ARMENIA COMPREHENSIVE FOOD SECURITY, VULNERABILITY AND NUTRITION ANALYSIS (CFSVNA)

April 2016*

Revised: December 2017

Foreword

Food insecurity and a dual malnutrition burden remain major challenges in Armenia, hampering the realization of the full human and socio-economic potential of the population. Despite the economic growth over the last decade, the level of food insecurity has been stagnant over the past five years, and there is growing disparity between the food insecure and food secure. Hunger has many costs: child undernutrition negatively impacts the Gross Domestic Product of the country as a result of increased healthcare costs and lower productivity. It also adds to education costs: food-insecure households are less educated and allocate less of their overall income to education expenses.

Poor nutrition causes irreversible damage to children. It affects brain and body development, and school achievement, as well as health and productivity later in life. Pregnancy and early childhood – the first 1,000 days – are especially critical. This underlines the importance of improving nutrition for mothers and young children. Access to nutritious food and awareness of its importance is crucial for a healthy, strong and productive population in the future.

Tackling food insecurity and child malnutrition requires new approaches to address the Sustainable Development Goals comprehensively, as they are all interlinked. The new food and food security systems, which include safety nets, need to play a bigger role in economic and social development. They must be inclusive, nutritious and healthy, climate smart, sustainable, business-friendly and productive.

This report was jointly developed by the National Statistical Service of the Republic of Armenia (NSS RA), the United Nations World Food Programme (WFP), and the United Nations Children's Fund (UNICEF). It presents Armenia's current socio-economic, poverty, food security and nutrition status, combined with trend analysis from 2008. It analyses data from the Integrated Living Conditions Surveys for the period 2008–2014 and identifies areas where measures could be taken, and areas where further investment would improve food and nutrition security and strengthen resilience to the risks that households face.

The report conveys several key messages for decision and policy-makers: 1) education is critical for improved food security; 2) a dual burden of malnutrition exists across the country among children under 5, with large numbers of both stunted and overweight children; 3) volatility in global and regional economies impedes Armenia's economic growth, and 4) the majority of the country's population is at risk of one or more natural hazards.

The report suggests that with joint efforts and with a greater coordination among all stakeholders, it is possible to develop and implement comprehensive national food security (in its three dimensions - availability, access and utilization) and nutrition policy along a life-cycle approach, which will help address the current food insecurity and malnutrition in the country.
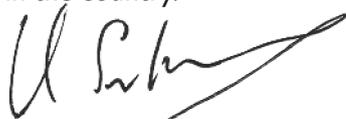
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Map designations used: The depictions and use of boundaries, geographic names and related data shown on maps and included in tables throughout the document are not warranted to be error-free, nor do they necessarily imply official endorsement or acceptance by the World Food Programme.

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List of Acronyms

AMD	Armenian Dram
BMI	Body Mass Index
CAC DRMI	Central Asia and Caucasus Disaster Risk Management Initiative
CARIM	Consortium for Applied Research on International Migration
CDC	Center for Disease Control
CFSVNA	Comprehensive Food Security, Vulnerability and Nutrition Analysis
CIS	Commonwealth of Independent States
DHS	Demographic and Health Survey
DRR	Disaster Risk Reduction
EU	European Union
FAO	Food and Agriculture Organization
FBP	Family Benefit Program
GDP	Gross Domestic Product
IAEA	International Atomic Energy Agency
IDDs	Iodine Deficiency Disorders
ILCS	Integrated Living Conditions Survey
ILO	International Labour Organization
IOM	International Organization for Migration
Kcal	Kilocalorie
MDG	Millennium Development Goal
MNDs	Micronutrient Deficiencies
NCDs	Non-Communicable Diseases
NDVI	Normalized Difference Vegetation Index
NSS RA	National Statistical Service of the Republic of Armenia
OECD	Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Cooperation in Europe
SD	Standard Deviation
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNISDR	United Nations Office for Disaster Risk Reduction
USA	United States of America
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

This Comprehensive Food Security, Vulnerability and Nutrition Analysis (CFSVNA) describes recent trends in the distribution of household food insecurity and child malnutrition in Armenia and explores underlying causes for them. It also recommends ways in which the government and its partners could address food insecurity and malnutrition in Armenia.

After several years of strong economic growth, the Armenian economy contracted by 14 percent[1] in 2009, in the aftermath of the 2008 global economic crisis. Poverty increased sharply, and a combination of this and high unemployment rates led many Armenians to pursue work opportunities abroad.

In 2014, Gross Domestic Product (GDP) grew by 3.6 percent. Although this was higher than in previous years,[2] it did not match pre-crisis levels of growth. Almost one in three people were living below the poverty line,[3] with urban areas outside the capital Yerevan worst affected (35 percent). Unemployment was a serious and growing problem affecting 18 percent of the economically active population;[4] it had been increasing since 2012, especially among women and young people.[5] Yerevan had the highest percentage of unemployment, at 27 percent.

Despite the economic growth over the last decade, the level of food insecurity has been stagnant over the past five years, and there is growing disparity between the food insecure and food secure

Food insecurity increased sharply in Armenia following the global economic crisis, and despite steady economic recovery and growth it has remained at a high level ever since. Fifteen percent of all households were food insecure in 2014, almost twice the level in 2008.[6] Data also shows that despite a stagnant rate of food insecurity, the level of food security has been increasing. This shows that although the situation is improving for part of the population, those worst off are being left behind. Increasing disparity is also seen in the Gini coefficient, an indicator for income inequality, which increased from 0.339 in 2008 to 0.373 in 2014.[7]

Exploring the distribution of food insecurity in 2014, this analysis found a higher prevalence in the north of the country, and in particular in Tavush (16 percent), Shirak (17 percent), Lori (17 percent) and Yerevan (18 percent).

A profile of food-insecure households was established. Food insecurity was closely linked to poverty: *marzes* (provinces) with the highest share of people below the poverty line (Lori and Shirak) had the highest share of food-insecure households. Food-insecure households had significantly more unemployed adults (19 percent)

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1   NSS RA & World Bank 2015.

2   NSS RA 2016.

3   NSS RA & World Bank 2015.

4   NSS RA 2015b.

5   Unemployment rates in 2014 were 20 percent among women and 37 percent among those aged 20–24.

6   ILCS 2014.

7   ILCS 2014.

compared with food-secure households (11 percent), a major concern given Armenia's high levels of unemployment. Similarly, pensions made up a larger proportion of overall income in food-insecure households, who also devoted a larger proportion of their overall expenditure to food and had fewer productive assets.

Education is critical for improved food security. Food-insecure households invested less in education than food-secure households, and they were educated to a lower level. Food-insecure households also had larger families and were more likely to have a disabled member.

	Profile of food-insecure households:
Demographics and education	⇒ Less educated and invest less in education ⇒ A higher likelihood of having a disabled member ⇒ Larger household size ⇒ Older heads of household
Food utilization	⇒ More food energy deficient ⇒ Higher percentage of staple foods in diet ⇒ Lower consumption of iron-rich foods
Food access	⇒ Higher poverty ⇒ Higher share of food expenditure ⇒ Relied more on pensions in their total income ⇒ More unemployed adults
Food availability	⇒ Fewer productive assets (land and livestock)
Stability	⇒ More money borrowed ⇒ Higher debts ⇒ Higher share of unsustainable income sources ⇒ Remittances make up >75 percent of total income

Food-insecure households borrowed more money and had more debts. They had less sustainable income sources and most of their income came from remittances – all indicators of unstable food security.

Finally, food-insecure households had poorer diets in terms of both quantity and quality, and they had a lower consumption of iron-rich foods.

Methodology

The report's findings are mainly based on the Integrated Living Conditions Surveys (ILCS) for the period 2008–2014. The ILCS is carried out each year by the National Statistical Service of the Republic of Armenia (NSS RA). In addition, an extensive literature review and secondary data sources were used to describe the country's recent socio-economic trends and risks. The nutrition analysis is based on ILCS 2014 anthropometric data and the Demographic and Health Surveys (DHS) for the period 2000–2010.

A food security framework and corresponding pillars (availability, access, utilization and stability) were used to create food security and nutrition indicators. Using ILCS data, food security profiles were created to reflect households' current consumption (diet quality and quantity), wealth and the sustainability of their income sources.

Geographically, north-western Armenia has the highest levels of food insecurity and the highest prevalence of malnutrition among children under 5.

In 2014, 19 percent of children under 5 years old were stunted and 15 percent were overweight. While rates of stunting and overweight were falling among children in rural areas, both were rising in urban areas. In urban areas outside Yerevan, where poverty was higher and education levels lower, 22 percent of children were stunted and 17 percent were overweight.

A dual burden of malnutrition exists across the country among children under 5, with large numbers of stunted and overweight children

Child stunting was significantly linked with household poverty, poor consumption, poor care and feeding practices, and lower education of mothers. The prevalence of overweight was the same across poor and rich households, indicating the need for greater awareness of healthy eating and lifestyle across the entire population.

