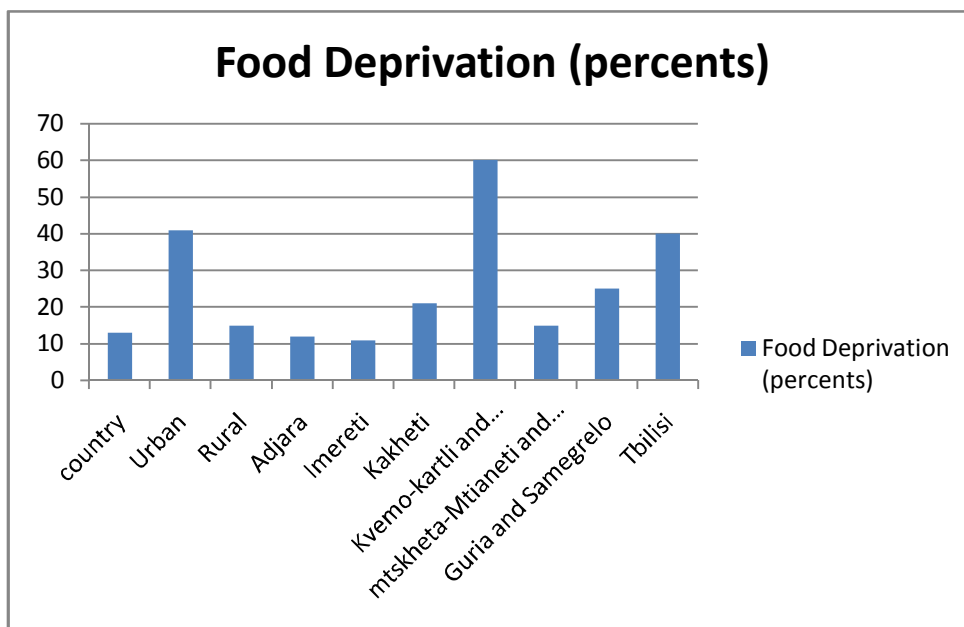
Table 4.6. Food deficit (depth of hunger) of undernourished population (kcal/person/day)

|                | <b>1990-92</b> | <b>1995-97</b> | <b>2003-2005</b> |
|----------------|----------------|----------------|------------------|
| <b>Georgia</b> | 230            | 210            | 180              |

Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

We can analyze from these statistics that food deprivation at the national level in 2005 was 13%, which means that more than one in seven Georgians suffered from food deprivation in 2005. Food deprivation is higher in urban than in rural areas. At regional level food deprivation ranged from 13 to 61 percent, in Imereti & Kvemo Kartli & Samtskhe- Javakheti respectively. Although population groups differed in minimum dietary energy requirements, (due to differences in weight for attained heights and sex-age population structures) and in how food is distributed within each population, the main reason for different magnitudes in food deprivation is the amount of consumed food.

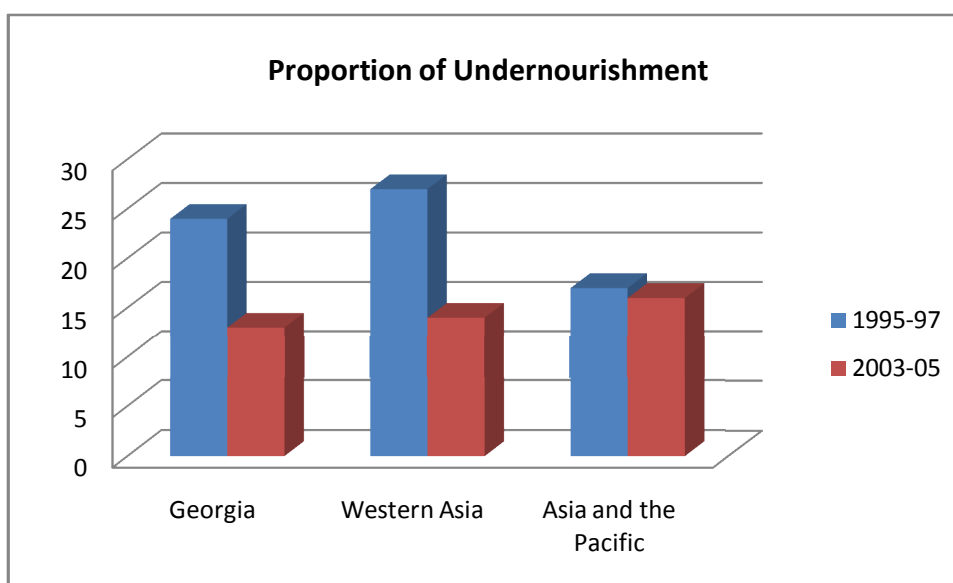
Figure 4.1. Food deprivation in Georgia (percentage)



Source: FAO (2008), *The State of Food Insecurity in the World 2008*. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

According to these statistics, Georgia had a moderate level of undernourishment in 2003-05, the latest period available; 13 percent of the total population was undernourished. Both the number and proportion of undernourished decreased over the period. The prevalence of undernourishment in Georgia was lower than in Western Asia and higher than in Asia and the Pacific in 2003-05 years (See Figure 4.2).

Figure 4. 2. Proportion of Undernourishment in 1995-97 and 2003-05 years



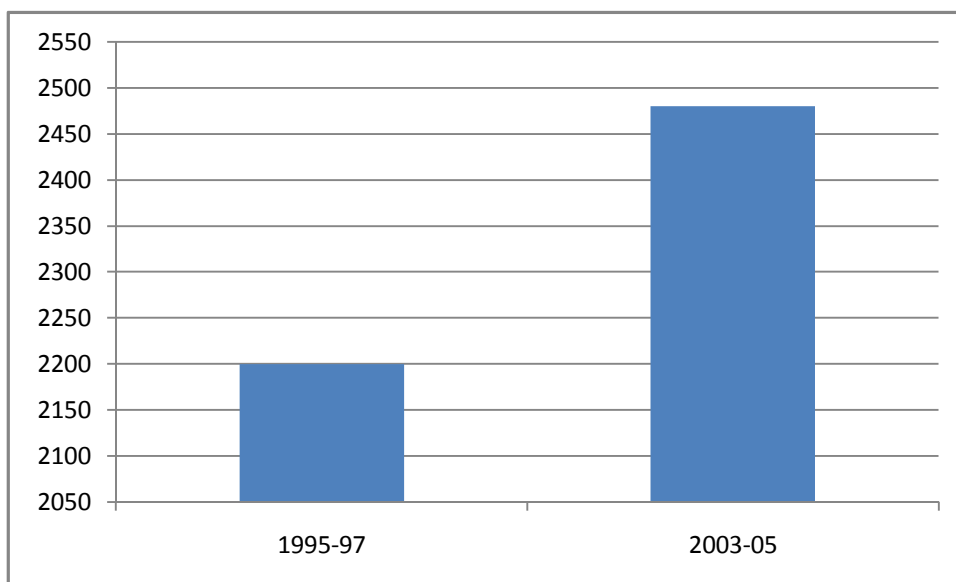
Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

**Food consumption.** Second important indicator of the food security is the food consumption. The dietary energy consumption mirrors food deprivation shown previously. Population groups with high food deprivation showed low dietary energy consumption. The dietary energy consumption per person is the amount of food in kcal per day for each individual in the total population. Dietary energy requirements differ by gender and age and for different levels of physical activity. Accordingly, minimum dietary energy requirements, the amount of energy needed for light activity and minimum acceptable weight for attained-height, vary by country and from year to year depending on the gender and age structure of the population. For an entire population, the minimum energy requirement is the weighted average of the minimum energy requirements of the different gender-age groups in the population. It is expressed as kilocalories (kcal) per person per day. These minimum dietary energy requirements are used exclusively to estimate the prevalence of undernourishment according to the FAO's approach.