Overweight children are more likely to become overweight as adults, which poses serious public health concerns. To help develop effective policies, national data collection needs to be improved to understand the prevalence and causes of overweight.

Deficiencies in micronutrients affect malnutrition and food insecurity; research to understand their prevalence and causes is under way in Armenia.[8] In this analysis, data from recent years[9] shows that food-insecure households consume a significantly lower level of iron-rich foods, indicating the importance of a nutritionally diverse diet.

The current level of malnutrition and micronutrient deficiencies in the country present a public health risk with significant implications for society and the economy, through healthcare costs as well as indirect costs associated with lost productivity.

Volatility in global and regional economies impedes Armenia's economic growth, and the majority of the country's population is at risk of one or more natural hazards

Together with these concerns, Armenia is a country exposed to multiple risks: this analysis found that 28 percent of households are at risk of becoming food insecure if affected by any shock.

The recent global and regional economic crises considerably reversed Armenia's achievements in poverty reduction and pushed many households below the poverty line and into food insecurity. This underlines the country's dependence on external economies, and its overall vulnerability to shocks in them. Such shocks destabilise trade, foreign exchange and the flow of remittances to Armenia. Remittances are a key income source for many households. They make a very significant contribution to the economy (18 percent of GDP in 2014). A sharp decrease in private remittances from 2015[10] poses a serious future risk in terms of poverty and food security.

Armenia is a shock-prone country where the majority of the population is at risk of one or more types of natural disasters. Earthquakes have the biggest economic impact, but less severe, more frequent shocks have a direct impact on the country's productivity and food security. These include hailstorms, frost, flooding, land- or mudslides and drought. Armenia is also exposed to human-induced hazards, including industrial accidents and political tensions within the region.

Since food insecurity, malnutrition, poverty and shocks are closely interrelated, analyses need to consider the wider impacts of changes in each.

Conclusions and recommendations

Many policies and programmes are in place to improve food and nutrition security in Armenia, aligned to critical strategic frameworks including the Armenia Development Strategy for 2014–25 and the United Nations Development Assistance Framework (UNDAF) 2016–2020.

This analysis concluded that further investments are needed to improve food and nutrition security, and to strengthen resilience to the risks households face. The following recommendations were made, based on the findings of this analysis:

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8   DHS 2015

9   ILCS 2008-14

10 IMF Armenia: News Report for March 2, 2016.

Strengthen food security and nutrition with comprehensive policies	• Develop and implement comprehensive national food security (in its three dimensions – availability, access and utilization) and nutrition policies, along a life-cycle approach
Reduce urban vulnerability and disparity	• Reduce inequality in urban areas by supporting labour opportunities for women and young people • Invest in initiatives for education, training and development in urban areas
Improve food security through investments in youth employment, education and agricultural productivity	• Support sustainable employment opportunities, especially for young people and in sectors less exposed to external economic shocks • Ensure agricultural policies and strategies refer to the production of diversified, nutrient-rich and affordable food as programmatic priorities for the Government of Armenia • Maintain and expand investments in education that provide opportunities to reduce the risk of food insecurity • Reinforce the productive assets of rural households involved in agriculture
Reduce the risk of stunting through early identification and tackle overnutrition through increased awareness	• Continue and improve initiatives that reduce the risk of stunting, particularly monitoring systems and the identification of at-risk or stunted children • Increase investments to tackle overnutrition • Boost initiatives that raise awareness of healthy diet and lifestyle
Reinforce emergency preparedness and disaster risk management	• Maintain and expand emergency preparedness programmes and disaster risk management activities • Support income generation and diversification • Invest in surplus, flexible credit policies, vigilance around financial flow changes and increased effectiveness of insurance institutions • Target preparedness and risk reduction measures in the most vulnerable *marzes* and urban areas
Increase the evidence base on food security and nutrition	• Further support NSS RA to analyse data according to their needs, including data on the distribution of vulnerability and food and nutrition insecurity • Increase the available data on non-communicable diseases and micronutrient deficiencies, in particular iron-deficiency anaemia • Encourage the collection of data on the impact, cost efficiency and effectiveness of interventions, to ensure their transparency and accountability • Collect additional data to understand underlying causes of overweight in children and adolescents • Strengthen partnerships around research and evidence-based programming for food security and nutrition
Enhance coordination	• Increase the coordination of food security and nutrition actors and activities • Establish a donor coordination forum around food security

Report Structure

Chapter 1 presents background information on Armenia's political and socio-economic context, including GDP and demographic trends as well as specific public health concerns. The chapter also presents the methodology for this analysis. This includes a food security and nutrition analytical framework, and detail on indicators used to classify food-secure, food-insecure and vulnerable households according to four pillars of food security: access, availability, utilization and stability.

Chapter 2 gives an overview of recent trends in household food insecurity. It explores the range of indicators which were significant in distinguishing food-insecure, vulnerable and food-secure households.

Chapter 3 includes information on socio-economic trends that influence national food security, covering issues including poverty, unemployment, emigration, remittances and livelihoods.

Chapter 4 describes the natural and human-induced shocks and stresses affecting Armenia, and the risks they pose to household food security. This includes the volatility of external economies, the range of natural disaster risks, and an issue increasingly urgent in Armenia and beyond: how climate change can impact productivity and food security.

Chapter 5 looks at the so-called 'dual burden' of malnutrition in children under 5 – stunting and overweight. Causal analysis is done with the existing quantitative data, and by using qualitative information. This chapter also briefly explores micronutrient deficiencies, in particular iron-deficiency anaemia among women of reproductive age and children under 5.

Chapter 6 uses maps to illustrate the geographical distribution of different risks, overlaying these with food insecurity and malnutrition prevalence. The maps illustrate the most vulnerable areas of Armenia, and they can inform the targeting of risk-reduction interventions.

Chapter 7 describes existing initiatives for tackling food insecurity and malnutrition according to themes: social protection; inclusive productivity; risk reduction; nutrition awareness; integrated social services; and education to support young people.

Chapter 8 identifies the key findings of the analysis and suggests recommendations for each of these, in order to support the Government of Armenia and its partners in their efforts to improve food and nutrition security.

1. Background and methodology

1.1 Rationale of the analysis

Food and nutrition security is a high priority for the Government of Armenia, and it is central to the Armenia Development Strategy for 2014–25. This Comprehensive Food Security, Vulnerability and Nutrition Analysis (CFSVNA) presents the current socio-economic, political, food security and nutrition context combined with recent trend analysis, and it suggests measures to support the Government of Armenia and its partners in improving food and nutrition security. The specific objectives of the analysis are to:

- Estimate the proportion of food-insecure households at the national and *marz* level, and in urban and rural areas;
- Describe the profile of food-insecure households according to key indicators;
- Describe trends in food insecurity and malnutrition;
- Describe the key risks faced by the population, and their geographical distribution; and
- Recommend interventions to improve food and nutrition security.

Overall, the analysis aims to support policy and programming initiatives by the Government of Armenia and its partners,[11] and to strengthen ongoing collaborations for sustainable development.

1.2. Country background

1.2.1 Political and socio-economic trends

The Republic of Armenia is a landlocked, lower-middle-income country of around 3 million people.[12] It borders Georgia and Azerbaijan to the north and east, and Iran and Turkey to the south and west. The country was a member of the Soviet Union from 1920 until its independence in 1991, and it adopted its national constitution in 1995.

Armenia's Head of State is the President, who oversees the functioning of legislative, executive and judicial authorities and appoints members of government based on the Prime Minister's proposals. A single-chambered National Assembly is the supreme legislative power of Armenia and consists of 131 deputies.

The governing Armenian Republican Party has had an absolute majority in Parliament since the parliamentary elections in May 2012. In February 2013, President Serzh Sargsyan was re-elected, with positive assessments of the election process given by international observation missions. In 2015 the Republican Party initiated a referendum for constitutional amendments, which was passed on 6 December. In the referendum, 66.2 percent voted in favour of transition from the semi-presidential to a parliamentary system of government, and this will come in effect at the end of 2018. At the end of 2015, official statements were made on negotiations to form a coalition government with the Armenian Revolutionary Dashnaktsutyun Party, which is likely to result in a sharing of ministerial seats.