According to the FAO each country has different Minimum Dietary Energy Requirement (kcal/person/day). For Georgia it is 2100 kcal per person in a day (2005-2008 years).

In reality dietary energy consumption<sup>3</sup> counted 2500 kcal/person/day, while the dietary protein consumption<sup>4</sup> was 77 g/person/day and the dietary fat consumption<sup>5</sup> was 58 g/person/day accordingly. In general, it must be mentioned that food consumption per person increased in 2003-2005 years,

Figure 4.3. Food consumption per person (Kcal/Day)



Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

Table 4.7 Inequality in access to food and to income in Georgia

| COUNTRY | INEQUALITY OF DIETARY ENERGY CONSUMPTION |                | INEQUALITY OF INCOME |                |
|---------|--|----------------|----------------------|----------------|
|         | Survey Year                              | GINI Coef. (%) | Survey Year          | GINI Coef. (%) |
| Georgia | 2001                                     | 13             | 2005                 | 41             |

Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

3 The dietary energy consumption per person is the amount of food in kcal per day for each individual in the total population.

4 The dietary protein consumption per person is the amount of protein in food in grams per day for each individual in the total population.

5 The dietary fat consumption per person is the amount of fat in food in grams per day for each individual in the total population.

**Access to Food.** Income inequality is the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within a country deviates from a perfectly equal distribution.

The Gini coefficient measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. A Lorenz curve plots the cumulative percentages of total income against the cumulative number of individuals or households, starting with the poorest

From table 4.7. above we can conclude that inequality of income is 41%, which is relatively high indicator, while inequality of dietary energy consumption is 13%, which means that this indicator is relatively perfectly distributed.

Table 4.8. Food consumption expenditure

| Food consumption expenditure   |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|
| Share (%) of food consumption expenditure in total household consumption expenditure |      |      |      |      |      |      |      |
|  | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| National   | 68   | 68   | 64   | 64   | 61   | 63   | 64   |
| Urban  | 76   | 77   | 73   | 74   | 71   | 73   | 74   |
| Rural  | 59   | 59   | 55   | 54   | 52   | 53   | 54   |

Source: National Statistics Office of Georgia

**Diet composition.** Diet composition involves dietary diversity of the total population of Georgia. FAO provides key nutrition concepts for developing food-based dietary guidelines, which includes requirements of protein, fats and carbohydrates. Let us consider each of them.

**Protein.** For high quality proteins, the requirements for most people can be met by providing 8-10% of total energy as protein. For predominantly vegetable-based mixed diets, which are common in developing country settings, 10-12% is suggested to account for lower digestibility and increased incidence of diarrhea disease. In the case of the elderly, where energy intake is low, protein should represent 12-14% of total energy.

**Fat.** In general, adults should obtain at least 15% of their energy intake from dietary fats and oils. Women of childbearing age should obtain at least 20% to better ensure an adequate intake of



essential fatty acids, needed for foetal and infant brain development. Active individuals who are not obese may consume up to 35% fat energy, as long as saturated fatty acids do not exceed 10% of energy intake. Sedentary individuals should limit fat to not more than 30% of energy intake. Saturated fatty acids should be limited to less than 10% of intake.

**Carbohydrate.** Carbohydrates are the main source of energy in the diet (55-75%) for most people. Grain products, tubers, roots and some fruits are rich in complex carbohydrates. Generally, they need to be cooked before they are fully digestible. Sugars usually increase the acceptability and energy density of the diet and total sugar intake is often inversely related to total fat intake. Moderate intakes of sugar are compatible with a varied and nutritious diet.

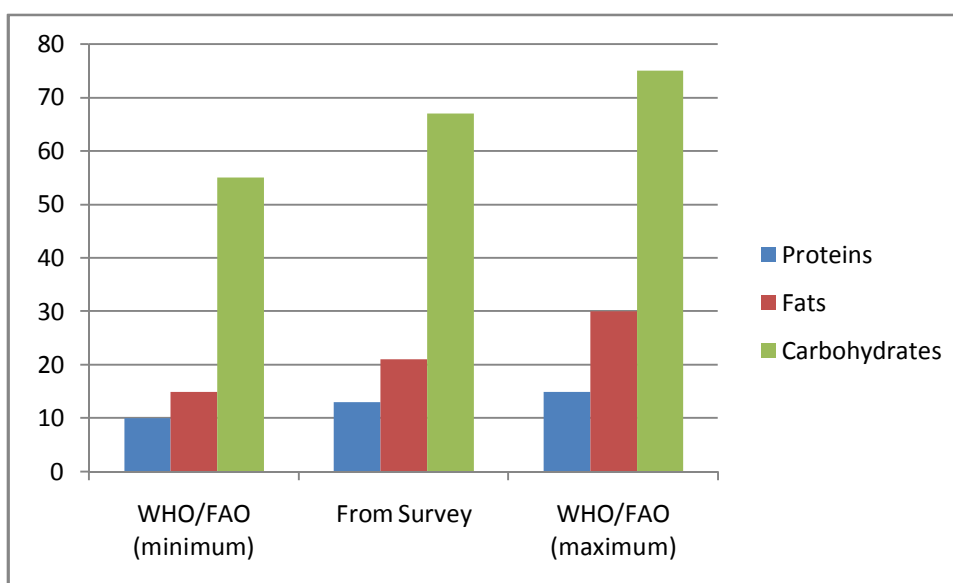
Table 4.9. Share in total dietary energy consumption (percent) in Georgia

| Macronutrients | 1990-92 | 1995-97 | 2005-07 |
|----------------|---------|---------|---------|
| Carbohydrates  | 75      | 71      | 67      |
| Proteins       | 12      | 12      | 13      |
| Fats           | 13      | 16      | 21      |

Source: National Statistics Office of Georgia

According to the table 4.9 the highest share of total dietary energy (kcal) was from carbohydrates (67 percent), followed by fats (21 percent) and by proteins (13 percent). If we compare these data with the recommended ranges by FAO and WHO experts, they exceed the minimum standards set by FAO and WHO.

Figure 4. 4. Share of proteins, fats and carbohydrates in total energy consumption at national level



Source: FAO (2008), The State of Food Insecurity in the World 2008. Economic and Social Department, Food and Agriculture Organization of the United Nations, Rome

### 4.2.3 Regression analysis of the food security factors

#### I. Calculation of the Food Security Indices

According to the data of the food security indicators we can conclude that the value of the Food Utilization index is 41, 24%, the value of Food Access is 25, 39% and the value of Food Availability is 33.37% according to the double summing up. So, we regard that the first index has priority in comparison to others.

Table 4.10 Food Utilization Index

| DEC    | 2050 | 2060 | 2055 | 2100 | 2090 | 2200 | 2200 | 2300 | 2300 | 2320 | 2310 | 2300 |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|
| MDeR   | 2300 | 2300 | 2300 | 2350 | 2400 | 2400 | 2450 | 2500 | 2500 | 2530 | 2530 | 2500 |
| Geo    |      |      |      |      |      |      |      |      |      |      |      |      |
| FUTILI | 0.89 | 0.89 | 0.89 | 0.89 | 0.87 | 0.91 | 0.89 | 0.92 | 0.92 | 0.91 | 0.91 | 0.92 |
| (a)    |      |      |      |      |      |      |      |      |      |      |      |      |

Table 4.11. Food Access Index

|          |      |      |      |      |      |      |      |      |      |      |      |      |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Amipc    | 41   | 46   | 48   | 46   | 50   | 73   | 75   | 80   | 92   | 102  | 112  | 115  |
| CPIAG    | 102  | 105  | 107  | 107  | 116  | 120  | 133  | 136  | 141  | 147  | 158  | 161  |
| F ACCESS | 0.40 | 0.43 | 0.44 | 0.42 | 0.43 | 0.60 | 0.56 | 0.58 | 0.65 | 0.69 | 0.70 | 0.71 |
| (b)      |      |      |      |      |      |      |      |      |      |      |      |      |

Table 4.12. Food Availability Index

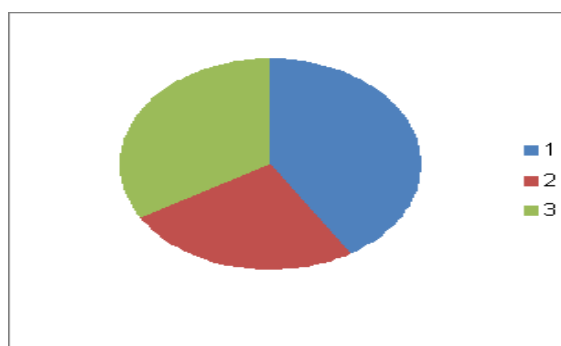
|         |      |      |      |      |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| TFPy    | 605  | 608  | 597  | 596  | 632  | 597  | 622  | 685  | 659  | 597  | 591  | 564  |
| TFCy    | 906  | 926  | 924  | 868  | 901  | 877  | 810  | 804  | 800  | 774  | 754  | 761  |
| FAvaili | 0.66 | 0.65 | 0.64 | 0.68 | 0.70 | 0.68 | 0.76 | 0.85 | 0.82 | 0.77 | 0.78 | 0.74 |
| (c)     |      |      |      |      |      |      |      |      |      |      |      |      |

If we express these indicators graphically, we will receive the following picture:

Table 4.13. Major Food Security Indicators

|             | Sum     | percent |
|-------------|---------|---------|
| F UTILI - 1 | 10.8496 | 41.24   |
| F ACCESS -2 | 6.67958 | 25.39   |
| F Availi -3 | 8.77918 | 33.37   |
|             | 26.3083 | 100.00  |

Figure 4.5. Major Food Security Indicators



## II. Regression analysis of the food security regional indices

In order to analyze the impact of regional food security indices on the country food security index, we use statistical method, LINEST formula, based on the correlation-regression analysis.

### A. Regression analysis of Food Utilization Index

In this case, regression equation takes this form:

$$A = -3.10^{-16}x_1 - 0.262x_3 + 0.167x_5 + 0.071x_6 + 0.5238x_7 + 0.4683$$

The meaning of the standard error value for the coefficients is the following:

Table 4.14. The meaning of the standard error for the Food Utilization Index

|         |   |         |   |         |         |         |   |   |   |       |
|---------|---|---------|---|---------|---------|---------|---|---|---|-------|
| 0.16137 | 0 | 0.06296 | 0 | 0.12463 | 0.09004 | 0.08151 | 0 | 0 | 0 | 0.175 |
|---------|---|---------|---|---------|---------|---------|---|---|---|-------|

The coefficient of determination is 0.9827. We can see, that this meaning is very close to the 1, which means that it is very close to perfect correlation and there is no difference between the estimated A value and the actual A value. The standard error for the A estimation is equal to 0.003. The F-statistic and the degree of freedom are equal to 68.2 and 6. The regression sum of squares and the residual sum of squares are insignificant: 0.0028 and 5E-05.

According to the coefficients, we can conclude that the increase by one point of the X1-Food utilization value of Adjara region, causes the reduction of the country value by  $-3.10^{-16}$ , X3-Samegrelo& Zemo Svaneti region by -0,262 points, but X5-Racha, X6-Shida Qartli and X7-Mtskheta-Mtianeti regions cause the increase of the value by 0,167, 0,071 and 0,5238 points accordingly. Here the theoretical Meaning of A-the free value is equal to 0,4683. Those coefficients, which are equal to 0 do not have any effect.

### B. Regression analysis of the Food Access Index

The regression equation for the B factor is the following:

$$B = 0.0005x_1 - 0.41x_2 + 0.243x_3 + 0.177x_4 + 0.222x_5 + 0.082x_6 + 0.2639x_7 + 0.0393x_8 - 0.3x_9 + 0.6255x_{10} + 0.0377$$

The meaning of the B is reduced by X2-Imereti and X9-Qveno Qartli by 0,41 and 0,3 points accordingly, while all other 8 regional indicators are in positive relationship with the country indicator. The free value is 0, 0377. The meaning of the standard error value for the coefficients is the following:

Table 4.15. The meaning of the standard error for the Food Access Index

|        |       |       |       |       |       |       |        |         |        |        |
|--------|-------|-------|-------|-------|-------|-------|--------|---------|--------|--------|
| 0.0329 | 0.138 | 0.088 | 0.132 | 0.114 | 0.104 | 0.063 | 0.0719 | 0.15667 | 0.1453 | 0.0136 |
|--------|-------|-------|-------|-------|-------|-------|--------|---------|--------|--------|

The coefficient of determination is 0.9999. We can see that this meaning is very close to the 1, which means that it is a very close to perfect correlation and there is no difference between the estimated B value and the actual B value. The standard error for the B estimation is 0.004. The F-statistic and the degree of freedom are equal to 1311.1 and 1. The regression sum of squares and the residual sum of squares are insignificant: 0.1615 and 1.E-05.

### C. Regression analysis of the Food Availability Index

$$C = 2.5667X_1 + 0.682X_2 - 0.452X_3 + 2.767X_4 - 2.019X_5 - 0.423X_6 + 0.818X_7 + 0.5811X_8 + 0.814X_9 - 1.706X_{10} - 1.755$$

Here we can conclude, that X1,(Adjara), X2(Imereti), X4(Guria), X7(Mskheta-Mtianeti), X8(Kakheti) and X9(Qvemo Qartli) indicators have positive relationship with the country indicator and their increase by one point, will increase the C indicator by 2,5667, 0,682, 2,767, 0,818, 0,5811 and 0,814 points. All other 4 factors have negative relationship (-0,452, -2.019, -0,423 and -1,706) The meaning of the standard error value for the coefficients is the following:

Table 4.16. The meaning of the standard error for the Food Availability Index

|        |       |       |       |       |      |        |       |         |        |        |
|--------|-------|-------|-------|-------|------|--------|-------|---------|--------|--------|
| 0.6486 | 0.208 | 0.254 | 0.645 | 0.454 | 0.11 | 0.2625 | 0.112 | 0.15313 | 0.4778 | 0.4446 |
|--------|-------|-------|-------|-------|------|--------|-------|---------|--------|--------|

The coefficient of determination is 0.9997. We can see that this meaning is very close to the 1, which means that it is a very close to perfect correlation and there is no difference between the estimated C value and the actual C value. The standard error for the C estimation is equal to 0.004.