The Human Development Index for Armenia in 2014 was 0.730,[13] placing it in the high human development category and positioning it 87th out of 187 countries and territories. During the last two decades, Armenia has undertaken comprehensive institutional, economic and social reforms with impressive results. It achieved double-digit GDP growth alongside a rapid reduction in poverty. The poverty rate fell from around 54 percent in 2004 to under 28 percent in 2008.[14] Poverty levels increased in the aftermath of the global financial crisis and stood at 30 percent in 2014. Human development indicators improved, with adult literacy becoming

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11 Prior to this analysis, the most recent study of food security, nutrition and vulnerability was Armenia – Impacts of the Global Financial Crisis: Follow-up Study, March 2010, available at https://www.wfp.org/content/armenia-impacts-global-financial-crisis-follow-study-march-2010

12 Government of Armenia and UN. (n.d.). UNDAF 2016–2020.

13 UNDP 2014.

14 NSS RA & World Bank 2015.

almost universal[15] and immunization and healthcare reducing child, infant and maternal mortality.[16]

However, the 2008 global economic crisis has had a significant and lingering impact, and much remains to be done to continue and sustain national development. Productivity, the development of human capital and employment are critical areas for investment, and cross-cutting themes of gender equality, governance and human rights, and environmental sustainability remain persistent concerns.[17]

1.2.2 Population trends

Approximately 3 million people were living in Armenia in 2015, of whom 48 percent were men and 52 percent women. Average life expectancy is 75 years, slightly higher for women than for men.[18]

The majority of the population live in urban areas (63.5 percent). The urban–rural distribution of the population has been fairly stable in recent years, after an increase in the rural proportion following Armenia's independence in 1991. Yerevan, the capital city, is home to around one third of the population.[19]

Since the 1990s, Armenia has experienced overall population decline and an ageing population. This has been caused by a decrease in the total fertility rate, an increase in mortality, and significant emigration that began with the break-up of the Soviet Union.[20] Currently, considerably more Armenians live outside the country than live in it: the diaspora was estimated at 7 million people (in 2008), mostly in Russia, USA, France, Argentina, Lebanon, Syria, Iran, Turkey, Canada, Ukraine, Greece and Australia (Box 2).

1.2.3 GDP trends and composition

Armenia's GDP for 2014 is estimated at US$11.61 billion, or US$3,852 per capita.[21] The country experienced strong GDP growth prior to the global economic crisis in 2008, mainly driven by exports and expansion in the construction and services sectors. The average annual growth rate during the period 2001–2008 was 11.8 percent, the highest rate in the CIS region.[22] As a result of the global economic crisis, the economy contracted by 14.1 percent in 2009. Although there has been positive growth every year since then, the rate has not returned to pre-crisis levels. The GDP growth rate in 2014 was 3.6 percent.[23]

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15   Adult literacy was 99.6 percent in 2013 (World Bank).

16   Maternal mortality was 25 per 100,000 live births in 2015 (WHO). This is a significant drop thanks to the universal attendance of births by skilled heath personnel; however, the rate is significantly higher than in neighbouring countries.

17   UN 2015.

18   On average, women live on 78 years, compared with 72 years for men (NSS RA & World Bank, 2015).

19   NSS RA & World Bank 2015.

20   Manasyan and Poghosyan 2012.

21   NSS RA 2016.

22   The Commonwealth of Independent States (CIS) formed when the former Soviet Union (now called Russia) dissolved in 1991. At present the CIS unites Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine.

23   NSS RA 2016.
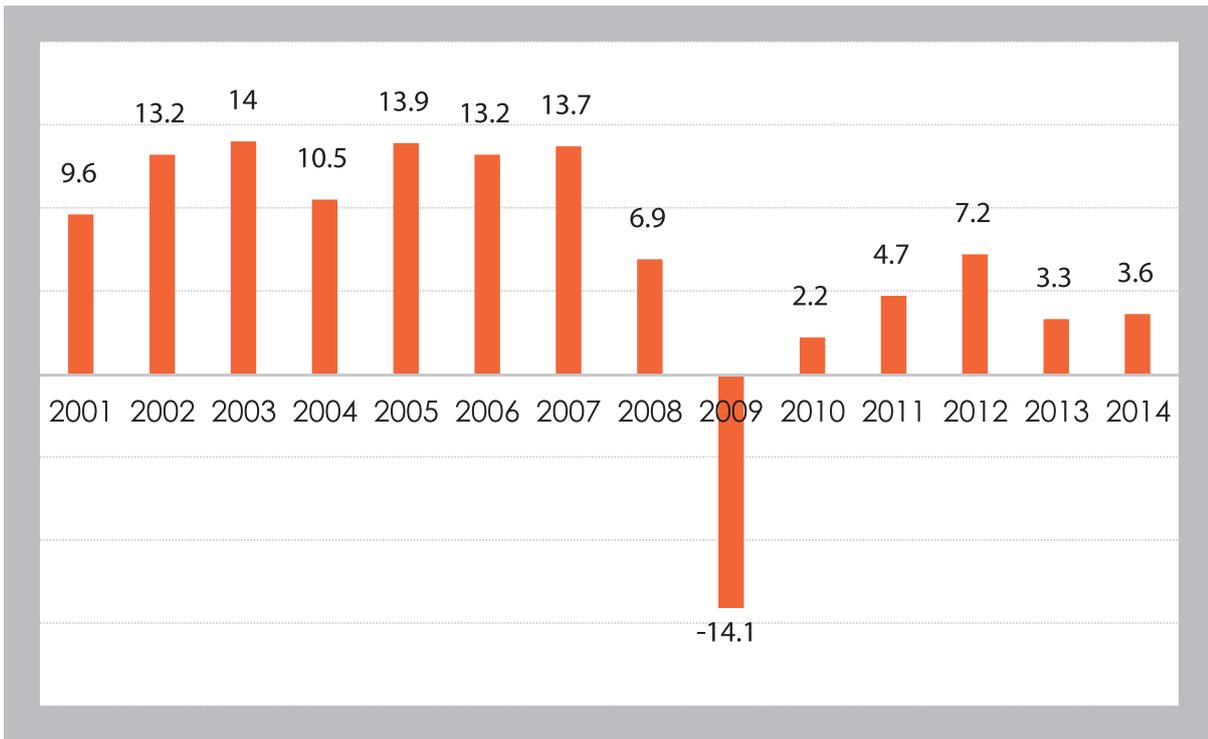
Figure 1: Trend (%) in real GDP growth rates 2001–2014

Sources: NSS RA 2016 and World Bank[24]

As a small developing economy, Armenia depends heavily on external markets for sustaining high growth and reducing poverty. As the GDP growth and composition trends show (Figures 1 and 2), shocks to these external economies have caused significant contractions in high-performing sectors such as construction, mining and energy. At the same time, resilient performance in agriculture, manufacturing and services has largely been able to compensate for this.

Over the last two decades, Armenia has shifted from being an industry-based to a service-based economy. In 2014, the services sector (public administration and trade) accounted for 45.3 percent of GDP. Agriculture accounted for 18.1 percent of GDP, and 16.0 percent came from the industrial sector, which includes diamonds, scrap metal, machinery and equipment, cognac, copper ore, zinc and gold.
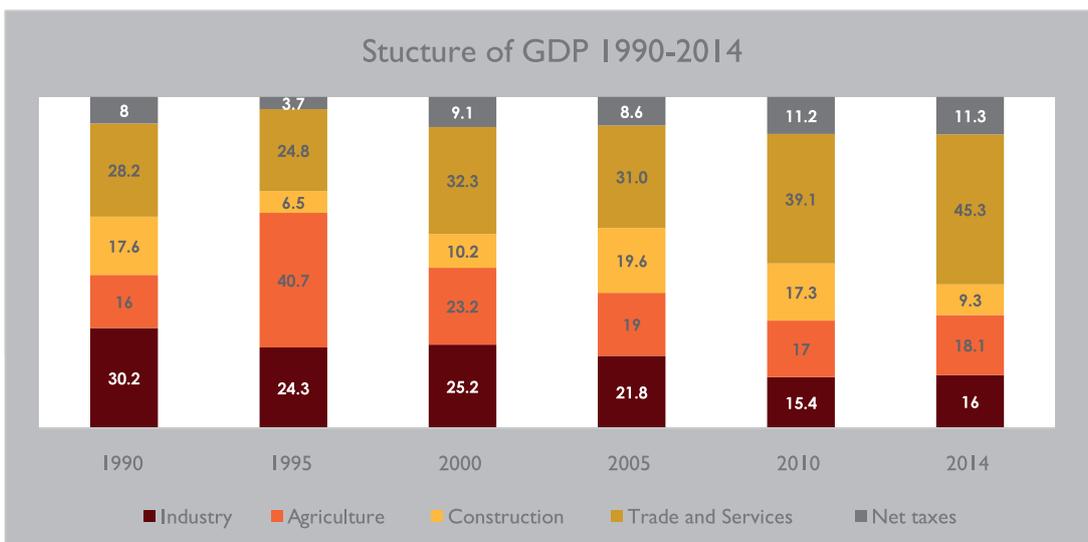
Figure 2: GDP composition 1990–2014[25]

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24   Available at http://databank.worldbank.org/data/reports.aspx?source=2&series=NY.GDP.MKTP.KD.ZG&country=ARM

25   GDP figures for the period 2012–2015 have been compiled according to the System of National Accounts (SNA) 2008, while GDP figures from 1990 to 2011 have been compiled according to the SNA 1993. Data are from the NSS RA's bulletin Socio-Economic Situation of RA, published between 1990 and 2014.

Private remittances have increased dramatically over the past 20 years. In 2014, remittances exceeded US$2.1 billion, which is almost 20 percent of GDP.

1.2.4 Public health

Public health in Armenia is dominated by a very high prevalence of non-communicable diseases (NCDs), also known as chronic (or 'lifestyle') diseases. The four main types are cardiovascular diseases (heart attacks and stroke); cancers; chronic respiratory diseases (chronic obstructed pulmonary disease and asthma); and diabetes. According to WHO, these account for 92 percent[26] of all deaths in Armenia, and there is a 30 percent probability of dying from them between the ages of 30 and 70. The situation is worsening: from 2007 to 2012, mortality caused by diseases of the circulatory system increased by 13 percent while cancer mortality rose by 15 percent; diabetes is also on the rise.[27] Four key factors are typically highlighted: smoking, alcohol, raised blood pressure and obesity. Men are more at risk of all these factors except obesity, which is more of a concern for women.[28]

The burden of NCDs in Armenia has significant implications for society and the economy. NCDs are generally long-term health conditions that place heavy demands on the public health system and national economy through direct healthcare costs and indirect costs associated with a lack of productivity.

As well as obesity and associated NCDs, child stunting presents a significant impediment to human development in Armenia. Its long-term effects on individuals and societies include diminished cognitive and physical development; reduced productive capacity and poor health; and an increased risk of degenerative diseases such as diabetes.[29] Another form of malnutrition that poses a public health concern in Armenia is micronutrient deficiencies, in particular iron-deficiency anaemia, which inhibits growth and development as well as nutrition and immunity (Chapter 5).

Box 1: Gender inequality

Despite high levels of education among women and an electoral code that sets a 20 percent quota for women in party lists, **political participation** among women is low: in 2014, women comprised 11 percent of ministers and deputy ministers, 11 percent of parliamentarians, and 8 percent of local government authorities. There were no women governors or heads of urban communities.

Women's **economic participation** is also low: women earn 34 percent less than men (up to 50 percent less in the mining and quarrying sector) and own just 11 percent of micro, small and medium enterprises. The 2013 **employment** rate of women was 46 percent compared to 62 percent of men. Women with higher education have higher rates of unemployment than men with similar levels of education (20 percent compared to 13 percent).

In 2014 the share of **households headed by women** was over a quarter (25.7 percent) because of high levels of economic migration by men, especially in rural areas. Given the limited economic opportunities for women, these households are vulnerable to poverty and food and nutrition insecurity.

Domestic violence in Armenia is underreported but available data and research indicates it is a serious problem affecting all strata of Armenian society, with a relative lack of legal measures to protect victims and punish perpetrators. It expresses norms and attitudes about women's lower social status, also suggested by figures for the **male-to-female sex ratio at birth** – this is at the very high level of 114 males per 100 females, suggesting prenatal sex selection.

Overall, securing equitable economic and political participation of women remains a challenge in Armenia, and gender-based violence and discrimination are a persistent concern.

Data sources: DHS 2010, ILCS 2014, EU 2015, UNDAF 2015

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26 WHO 2014a.
27 Government of Armenia and UN. (n.d.). UNDAF 2016-20. This rise also relates to population ageing, as 11 percent of the population is over 65.
28 WHO 2014a.
29 WHO 2014b.

1.3 Methodology

1.3.1 Food security and nutrition framework and concepts

Analytical framework

The analysis in this report is based on a food and nutrition security conceptual framework used by WFP and UNICEF.[30] The framework considers food and nutrition security at the levels of individual, household and community. Figure 3 shows the five key areas of this framework, which include the following:

1) Food security context (*green box*): external social, economic and political factors affecting the household and community;

2) Livelihood assets and coping strategies (*blue boxes*): natural, human, social, physical and financial (economic) capital of households, which determine activities undertaken to improve wellbeing;

3) Food security and health or care practices (*yellow boxes*): a household's ability to access food, its health and hygiene environment, and its knowledge of and access to adequate care;

4) Individual outcomes (*pink boxes*): outcomes for individuals (nutrition status and mortality) as a result of food intake and disease status; and

5) Vulnerability (*red box on the left*): exposure to shocks and hazards that increase the risk of food and nutrition insecurity.
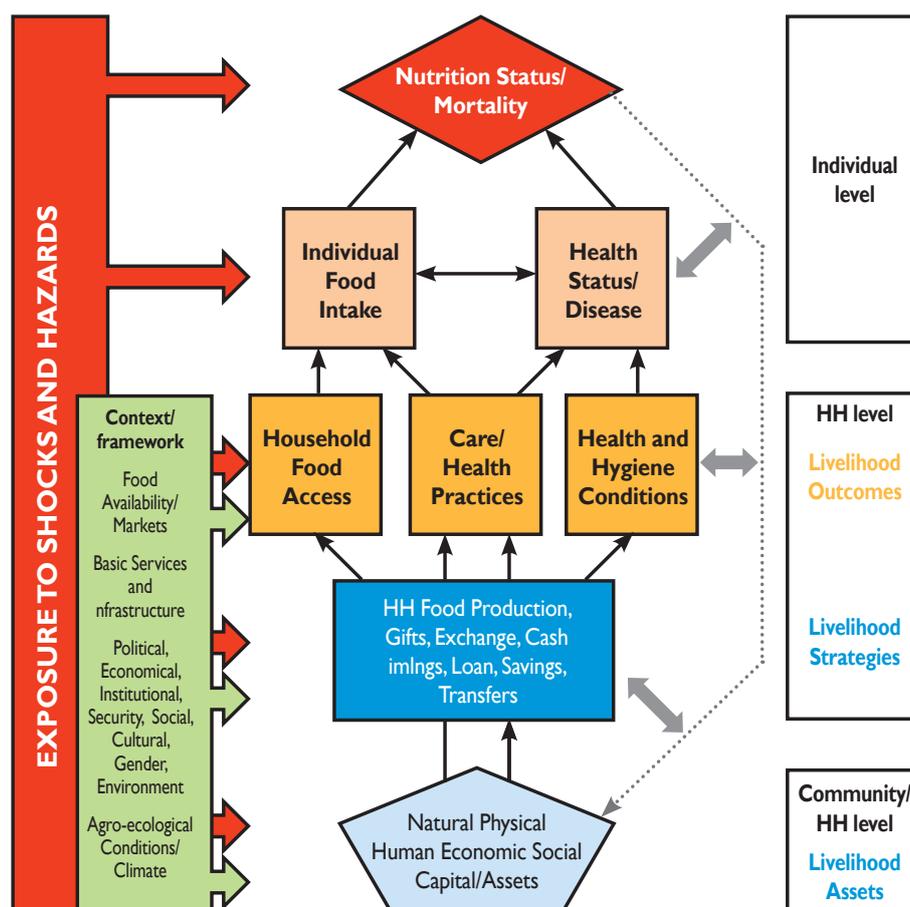
Figure 3: Food and nutrition security conceptual framework (WFP 2009)

Based on this analytical framework, the food and nutrition security analysis was structured around four food security pillars and their proxy indicators.

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30 The framework was created by WFP based on a combination of UNICEF's Nutrition framework and the Sustainable Livelihoods framework. More details are at http://www.wfp.org/content/comprehensive-food-security-and-vulnerability-analysis-cfsva-guidelines-first-edition

Food security definition and indicators

"Food security defines a situation in which all people at all times have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO 1996)

The four pillars of food security are:

Availability: Presence of food through domestic production, commercial imports and food assistance. This can be aggregated at the regional, national, *marz* or community level.

Access to food: A household's ability to acquire adequate food through domestic production and stock, direct purchases, barter, gifts, borrowing and food assistance.

Utilization of food: A household's ability to make use of the food they have access to. This includes an individual's ability to absorb and metabolise nutrients, which can be affected by illness or poor care practices; methods of food storage, processing and preparation; use of water and cooking fuel; and hygiene conditions.

Stability: The potential for food security to change or be maintained over time. Even if food intake is adequate at a certain time, people will be food insecure if they have future periods of inadequate access to food. This can be affected by adverse weather and climate; geopolitical instability; social unrest; and economic factors (e.g. unemployment or rising food prices).

Since food security is not directly measurable, analysts typically use proxy indicators to understand its dynamics in a given context. In this analysis, food security profiles were created and tested using indicators representing the four pillars of food security.
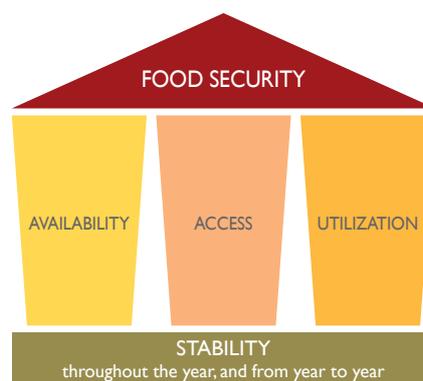
Figure 4: Food security pillars

Creation of food security profiles

Using data available in national surveys, food security proxy indicators were identified to create food security profiles (a detailed description of their calculation is in Annex 2).