The F-statistic and the degree of freedom are equal to 334.12 and 1. The regression sum of squares and the residual sum of squares are insignificant: 0.0528 and 2.E-05.

## CONCLUSIONS AND RECOMMENDATIONS

To achieve the substantial food security is critically important for the Georgian economy. It is the main source of the economic, social, ecological and other important issues, which provide main source of country's development. Food security is a multi-dimensional phenomenon. National political action seems to require the identification of the food security deficit that can be the basis for setting of targets, thus necessitating the adoption of single, simplistic indicators for policy analysis. Since food insecurity is about risks and uncertainty, the formal analysis should include both chronic sub-nutrition and transitory, acute insecurity that reflects economic and food system volatility. Various factors shaping food security should be taken into consideration. Some general recommendations are suggested below:

1. To improve substantial economic and agricultural advances strong and stable relationships with the European Union is suggested in order to continue harmonization of EU laws and regulations. It is recommended to invite international experts, as well as study the experience of new EU accession countries;

2. The government of Georgia is recommended to introduce gradually food security management systems and start/continue harmonization of EU laws and regulations providing determined transition time for its implementation and enforcement. These regulations, standards and guidelines should be developed for each industry sector (canneries, bakeries, dairies, etc). Taking into consideration the fact, that translation issues were prioritized by many stakeholders interviewed during the survey, government of Georgia might consider recruiting and training a team of translators within each government agency for proper translation of EU regulations. It is furthermore suggested to apply to international organizations for assistance in implementation of this activity;

3. In order to address various policy challenges identified during the survey, it is suggested to initiative an intensive work on consumer awareness programs and inclusion society in standards development process. The objectives of the consumer awareness campaign will include: 1) building of an efficient mechanisms for indirect enforcement through a campaign to increase consumer awareness, and make compliance by food processors consumer-driven; and 2) making consumer aware of their own responsibilities in relation to food security and consumption-related health. This initiative will include activities such as publication of brochures, leaflets, posters,

broadcasting of educational TV/radio programs, as well as development of an educational web-site, where all training materials and other useful information will be placed;

4. To avoid duplication of efforts and ensure that conflicting messages are not communicated to the several food industry stakeholders about rules, regulations, codes and procedures, a system of coordinating and evaluating each ministry's/agency's regulatory functions should be established and followed up. Particularly, it is suggested to strictly separate powers and responsibilities of the regulatory authorities and develop a Functional Mapping;

5. While regulatory personnel interviewed during the survey were perceived to have academic qualifications and scientific background to monitor and enforce food security regulations, their competence to perform their job responsibilities was an issue. Hence, additional training and/or opportunities should be provided to regulatory personnel to gain practical training and experience in the regulatory system;

6. The fact that majority of food producers in Georgia expressed lack of experience in the competence and understanding of staff in regulatory agencies to enforce food security regulations is destructive and harmful for both the food processing industry and regulatory agencies. This relationship needs to be rectified, nurtured and strengthened;

7. In order to improve government communications system, many surveyed stakeholders recommended creation of an information exchange system, involving key food safety stakeholders, thus making science-based information available to the populace;

8. In addition, survey showed that consumers of food products are aware and follow a number of food safety concepts and practices. Majority of them are familiar either with food security, food safety or food quality definitions, and some can describe the difference between them. It would appear that most of the concepts mentioned by consumers are relevant to assuring that the food consumed is safe for human consumption. Some concepts could be inappropriate or irrelevant to the issue of food safety and food quality. This could be because of traditional beliefs and habits and/or the lack of science-based information on the subject. It would be important to flag such items and give them due consideration when programmatic and training interventions are planned;

9. Establishment of department of agricultural statistics in the Ministry of Agriculture is highly recommended. This department will control the collection, analysis and dissemination of



agricultural statistics. Similar departments should be established in each regional departments which are technically affiliated and administratively answerable to the Ministry of Agriculture;

10. Improved diet composition can be achieved by improving the general socio-economic situation, leading to growth in household income and a more diversified pattern of food consumption. One of the most serious interventions is in protecting the consumer market from counterfeit products. This can only be done through the improvement of the relevant legal framework. Great importance is attached to the protection of the local market from smuggling and dumping;

11. As survey findings showed, further subsidization and substantial insurance for farmers and their products are highly recommended both from government and private sector. Additional finances promote their production and increase their competitiveness;

12. According to survey results it is also important to consider the correlation between seed security and food security. To maximize the yield of food/feed production availability and provision of high seed should be taken into considerations;

13. An important contributing factor for the successful attainment of poverty reduction and food security is a well-targeted and well-sequenced implementation of reforms (especially agrarian reforms), such as formation effective tax code, creation credit unions, implementation stable insurance policy for the rural population and producers, development infrastructure for the special programs. It must be mentioned, that strategic goal of the agrarian reforms should be to improve the level of life and to solve the food problems. Government should support those fields, which provide the full access of production and food for the total population;

14. Hence, improving governance is viewed as a major priority. It is essential to continue with assistance from Georgia's partners and mobilize support to translate the objectives into reality. Regulatory agencies have both enforcement/punitive and education/ supportive roles;

15. For the effective existence of the food markets in the country, it is extremely worth to organize auctions, commodity exchange markets, where the objective price for the food product should be set;

16. Internal (social, economic, technological) and external (foreign trade, trade balance, international competition, foreign investments) factors have a huge effect on the food security issues. For the objective assessment of food security all these factors should be studied, analyzed,

and implemented accordingly. A lot attention should be paid towards the factors contributing economic growth, to achieve economic growth and in this way to solve food security problem. Major priority should be the creation of competitive agrarian markets, which stimulate export growth;

17. A system of food security outreach education targeted toward consumers should be established through joint efforts among concerned ministries, universities, and other public sector agencies involved in food security, the private food industry sector, the mass media and other organizations that have an interest in the issue of food security;

18. Besides, another important issue of food security is insuring the quality and safety of the food products in the country. It is the government's priority to be the guaranty of the safe food. Quality and safety have to be built into food products throughout the production, processing and distribution chain, and this is the basic responsibility of the producers, processors and distributors of food. Georgian government should through extension services and other community outreach programmes, seek the co-operation of industry to promote the use of good agricultural and food handling and manufacturing practices in improving quality and safety of foods and preventing losses. The special needs of small and medium-scale industrial units require particular attention;

19. All aspects and avenues of information networking should be utilized, including the internet, to establish and foster linkages among educational establishments;

20. In order to regulate food demand and supply, food prices, consumer and producers interests, it is necessary to create special organ, which will stabilize all these factors through the proper intervention on the market. Besides, with the recommendation of the European Union, it would be useful to establish food security regulation agency, which will analyze and forecast the current condition of the food security and provide certain recommendations for the stakeholders. Experience of activities of national agencies in developed countries (England, Germany, France, etc) should be properly studied and assessed. While implementing concrete issues for the development of such organ, the basic characteristics of all these agencies should be taken into consideration. For instance, risk assessment analysis and separation are paid great importance in all those countries. The detailed definition and examination of these factors is extremely needed while creating regulatory agency;

21. There is highly recommended to establish risk assessment or risk evaluation tradition as the basis for food security policymaking. Formal risk assessment is demanding in terms of data and skills. Little expertise in these areas is available in Georgia and building it up will require a long and sustained effort. Less formal “risk evaluation” of commodity and hazard combinations can be a good next-best solution, and, in applying it, risk managers will better understand the data needed to carry out more formal analysis. Risk assessment and analysis of costs and benefits are the main building blocks for policymaking and for managing food security and food safety, both in government and in private enterprises;

22. Separation of public sector functions will promote transparency and help avoid conflicts of interests. Policy making should thus be separated from policy implementation, especially inspection, and independent public sector units should play roles in auditing and evaluation. Separation of risk management (mainly a policy role), risk assessment (mainly a scientific role), and risk communication (also mainly a policy role) will accomplish another important distinction in responsibilities.