Table 1: Proxy food security indicators

	Proxy of:	Indicator	Description
Current Consumption	Diet quantity	Food energy deficiency	Households who consume less than the recommended daily intake of kilocalories (based on age–sex requirements for each member of the household) are classified as *highly food energy deficient*.
	Diet quality	Very high consumption of staples	Households who acquire more than 70 percent of their dietary energy from staple foods (cereals, roots and tubers) are classified as having a *very high consumption of staple foods. w*
	Diet quantity and quality	Poor dietary intake	Households who are both highly food energy deficient and who have a high consumption of staple foods are classified as having *poor dietary intake*.
Sustainability	Stability	Unsustainable Income source	Households who derive more than 75 percent of their income from sources that have a higher risk of not being able to sustain adequate future food consumption – for example remittances, savings, credit, humanitarian assistance or one-off payments – are classified as having *an unsustainable income source*.
	Wealth	Poorest two wealth quintiles	Consumption wealth quintiles are used to classify the population as wealthy or poor. The first and second quintiles are classified as the *poorest*.

A combination of these indicators was used to classify households as food insecure, vulnerable or food secure.
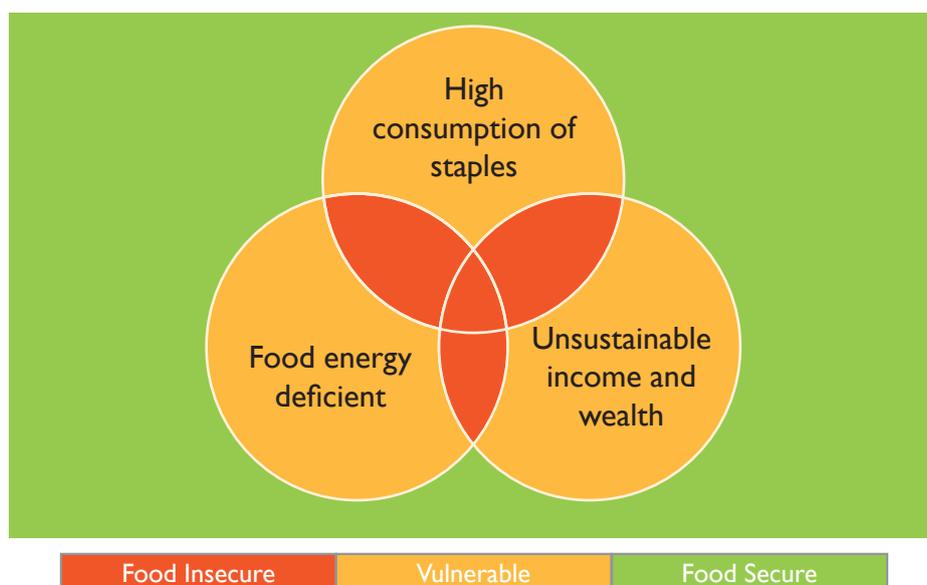
Figure 5: Food security classification

Food insecure: Households that are food energy deficient and have a high consumption of staples. A household is also classified as food insecure if it is either food energy deficient or has a high consumption of staples, combined with unsustainable income and wealth.

Vulnerable: Households with an adequate diet but an unsustainable income source that will not allow them to maintain this in the event of a shock. A household is also classified as vulnerable if it has a sustainable income but a diet lacking in quantity or quality.

Food secure: Households that are currently meeting their dietary requirements and are likely to be able to sustain similar consumption in the future.

Validation of food security profiles

Significance tests[31] were run to establish whether the differences between food security groups were significant, and therefore whether it was possible to describe the characteristics of food-insecure, vulnerable and food-secure households. The analysis was done for several years: 2008, 2009, 2010, 2012 and 2014. Some indicators were only consistent for a few years, and the differences were not always significant.

Detailed information on the analysis of food security data is given in Chapters 2 and 3.

Nutrition security definition and indicators

"Nutrition security exists when all people at all times consume food of sufficient quantity and quality in terms of variety, diversity, nutrient content and safety to meet their dietary needs and food preferences for an active and healthy life, coupled with a sanitary environment, adequate health, education and care." (FAO/AGN 2012[32])

Nutritional status is the balance between the intake of nutrients and their expenditure in processes of growth, reproduction and health maintenance. Malnutrition is any condition caused by deficient or excess nutrient intake. It can be divided into undernutrition, overnutrition and micronutrient deficiencies.

Undernutrition occurs when a person consumes a diet that does not meet the nutrient and energy requirements for them to remain healthy.

Overnutrition occurs when a person consumes a diet that exceeds the nutrient and energy requirements for them to remain healthy.

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31   Anova, T-test, Z-test and chi-square.

32   At http://www.fao.org/docrep/meeting/026/MD776E.pdf

Micronutrient deficiencies occur when essential vitamins and/or minerals are not present in adequate amounts in a person's diet, resulting in their impaired physical and mental growth.

This analysis focuses on malnutrition in children under 5 years old. Standard indicators used for analysing malnutrition are listed in Figure 6.

Malnutrition indicators

Undernutrition

Sturting
(height for age < –2 SD)

Wasting
(weight for height < –2 SD)

Underweight
(weight for age < –2 SD)

Overnutrition

Underweight
(weight for height > +2 SD)

Obesity
(weight for height > +3 SD)

Micronutrient deficiency

- **Anaemia**
- **Vitamin A deficiency**
- **Iodine deficiency**
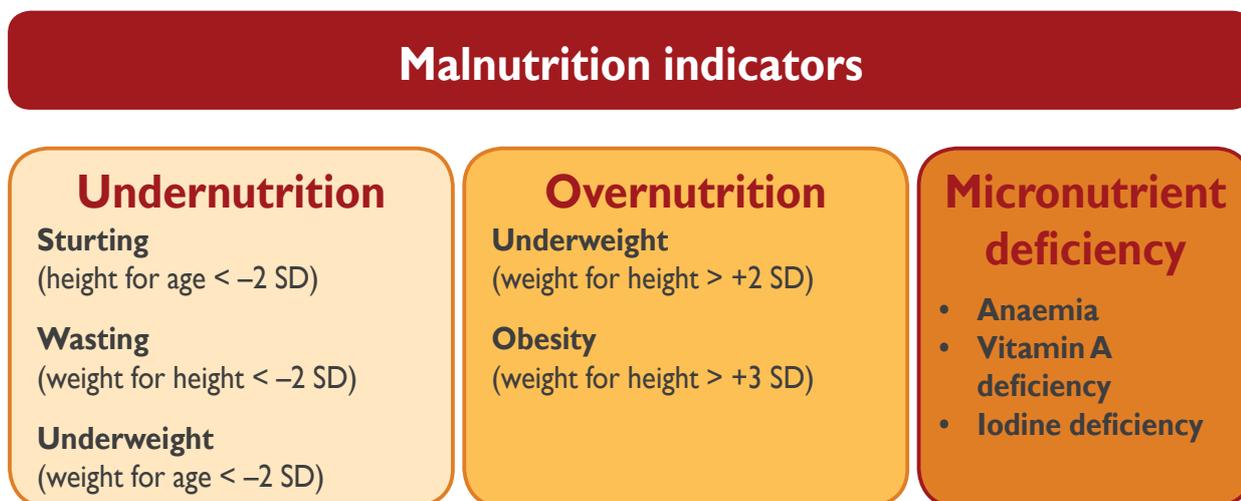
Figure 6: Malnutrition indicators

SD = Standard deviation

While the analysis explored different malnutrition indicators in Armenia, it focused on stunting, overweight and anaemia.

Stunting (height for age < -2SD) is a measure of chronic malnutrition where a child fails to achieve the expected length or height of a healthy, well-nourished child of the same age. Stunting is associated with long-term suboptimal health and/or nutrition through poor socio-economic conditions and sustained exposure to adverse conditions such as illness and/or inappropriate feeding practices (WHO).

Overweight (weight for height > +2SD) is defined as having more body weight than is considered normal or healthy for one's age or build. The measure is based on the Body Mass Index (BMI): a BMI greater than or equal to 25 (equivalent to +2 SD) is overweight; a BMI greater than or equal to 30 (equivalent to +3 SD) is obese (WHO).

Anaemia is defined as a condition where blood haemoglobin (responsible for carrying oxygen) is below normal levels for age, gender and physiological conditions because of a deficiency of one or more basic nutrients – iron, folic acid, zinc, vitamin B12 or proteins. The threshold for iron-deficiency anaemia in children under 5 is defined as haemoglobin levels less than 11g/dL, and for women of reproductive age it is less than 12g/dL.

Detailed information on the analysis of malnutrition data is given in Chapter 5.

1.3.2 Data sources

This analysis is based on the use of secondary data. The main source of data is the Integrated Living Conditions Survey (ILCS) carried out each year by the NSS RA in collaboration with the World Bank. Datasets from 2008, 2009, 2010, 2012 and 2014 were used to support a trend analysis.

The ILCS collects comprehensive data on households and individuals, providing annual information on income, expenditure, level of poverty and living conditions.[33] The number of households interviewed was

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33 More information about ILCS is available at http://www.armstat.am/en/

7,872 in 2008–2011 and 5,184 thereafter, but the sample frame ensures representativeness by *marz* and by disaggregated area (i.e. Yerevan, urban and rural areas). In 2014, for the first time, anthropometric data (height and weight measures) were collected for 1,348 children under 5 to analyse the prevalence of child malnutrition.

Another key source of nutrition information was the Demographic and Health Survey (DHS) for 2000, 2005 and 2010.[34] DHS is a nationally representative survey of population and health issues, conducted by NSS RA and the Ministry of Health.

Geospatial data on the distribution of natural and human-induced risks were taken from LandScan, UNEP, UNISDR, UNDP and the Armenian State Hydro-meteorological and Monitoring Service.

An in-depth literature review was carried out using a range of publications, in particular from the following sources: the Government of Armenia, NSS RA, World Bank, UNDP, UNICEF, International Labour Organization, International Migration Organization, WFP, Organization for Economic Co-operation and Development (OECD), and Armenia's National Institute of Labour and Social Research.

Additional inputs were provided during meetings in January 2016 with 18 experts and partners who represented government, bilateral and multilateral agencies, as well as NGOs. An initial planning workshop with 22 stakeholders was held in January 2016 in Yerevan to agree the methodology. In late January a second workshop (attended by 20 stakeholders) discussed the interim findings, and in March 2016 a larger workshop (attended by 65 stakeholders) presented and discussed the final findings.

Where possible, results are presented by *marz* and by area. To reflect socio-economic differences between Yerevan and other cities in Armenia, areas are divided into rural, Yerevan and 'other urban'.

1.3.3 Limitations of the study

Quantitative data:

i. The analysis used secondary quantitative data which were not designed specifically for a CFSVNA. Qualitative information was used to fill gaps where possible, and missing data has been highlighted.

ii. The limitations listed in the *Social Snapshot and Poverty in Armenia* report are also valid for this analysis. In particular, the ILCS 2014 was mostly insufficiently answered by households in Yerevan, with a refusal rate[35] of 18.4 percent, compared to the national average of 8.7 percent. In general, the refusal rate among relatively well-off households was comparatively high. As a result, figures for food insecurity and other wealth indicators might be overestimated because the sample is biased towards poorer households.

iii. It was not always possible to compare indicators between different years because in some instances the survey questions differed from year to year (for example, questions regarding livestock ownership, access to land or level of tertiary education received).

iv. Analysis of data on household food consumption assumes that food is distributed proportionally according to needs within a household, but this may not be the case.

v. Information on prevalence of child malnutrition came from different sources (DHS and ILCS) whose sampling methods differed slightly, so it was not always comparable or suitable for trend analysis.

vi. Anthropometric data collected for the ILCS 2014 was representative at the national but not at the *marz* level, limiting malnutrition analysis at sub-national level.

vii. Certain causal analysis of child malnutrition was not possible because the dataset did not allow individual children to be linked to mothers. (For example, without being able to establish child–

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34 The latest DHS was conducted in 2015. The results will be available in 2016.

35 The ratio of refusals to the total number of addresses visited.

mother relationships within a household, it was not possible to explore whether a mother's education/health/socio-economic status had any bearing on her child's nutrition.)

viii. Anthropometric data (weight and height) was only collected for children under 5, which limited quantitative analysis of the causes of malnutrition to this age group. Qualitative data and statistical information was used to complement this where possible.

Qualitative data: Time/access constraints and the wealth of available knowledge and data meant that community-level discussions were not held to triangulate analysis findings. Future analysis should consider holding community discussions to improve the understanding of food and nutrition security across Armenia.

2. Food insecurity trends and the profile of food-insecure households

KEY MESSAGES

- *Despite national economic growth, Armenia's level of food insecurity was stagnant from 2010 to 2014.*

- *The percentage of food-insecure households almost doubled after the global economic crisis – rising from 8 percent in 2008 to 14 percent in 2010 – and it has remained high ever since.*

- *There is a growing gap between the food insecure and the food secure: while the share of food-insecure households was stable at around 13–15 percent, that of food-secure households increased significantly.*

- *In 2014, nearly a third of Armenian households were vulnerable to becoming food insecure in the event of future shocks.*

- *A combination of poor diet quality and poor diet quantity is seen across the country, with marked differences between urban and rural areas.*

- *Statistical analysis reveals a profile of food-insecure households as follows: less wealth; more unemployment; more debt; higher reliance on remittances or pensions; larger households; more members with a disability; lower levels of education; and less money invested in education.*

This chapter presents national, urban and rural trends in food insecurity. It explores indicators that distinguish households that are food insecure, vulnerable to becoming food insecure, and food secure, doing so according to the four pillars of food insecurity.

2.1 Food insecurity trends

Applying the methodology described in Chapter 1, this chapter looks at a range of proxy indicators distinguishing food-secure, food-insecure, and vulnerable households.

2.1.1 National trends

Figure 7 shows trends in national food insecurity between 2008 and 2014. In 2008, 8 percent of all households were considered food insecure. After that year's global economic crisis, food insecurity increased, and it remained between 13 and 15 percent for the following five years. The crisis also caused a significant drop in the level of food security: 59 percent of households were considered food secure in 2009, but this fell to 48 percent in 2010. However, while food insecurity stayed at roughly the same level from 2010 onwards, the level of food security steadily increased, reaching 57 percent of the population in 2014.
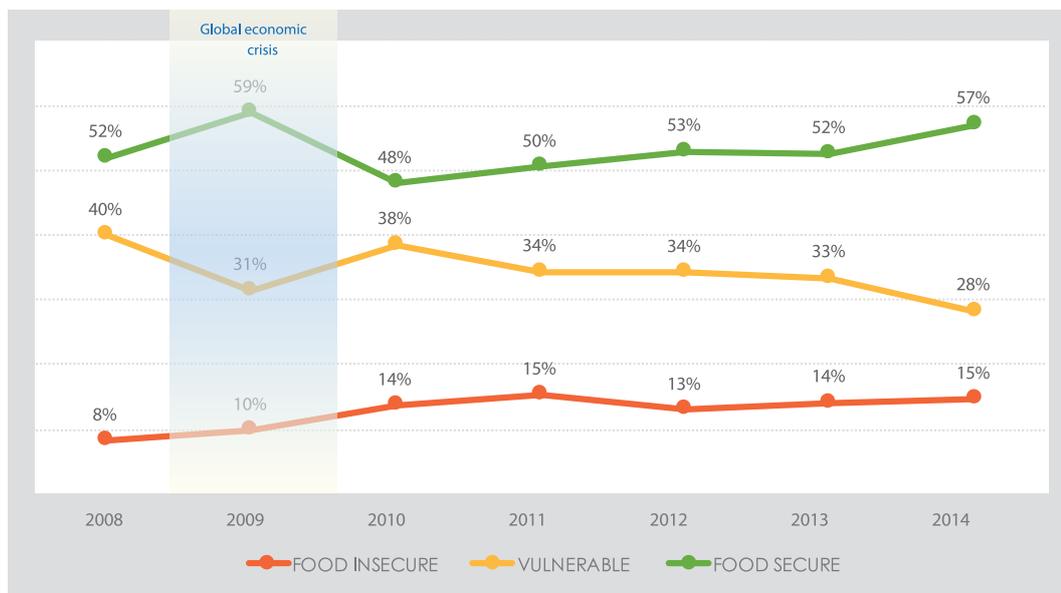
Figure 7: Food security trends 2008–2014 (ILCS, WFP)

Figure 7 also shows trends in households considered vulnerable to food insecurity, particularly in the event of shocks. Between 2008 and 2014, the proportion of vulnerable households decreased from 40 to 28 percent of the population (with a spike in 2010, presumably when the full effects of the global economic crisis were felt).

Taken together, these trends indicate two dynamics: i) the overall economic growth of the country is reflected in the improving food security status of the population; and ii) the rising socio-economic disparity of the country is reflected in the increasing gap between levels of food security and food insecurity.

2.1.2 Trends in urban and rural areas

Trends in the distribution of food insecurity vary across areas. The red lines in Figure 8 show that food insecurity constantly increased in rural areas after the global economic crisis, to reach 14 percent in 2014. Meanwhile in urban areas outside Yerevan[36] it began to fall after 2011. The urban improvement could be linked to the recovery of GDP after the crisis and its economic impacts. Yerevan had rising food insecurity after 2012, with a level higher than elsewhere in Armenia: this links with other findings (Figures 12 and 13) that show Yerevan has the lowest levels of dietary intake in terms of energy, and a very high consumption of staples, reflecting poor dietary diversity (section 2.2.3).

Figure 8 also shows that the proportion of vulnerable households in urban areas outside Yerevan and rural areas began decreasing after 2010 (yellow lines). The level in Yerevan was more stable and even increased slightly around 2014. Finally, trends for food-secure households (green lines) were similar in the different areas until 2013, after which the proportion of food secure in Yerevan decreased and the proportion in rural areas increased by 9 percentage points to 59 percent. The worsening food security in Yerevan coincided with an increase in unemployment, which rose from 24 percent in 2013 to 27 percent in 2014. The clear improvement in food security in rural areas coincides with the increasing importance of agriculture in overall GDP.