23. As mentioned during the survey, the law on food safety is not approved yet and still needs special amendments. Besides, this law, a separate Law of Food Security is highly recommended to be implemented and adopted. The adoption of the Food Security Law is highly recommended as it would enable the effective coordination of all issues relevant to food security in Georgia. A Food Security Law would set out goals and mechanisms for coordinating, developing and controlling the implementation of food security and thus organize the various sectors of the State to implement a comprehensive food and nutrition security policy. The legal principles on which a food security should be based are: participation, accountability, non-discrimination, transparency, human dignity, empowerment and the rule of law. The food security law should establish the agencies responsible for food security lay down their functions and responsibilities and stipulate the guiding principles of the law by which all decisions and actions of the responsible bodies acting on the basis of this law will be guided. It should also include provisions on definitions, measures to enhance food security, the institutional setting for its implementation ensuring participation of civil society as well as financial and budgetary arrangements. Based on this law, other primary legislation and accompanying subsidiary legislation will need to be adopted

or amended. If such a law is adopted, existing sectoral legislation will have to be harmonized with it;

24. The WTO SPS and TBT Agreements have vastly changed the current international food trade scenario. The Agreements accept Codex international food standards and its other recommendations as bench marks for introduction of national food protection measures. Nations imposing more stringent requirements for food imports into their countries have to do so on the basis of valid scientific. As the WTO Agreements provide a level playing field for international trade in food, it would be in the interest of Georgia to accept and implement Codex standards. This also calls for its greater participation in Codex work. The information generated within Codex is of great significance in enhancing food security at national and local levels; being a member of WTO involves many potential benefits, but it also entails a commitment to comply with WTO rules and obligations. Sanitary and phytosanitary requirements generally play only a minor role in decisions on WTO activity, but the benefits derived from this organization can be significantly affected by the Georgian government and private sector capacities to manage these requirements;

25. Georgia should maintain active relations with United States, countries of European Union. It is very important to assess pessimistic, neuter and optimistic scenarios of the development of Georgian economy. Pessimistic scenario implies to continue the current political, economic and social tendencies and come out from the crisis in a drawling manner. According to the neuter scenario, crisis should be solved rapidly, not only with the geopolitical factors, but through the advantages in the education, science and technology. And finally, optimistic scenario means to solve the crisis very rapidly through the foreign investments (in case the inflow of foreign investment will be enormous). This situation will improve the level of life in the country. Of course, for Georgia, the third scenario is most acceptable. Although it must be mentioned, that this can be achieved through the sustainable development of Georgian economy. This strategy includes: creation of the market economy, entrepreneurship development, government role improvement, achievement of social responsibility and financial sustainability, accession in the European Union and NATO. It goes without saying, that the government of Georgia should make a firm social, economic and political commitment to achieve the objective of promoting the nutritional well-being of its people, as an integral part of its development policies, plans and programs in the short and long term. Ministries such as agriculture, health, education and other relevant sectors should

consider where possible, incorporating nutrition objectives in their plans, programmes and projects. Equally necessary is the coordination with NGOs and the private sector assuring access to adequate and safe food supplies, health care and education and related services which must be achieved using sustainable measures which are environmentally sound. This requires better utilization of natural resources to meet the nutritional and other needs of the growing population without jeopardizing the capacity to meet the needs of the future generations. This can happen by providing farmers with incentives to adopt sustainable and efficient practices in managing natural resources such as land and forest ownership, technical knowledge and through markets promotion. Priority must be given to the most food insecure, infants, small children, female child and adolescents, pregnant and nursing women and the elderly within households, the disabled, other groups include indigenous populations, refugees and displaced persons;

26. People's participation at local level is a prerequisite for improving food production and sustaining access to food, and for adequate nutrition improvement programmes and projects. The importance of the informal sector in the processing of and distribution of food should be recognized.

Implementing all these recommendations greatly contribute to the achievement of the food security, which facilitates country integration into the international market and in international economic relations, as well as, it can be seen as major factor of country's economical security and development.

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## APPENDICES

### Appendix A-1. Personal interview instrument for government members

Institution:-----  
-----

Name and title of respondent:-----  
-----

Date of Interview:-----  
-----

1. Do you think there are issues in adoption and implementation of policy for harmonization (approximation) of national legislation with international/EU food safety standards and regulations, such as Codex Alimentarius, ISO?
2. Do you think current food security system in your country is transparent?

| Yes | No |
|-----|----|
|     |    |

3. Do you think there are any issues in developing government communication policy?

| Yes | No |
|-----|----|
|     |    |

3.1 If yes, please indicate one or more issues below:

- Between various government bodies
- With consumers and consumer advocates
- With agribusinesses
- With independent experts, NGOs, donors
- Others, please indicate-----  
-----

4. Do you think there are any issues in developing training policy for government officials, independent experts, and donors?

|     |    |
|-----|----|
| Yes | No |
|     |    |

5. Do you think that government officials responsible for food security regulation have adequate academic qualifications and on-the-job trainings?

|     |    |
|-----|----|
| Yes | No |
|     |    |

6. Do you feel this training is sufficient?

|     |    |
|-----|----|
| Yes | No |
|     |    |

7. If no, what additional academic training would you recommend?-----  
 -----  
 -----

8. Do you think current food safety system in country is transparent?

| Level of transparency | Members of government |
|-----------------------|-----------------------|
| 1                     |                       |
| 2                     |                       |
| 3                     |                       |
| 4                     |                       |
| 5                     |                       |
| 6                     |                       |
| 7                     |                       |
| 8                     |                       |
| 9                     |                       |
| 10                    |                       |

|                     |  |
|---------------------|--|
| Missing/No response |  |
|---------------------|--|

9. Please indicate those economic factors, which you think have positive effect on food security achievement?-----  
-----  
-----  
-----  
-----

10. Please indicate those economic factors, which you think have negative effect on food security achievement?-----  
-----  
-----  
-----  
-----

**Appendix A-2. Personal interview instrument for food producers**

Name of Respondent:-----  
-----

Type of Operation (Please specify)-----  
-----  
-----

Date of Interview: -----

1. Do you know the specific food security regulations that apply to your processing operations:

| Yes | No |
|-----|----|
|     |    |

2. If, Yes, what are the food safety regulations you must follow?-----  
-----  
-----  
-----

3. Do you have confidence that regulatory agencies are competent in enforcing regulations and have an understanding of those regulations to ensure food security?

| Yes | No |
|-----|----|
|     |    |

4. Are you exporting, or do you plan to, export your food products?

| Yes | No |
|-----|----|
|     |    |

5. Are you familiar with the regulations and standards (major international standards, WTO, ISO,) governing export?

| Yes | No |
|-----|----|
|     |    |

6. Do you think there are any issues in adoption and implementation of policy for harmonization (approximation) of national legislation with international/EU food security standards and regulations, such as Codex Alimentarius, ISO?