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36   There is a marked difference in socio-economic and consumption-related indicators between Yerevan and other cities. This warrants the separate treatment of Yerevan and 'urban outside Yerevan' areas in much of this analysis.
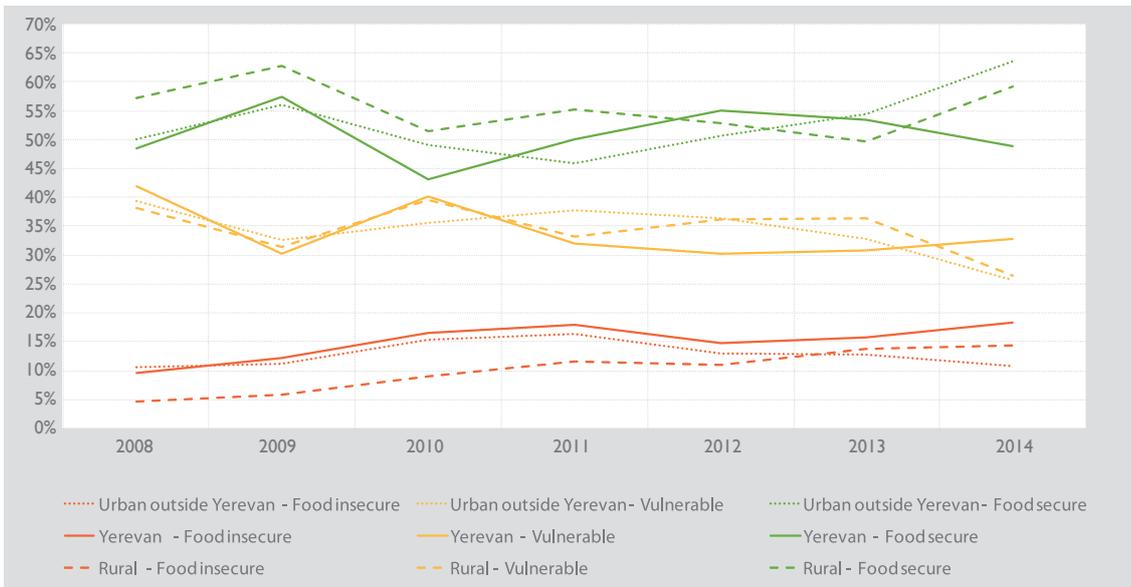
Figure 8: Food security trends by urban and rural areas (ILCS, WFP, 2008–14)

2.1.3 Status of food security by area

In 2014, the highest level of food insecurity was 18 percent, in the capital city Yerevan.[37] This was followed by 14 percent in rural areas, and 11 percent in urban areas outside Yerevan. The proportion of food insecure was highest in the *marzes* of Shirak (17 percent), Lori (17 percent) and Tavush (16 percent). The proportion of households who were vulnerable to becoming food insecure was highest in Tavush (41 percent), Armavir (30 percent), Lori (29 percent) and Aragatsotn (29 percent). Households living in these *marzes* had a poorer quality diet than the national average, mostly because they were consuming a high proportion of staple foods (Annex 3).
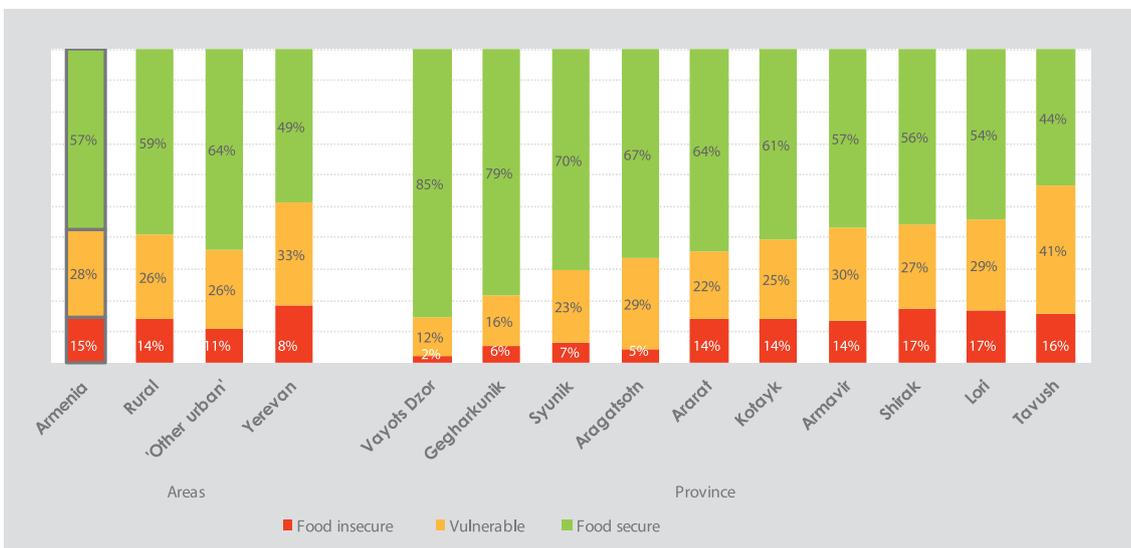
Figure 9: Food security groups by area and *marz* (WFP, ILCS 2014)

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37 As described in the methodology (limitations), the ILCS 2014 was particularly under-answered by wealthier households in Yerevan, with a refusal rate (ratio of refusals and total number of addresses visited) of 18.4 percent, compared to the national rate of 8.7 percent. So while there is marked disparity and high vulnerability (poverty, unemployment) in Yerevan, figures for food insecurity may be overestimated because of the sample's bias towards poorer households.

2.2 Profile of food-insecure households

2.2.1 Methodology

The indicators used to explore household food security cover household demographics as well as the four pillars of food security: access, availability, utilization and stability. Indicators were selected using a food security and nutrition analytical framework and according to the data available. Statistical tests (Anova, T-test, Z-test and chi-square) were run to confirm whether differences between food-insecure, vulnerable and food-secure households were significant.

The analysis was done for five different years (2008, 2009, 2010, 2012 and 2014) in order to i) understand food security trends before and after the global economic crisis of 2008; and ii) understand trends in the characteristics of food-insecure and vulnerable households over time. Table 2 lists the indicators used; a description of the indicators, prevalence and tests is given in Annex 2.

Table 2: Profiling food-insecure households

Demographics and education	• More disabled household members • Larger household size • Lower education level of adults and household head • Lower share of education expenditures
Food utilization	• More food energy deficient • Higher percentage of staple foods in diet • Higher prevalence of poor dietary intake • Lower consumption of iron-rich foods
Food access	• Lower wealth • Higher poverty • Higher share of food expenditures • Higher share of pension in total income • More unemployed adult members
Food availability	• Fewer productive assets (land and livestock)
Stability	• More money borrowed • Higher share of debt in annual income • Higher share of unsustainable income sources • Remittances make up >75 percent of total income

2.2.2 Household demographics and education

Household demographics

Certain household demographics were more likely to be food insecure, related to the socio-economic status of the household head and the composition and status of household members. The analysis found that food-insecure households (indicated by the red bar in Figure 10) were more likely to have:

– A disabled member;
– Six or more members; and
– An older head of household (the average age of a food-insecure household head was 61 years, compared to 60 for vulnerable households and 58 for food-secure households).
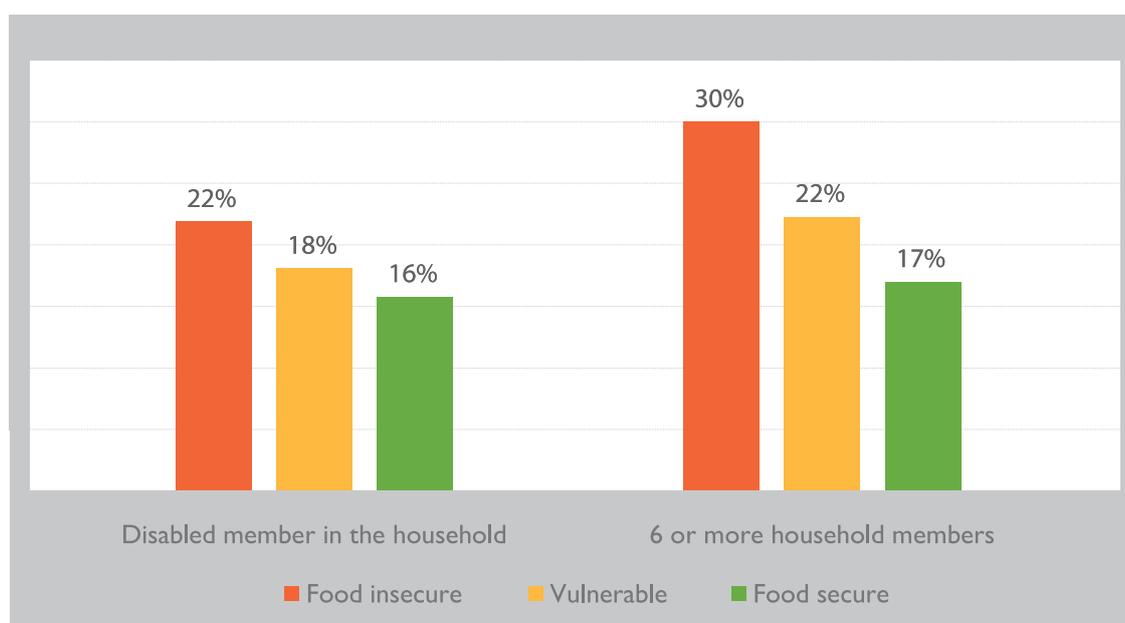
Figure 10: Percentage of vulnerable groups within food security groups (WFP, ILCS 2014)

Education

While the level of secondary education is very high in Armenia, the analysis found a significant difference in the food security of households headed by people with tertiary (higher, graduate and post-graduate[38]) education, and those headed by people educated to a lower level. Households whose adult members were educated beyond secondary level also tended to be more food secure, and food-secure households spent a higher proportion of their expenses on education (Table 3). This confirms the understanding that education plays an important role in food security by enhancing productivity and income as well as social status, connections and knowledge.