| Yes | No |
|-----|----|
|     |    |

7. What benefits do you see in such policy?-----

-----  
 -----  
 -----

8. What negative outcomes do you see in such a policy?-----

-----  
 -----  
 -----

9. Please indicate those economic factors, which you think have positive effect on food security achievement?-----

-----  
 -----  
 -----

10. Please indicate those economic factors, which you think have negative effect on food security achievement

**Appendix A-3. Personal interview instrument for NGOs, independents experts, foreign donor organizations**

Name of Respondent:-----  
-----

Name of Organization -----  
-----  
-----

Date of Interview: -----

1. Do you think there are any issues in adoption and implementation of policy for harmonization (approximation) of national legislation with international/EU food security standards and regulations, such as Codex Alimentarius, ISO?

| Yes | No |
|-----|----|
|     |    |

2. If yes, indicate one or more issues below:

- Determining which standards to use (EU vs. ISO)
- Development of mandatory regulations vs. voluntary standards
- Role of government vs. business in development of regulations and standards
- Inclusion of public in standards development
- Other, Please indicate-----  
-----  
-----

3. Do you think current food security system in your country is transparent?

| Yes | No |
|-----|----|
|     |    |

4. Does your organization provide food security information to any of the following institutions/organizations? Check yes or no for each institution/Organization?

| Institution/Organization | Yes | No |
|--------------------------|-----|----|
| Government               |     |    |
| Food Industry            |     |    |
| Consumers                |     |    |
| Universities             |     |    |
| Others, Please mention   |     |    |

5. Is yes, please explain the nature of the information (Please list, such as training, technical assistance, regulatory compliance, export information, etc)-----  
-----  
-----  
-----
6. Please indicate those economic factors, which you think have positive effect on food security achievement?-----  
-----  
-----  
-----  
-----
7. Please indicate those economic factors, which you think have negative effect on food security achievement?-----  
-----  
-----

**Appendix A-4. Personal interview instrument for consumers**

Name of Respondent:-----  
-----

Date of Interview: -----

1. Gender

- Male
- Female

2. Age Range

- 18-25
- 26-40
- 41-60
- 61 and older

3. Please describe the difference between “food safety” and “food security” concepts-----

-----  
-----  
-----  
-----

4. Would you evaluate current food security situation in our country as “satisfactory”?

| Yes | No | Do not know |
|-----|----|-------------|
|     |    |             |

5. Have you heard about international standards on food security?

| Yes | No |
|-----|----|
|     |    |



5.1.If yes, please name them-----  
 -----  
 -----  
 -----  
 -----  
 -----

6. Does application of international standards in our country have any impact on food security issues?

| Yes | No | Do not Know |
|-----|----|-------------|
|     |    |             |

6.1 If yes, please describe positive or negative examples

Positive examples-----  
 -----  
 -----

Negative examples-----  
 -----  
 -----  
 -----

7. Please indicate those economic factors, which you think have positive effect on food security achievement?-----  
 -----  
 -----  
 -----  
 -----

8. Please indicate those economic factors, which you think have negative effect on food security achievement?-----  
-----  
-----  
-----  
-----

## APPENDIX B. FOOD SECURITY ASSESSMENT FACTORS

**Table B.1. Food production in 1997-2008<sup>6</sup>**

| Production                  |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Production (kg/person/year) |      |      |      |      |      |      |      |      |      |      |      |      |
| Food groups                 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Cereals                     | 155  | 145  | 142  | 138  | 134  | 135  | 150  | 162  | 141  | 122  | 130  | 128  |
| Starchy Roots               | 9    | 14   | 8    | 10   | 11   | 13   | 4    | 7    | 5    | 7    | 6    | 9    |
| Sugar &<br>Sweeteners       | 22   | 27   | 24   | 19   | 22   | 24   | 14   | 18   | 16   | 13   | 16   | 15   |
| Pulses                      | 1    | 1    | 1    | 3    | 3    | 3    | 2    | 6    | 4    | 2    | 5    | 3    |
| Treenuts                    | 8    | 9    | 7    | 12   | 15   | 8    | 4    | 6    | 5    | 9    | 5    | 8    |
| Oilcrops                    | 1    | 1    | 1    | 2    | 6    | 4    | 4    | 9    | 6    | 8    | 10   | 8    |
| Vegetable Oils              | 5    | 10   | 11   | 14   | 13   | 10   | 5    | 7    | 6    | 8    | 7    | 9    |
| Vegetables                  | 79   | 77   | 75   | 80   | 89   | 80   | 64   | 68   | 60   | 60   | 55   | 52   |
| Fruits - Excluding<br>Wine  | 120  | 114  | 113  | 120  | 127  | 120  | 110  | 116  | 120  | 98   | 99   | 90   |
| Stimulants                  | 5    | 9    | 8    | 8    | 7    | 6    | 4    | 7    | 5    | 7    | 9    | 6    |
| Spices                      | 3    | 3    | 3    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 2    |
| Alcoholic<br>Beverages      | 37   | 40   | 39   | 20   | 22   | 24   | 30   | 29   | 26   | 25   | 24   | 24   |
| Meat                        | 22   | 19   | 23   | 18   | 22   | 17   | 15   | 19   | 18   | 15   | 14   | 10   |
| Offals                      | 3    | 2    | 3    | 2    | 3    | 3    | 1    | 3    | 4    | 2    | 2    | 2    |
| Animal Fats                 | 3    | 4    | 2    | 2    | 3    | 3    | 4    | 2    | 1    | 3    | 3    | 2    |
| Milk - Excluding<br>Butter  | 89   | 83   | 89   | 100  | 108  | 104  | 150  | 167  | 178  | 162  | 150  | 140  |
| Eggs                        | 39   | 42   | 42   | 45   | 44   | 38   | 57   | 54   | 58   | 50   | 51   | 54   |
| Fish, Seafood               | 4    | 8    | 6    | 2    | 2    | 4    | 3    | 4    | 5    | 4    | 3    | 2    |

<sup>6</sup> Source for all tables: <http://www.fao.org/economic/ess/food-security-statistics/en/>, [www.geostat.ge](http://www.geostat.ge)

**Table B.2. Food consumption in 1997-2008**

| <b>Consumption</b>                  |             |             |             |             |             |             |             |             |             |             |             |             |
|-------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Consumption( kg/person/year)</b> |             |             |             |             |             |             |             |             |             |             |             |             |
| <b>Food groups</b>                  | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
| Cereals                             | 181         | 179         | 180         | 165         | 164         | 168         | 158         | 145         | 140         | 147         | 140         | 141         |
| Starchy Roots                       | 25          | 27          | 23          | 22          | 24          | 21          | 19          | 15          | 18          | 17          | 15          | 16          |
| Sugar & Sweeteners                  | 36          | 34          | 37          | 30          | 27          | 29          | 27          | 25          | 26          | 24          | 26          | 23          |
| Pulses                              | 3           | 5           | 2           | 3           | 5           | 4           | 2           | 4           | 6           | 3           | 1           | 2           |
| Treenuts                            | 22          | 23          | 18          | 19          | 18          | 20          | 17          | 15          | 16          | 19          | 23          | 22          |
| Oilcrops                            | 2           | 4           | 4           | 3           | 6           | 5           | 2           | 2           | 2           | 4           | 2           | 6           |
| Vegetable Oils                      | 15          | 13          | 11          | 13          | 14          | 12          | 15          | 11          | 14          | 13          | 12          | 13          |
| Vegetables                          | 237         | 237         | 236         | 240         | 243         | 245         | 226         | 234         | 231         | 228         | 220         | 226         |
| Fruits - Excluding Wine             | 64          | 67          | 64          | 59          | 54          | 57          | 44          | 47          | 48          | 35          | 39          | 38          |
| Stimulants                          | 27          | 28          | 24          | 20          | 23          | 24          | 19          | 16          | 18          | 18          | 16          | 19          |
| Spices                              | 2           | 1           | 2           | 3           | 4           | 2           | 1           | 3           | 7           | 2           | 4           | 5           |
| Alcoholic Beverages                 | 40          | 41          | 43          | 49          | 51          | 48          | 47          | 52          | 50          | 47          | 48          | 43          |
| Meat                                | 34          | 38          | 36          | 30          | 29          | 28          | 26          | 24          | 22          | 25          | 20          | 24          |
| Offals                              | 4           | 3           | 6           | 3           | 7           | 5           | 9           | 7           | 5           | 8           | 5           | 6           |
| Animal Fats                         | 4           | 6           | 5           | 5           | 8           | 5           | 6           | 4           | 8           | 8           | 7           | 6           |
| Milk - Excluding Butter             | 81          | 80          | 82          | 78          | 79          | 80          | 69          | 73          | 72          | 63          | 59          | 61          |
| Eggs                                | 104         | 115         | 124         | 109         | 122         | 105         | 98          | 105         | 99          | 98          | 101         | 96          |
| Fish, Seafood                       | 25          | 25          | 27          | 17          | 23          | 19          | 25          | 22          | 18          | 15          | 16          | 14          |

**Table B.3. Average monthly income per capita in 1997-2008**

| Average monthly income per capita (GEL) |      |      |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Total Country                           | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|   | 41   | 46   | 48   | 46   | 50   | 73   | 75   | 80   | 92   | 102  | 112  | 115  |
|   |      |      |      |      |      |      |      |      |      |      |      |      |

**Table B. 4. Consumer Price Index in 1997-2008**

| Consumer Basket Cost By Aggregate Group (In a month, GEL) |      |      |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| Total Country   | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|   | 102  | 105  | 107  | 107  | 116  | 120  | 133  | 136  | 141  | 147  | 158  | 161  |
|   |      |      |      |      |      |      |      |      |      |      |      |      |

**Table B. 5. Food consumption in 1997-2008**

| Food Consumption                                   |      |      |      |      |      |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|------|------|------|------|------|
|  | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Carbohydrate Consumption<br>(g/Person/Day)         | 330  | 329  | 328  | 336  | 339  | 335  | 340  | 341  | 339  | 350  | 355  | 353  |
| Dietary Protein<br>Consumption<br>(g/Person/Day)   | 67   | 68   | 69   | 70   | 71   | 77   | 76   | 78   | 76   | 80   | 81   | 82   |
| Dietary Fat Consumption<br>(g/Person/Day)          | 73   | 69   | 70   | 71   | 73   | 72   | 60   | 65   | 59   | 64   | 62   | 63   |
| Dietary energy<br>Consumption<br>(Kcal/Person/Day) | 2050 | 2060 | 2055 | 2100 | 2090 | 2200 | 2180 | 2300 | 2300 | 2302 | 2300 | 2300 |

**Table B.6. Minimum energy requirements in 1997-2008**

| <b>Minimum energy requirements</b>  |             |             |             |             |             |             |             |             |             |             |             |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|   | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
| Minimum Dietary energy Requirement according to FAO:  | 1980        | 1980        | 1970        | 1970        | 1980        | 1980        | 1980        | 2000        | 2100        | 2100        | 2100        | 2100        |
| Minimum Dietary energy Requirement according to the Ministry of health and social Affairs of Georgia: | 2300        | 2300        | 2300        | 2350        | 2400        | 2400        | 2450        | 2500        | 2500        | 2530        | 2530        | 2500        |

## APPENDIX C. MAJOR INSTRUMENTS USED FOR REGRESSION ANALYSIS

**Table C.1. The Impact of regional food utilization factors on the country food utilization factor –A**

|      | Georgia | Ajara<br>(X1) | Imereti<br>(X2) | Samegr&Zemo<br>Svan<br>(X3) | Guria<br>(X4) | Racha<br>Lechx<br>(X5) | Shida<br>Kartli<br>(X6) | Mtskheta<br>Mtianeti<br>(X7) | Kakheti<br>(X8) | Qvemo<br>Qartli<br>(X9) | Samtskhe-<br>Javaxeti<br>(X10) |
|------|---------|---------------|-----------------|-----------------------------|---------------|------------------------|-------------------------|------------------------------|-----------------|-------------------------|--------------------------------|
| 1997 | 0.89    | 0.9           | 0.91            | 0.88                        | 0.8           | 0.87                   | 0.9                     | 0.89                         | 0.8             | 0.9                     | 0.88                           |
| 1998 | 0.89    | 0.9           | 0.91            | 0.88                        | 0.8           | 0.87                   | 0.9                     | 0.89                         | 0.8             | 0.9                     | 0.9                            |
| 1999 | 0.89    | 0.9           | 0.91            | 0.88                        | 0.8           | 0.87                   | 0.9                     | 0.89                         | 0.8             | 0.9                     | 0.88                           |
| 2000 | 0.89    | 0.9           | 0.91            | 0.88                        | 0.8           | 0.87                   | 0.9                     | 0.89                         | 0.8             | 0.9                     | 0.88                           |
| 2001 | 0.87    | 0.89          | 0.87            | 0.85                        | 0.82          | 0.82                   | 0.88                    | 0.85                         | 0.89            | 0.87                    | 0.89                           |
| 2002 | 0.91    | 0.9           | 0.92            | 0.92                        | 0.9           | 0.93                   | 0.93                    | 0.92                         | 0.94            | 0.91                    | 0.9                            |
| 2003 | 0.89    | 0.9           | 0.91            | 0.88                        | 0.8           | 0.87                   | 0.9                     | 0.89                         | 0.8             | 0.9                     | 0.88                           |
| 2004 | 0.92    | 0.9           | 0.91            | 0.93                        | 0.9           | 0.91                   | 0.89                    | 0.9                          | 0.89            | 0.91                    | 0.9                            |
| 2005 | 0.92    | 0.9           | 0.91            | 0.93                        | 0.9           | 0.91                   | 0.89                    | 0.9                          | 0.89            | 0.91                    | 0.9                            |
| 2006 | 0.91    | 0.9           | 0.91            | 0.89                        | 0.89          | 0.87                   | 0.91                    | 0.9                          | 0.91            | 0.9                     | 0.88                           |
| 2007 | 0.91    | 0.9           | 0.91            | 0.89                        | 0.89          | 0.87                   | 0.91                    | 0.9                          | 0.91            | 0.9                     | 0.88                           |
| 2008 | 0.92    | 0.9           | 0.92            | 0.92                        | 0.9           | 0.93                   | 0.93                    | 0.92                         | 0.94            | 0.91                    | 0.9                            |

**Table C.2. Findings of the regression analysis**

|        |       |        |      |       |       |        |      |      |      |        |
|--------|-------|--------|------|-------|-------|--------|------|------|------|--------|
| -3E-16 | 0     | -0.262 | 0    | 0.167 | 0.071 | 0.5238 | 0    | 0    | 0    | 0.4683 |
| 0.1614 | 0     | 0.063  | 0    | 0.125 | 0.09  | 0.0815 | 0    | 0    | 0    | 0.175  |
| 0.9827 | 0.003 | #N/A   | #N/A | #N/A  | #N/A  | #N/A   | #N/A | #N/A | #N/A | #N/A   |
| 68.2   | 6     | #N/A   | #N/A | #N/A  | #N/A  | #N/A   | #N/A | #N/A | #N/A | #N/A   |
| 0.0028 | 5E-05 | #N/A   | #N/A | #N/A  | #N/A  | #N/A   | #N/A | #N/A | #N/A | #N/A   |

**Table C.3. The Impact of regional food access factor on the country food access factor B**

|      | Georgia | Ajara | Imereti | Samegr&<br>Zemo<br>Svan | Guria | Racha<br>Lechx | Shida<br>Kartli | Mtskheta<br>Mtianeti | Kakheti | Qvemo<br>Qartli | Samtskhe-<br>Javaxeti |
|------|---------|-------|---------|-------------------------|-------|----------------|-----------------|----------------------|---------|-----------------|-----------------------|
| 1997 | 0.4     | 0.39  | 0.41    | 0.38                    | 0.38  | 0.4            | 0.38            | 0.41                 | 0.42    | 0.4             | 0.4                   |
| 1998 | 0.43    | 0.43  | 0.42    | 0.43                    | 0.4   | 0.39           | 0.4             | 0.42                 | 0.39    | 0.4             | 0.4                   |
| 1999 | 0.44    | 0.44  | 0.45    | 0.4                     | 0.41  | 0.42           | 0.43            | 0.45                 | 0.41    | 0.42            | 0.43                  |
| 2000 | 0.42    | 0.4   | 0.42    | 0.43                    | 0.44  | 0.39           | 0.4             | 0.42                 | 0.39    | 0.4             | 0.41                  |
| 2001 | 0.43    | 0.42  | 0.41    | 0.4                     | 0.39  | 0.41           | 0.43            | 0.44                 | 0.41    | 0.42            | 0.42                  |
| 2002 | 0.6     | 0.61  | 0.59    | 0.6                     | 0.61  | 0.58           | 0.58            | 0.61                 | 0.58    | 0.61            | 0.61                  |
| 2003 | 0.56    | 0.55  | 0.57    | 0.55                    | 0.54  | 0.58           | 0.54            | 0.6                  | 0.58    | 0.56            | 0.4                   |
| 2004 | 0.58    | 0.59  | 0.6     | 0.59                    | 0.61  | 0.57           | 0.55            | 0.59                 | 0.57    | 0.59            | 0.4                   |
| 2005 | 0.65    | 0.67  | 0.65    | 0.66                    | 0.6   | 0.69           | 0.65            | 0.68                 | 0.62    | 0.65            | 0.43                  |
| 2006 | 0.69    | 0.7   | 0.71    | 0.72                    | 0.67  | 0.64           | 0.68            | 0.64                 | 0.68    | 0.63            | 0.41                  |
| 2007 | 0.7     | 0.72  | 0.74    | 0.78                    | 0.69  | 0.68           | 0.7             | 0.69                 | 0.72    | 0.7             | 0.42                  |
| 2008 | 0.71    | 0.71  | 0.69    | 0.72                    | 0.73  | 0.72           | 0.69            | 0.7                  | 0.71    | 0.72            | 0.61                  |

**Table C.4. Findings of the regression analysis**

|        |       |       |       |       |       |        |        |         |        |        |
|--------|-------|-------|-------|-------|-------|--------|--------|---------|--------|--------|
| 0.0005 | -0.41 | 0.243 | 0.177 | 0.222 | 0.082 | 0.2639 | 0.0393 | -0.3    | 0.6255 | 0.0377 |
| 0.0329 | 0.138 | 0.088 | 0.132 | 0.114 | 0.104 | 0.063  | 0.0719 | 0.15667 | 0.1453 | 0.0136 |
| 0.9999 | 0.004 | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |
| 1311.1 | 1     | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |
| 0.1615 | 1E-05 | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |



**Table C.5. The impact of regional food availability factors on the country food availability factor C**

|      | Georgia | Ajara | Imereti | Samegr&Ze<br>mo Svan | Guria | Racha<br>Lechx | Shida<br>Kartli | Mtskheta<br>Mtianeti | Kakheti | Qvemo<br>Qartli | Samtskhe<br>-Javaxeti |
|------|---------|-------|---------|----------------------|-------|----------------|-----------------|----------------------|---------|-----------------|-----------------------|
| 1997 | 0.66    | 0.67  | 0.65    | 0.6                  | 0.61  | 0.59           | 0.61            | 0.66                 | 0.63    | 0.66            | 0.65                  |
| 1998 | 0.65    | 0.64  | 0.63    | 0.61                 | 0.6   | 0.66           | 0.6             | 0.67                 | 0.64    | 0.62            | 0.64                  |
| 1999 | 0.64    | 0.63  | 0.63    | 0.59                 | 0.64  | 0.6            | 0.6             | 0.65                 | 0.64    | 0.63            | 0.63                  |
| 2000 | 0.68    | 0.67  | 0.66    | 0.69                 | 0.62  | 0.69           | 0.65            | 0.69                 | 0.63    | 0.65            | 0.65                  |
| 2001 | 0.7     | 0.71  | 0.72    | 0.69                 | 0.68  | 0.7            | 0.71            | 0.68                 | 0.7     | 0.68            | 0.71                  |
| 2002 | 0.68    | 0.67  | 0.67    | 0.65                 | 0.69  | 0.63           | 0.63            | 0.68                 | 0.68    | 0.64            | 0.63                  |
| 2003 | 0.76    | 0.77  | 0.76    | 0.74                 | 0.73  | 0.79           | 0.75            | 0.79                 | 0.73    | 0.74            | 0.65                  |
| 2004 | 0.85    | 0.86  | 0.85    | 0.84                 | 0.86  | 0.87           | 0.8             | 0.83                 | 0.83    | 0.89            | 0.64                  |
| 2005 | 0.82    | 0.8   | 0.8     | 0.83                 | 0.83  | 0.81           | 0.82            | 0.84                 | 0.83    | 0.82            | 0.63                  |
| 2006 | 0.77    | 0.71  | 0.74    | 0.76                 | 0.78  | 0.77           | 0.74            | 0.75                 | 0.79    | 0.71            | 0.65                  |
| 2007 | 0.78    | 0.75  | 0.78    | 0.76                 | 0.78  | 0.74           | 0.78            | 0.74                 | 0.78    | 0.69            | 0.71                  |
| 2008 | 0.74    | 0.69  | 0.76    | 0.72                 | 0.72  | 0.72           | 0.7             | 0.71                 | 0.73    | 0.75            | 0.63                  |

**Table C.6. Findings of the regression analysis**

|        |       |       |       |       |       |        |        |         |        |        |
|--------|-------|-------|-------|-------|-------|--------|--------|---------|--------|--------|
| 2.5667 | 0.682 | -     | 2.767 | 2.019 | 0.423 | 0.818  | 0.5811 | 0.81406 | -1.706 | -1.755 |
| 0.6486 | 0.208 | 0.254 | 0.645 | 0.454 | 0.11  | 0.2625 | 0.112  | 0.15313 | 0.4778 | 0.4446 |
| 0.9997 | 0.004 | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |
| 334.12 | 1     | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |
| 0.0528 | 2E-05 | #N/A  | #N/A  | #N/A  | #N/A  | #N/A   | #N/A   | #N/A    | #N/A   | #N/A   |