Table 3: Education indicators by food security groups (WFP, ILCS)

	Proportion of adults educated beyond secondary level (2014)	Share of education expenditure (2012)	Household head with secondary or lower level education (2014)
Food insecure	**39.2%**	0.4%	63.4%
Vulnerable	48.8%	0.6%	54.1%
Food secure	50.9%	1.1%	50.7%

2.2.3 Food utilization

Food energy deficiency (poor diet quantity)

Food energy deficiency indicates a household is consuming an inadequate quantity of food. In this analysis, energy deficiency was calculated using national (NSS RA) guidance on kilocalorie consumption and adjusted according to the adult equivalent coefficient.[39] An adequate intake threshold of 2100 kcal per day was used to differentiate households with poor energy intake from ones with an adequate intake. Figure 11 shows the distribution of food energy deficiency by *marz* and area, indicating wide variation. In Shirak and Ararat for example, 29 percent of all households had food energy deficiency, compared to just 6 percent in Aragatsotn.

Figure 12 also shows that food energy deficiency has been constantly deteriorating in rural areas (green line) since 2009. However, it was worst overall in Yerevan (purple line): even though there was a great improvement after 2010, the situation started to decline after 2013 probably due to the increased unemployment in the

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38   Questionnaires differed from year to year; for some years, vocational education was included in this group.

39   NSS RA calculates energy deficiency per capita. This analysis adjusted that to account for the different needs of different household members, i.e. by age and gender (ILCS 2014).

capital. However, the high rates of food energy deficiency identified in areas of Yerevan may also have been influenced by the skew of survey responses towards less wealthy households[40] and the possible underestimation of food consumed outside the house.

Very high consumption of staple foods (poor diet quality)

A very high consumption of staple foods (cereals, roots, tubers) indicates a household is consuming a diet of low quality or diversity. In this analysis, very high consumption of staples was defined as a household getting more than 70 percent of its overall energy intake from staples.[41] Figure 11 shows the distribution of high staple consumption by *marz* and area, indicating that like food energy deficiency, there is considerable variation. As many as 48 percent of households have a very high consumption of staples in Tavush, compared to just 6 percent in Gegharkunik. Between urban and rural areas the difference is not so marked, but very high consumption of staples is most prevalent (30 percent) in rural areas where households depend more on their own production and on local market availability.
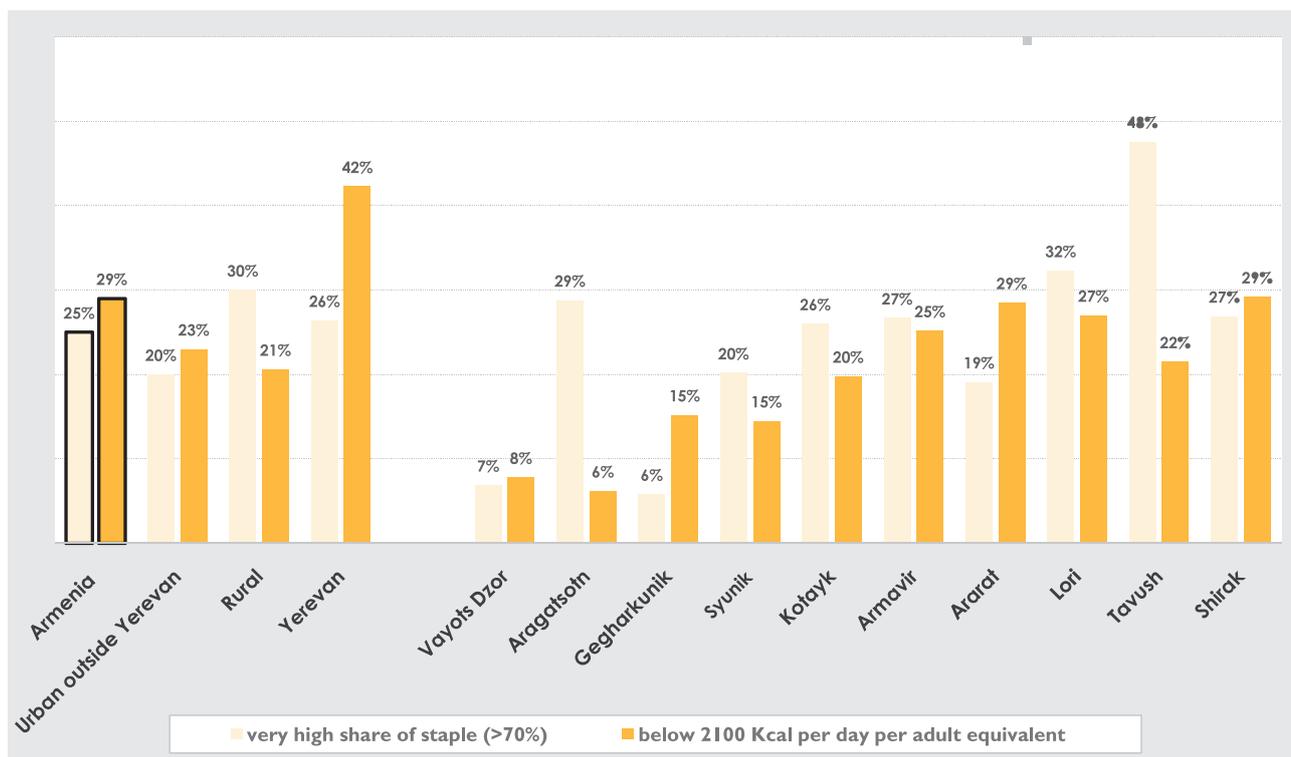
Figure 11: Percentage of households with energy deficiency and very high consumption of staples (WFP, ILCS 2014)
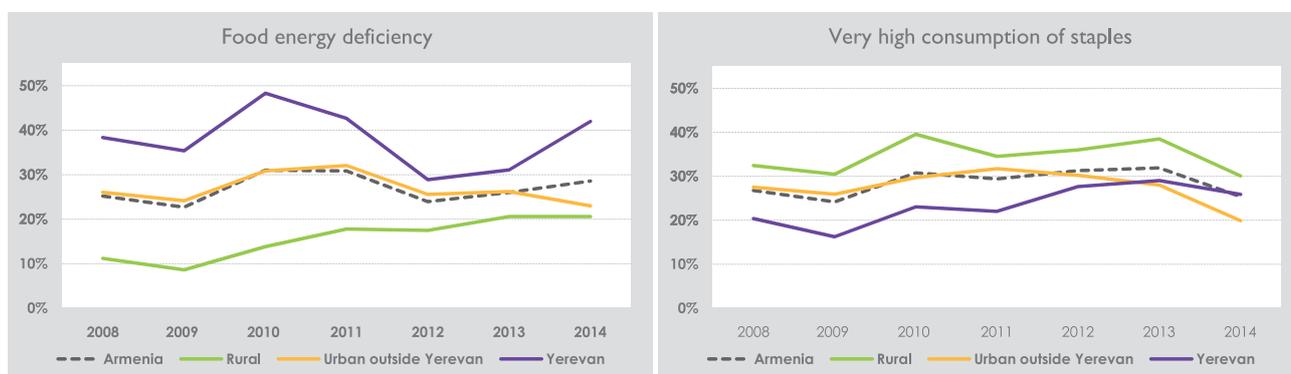
Figure 12: Trends of food energy deficiency and very high consumption of staple foods (WFP, ILCS 2014)

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40   The survey refusal rate (ratio of refusals to total number of addresses visited) in Yerevan was 18.4 percent, considerably higher than the average refusal rate across the country of 8.7 percent.

41   Based on food supply data, FAO estimates that in low-income developing countries, the percentage of food energy derived from staples averages around 70 percent; in industrialized developed countries, the average is around 30 percent. IFPRI guidelines based on this and similar classifications of staple consumption according to diet quality are as follows: >75 percent = very poor diet quality; 60–75 percent = poor diet quality; 40–60 percent = medium diet quality; <40 percent = adequate diet quality (Smith and Subandoro 2007).

Poor dietary intake (poor diet quality and quantity)

The combination of food energy deficiency and very high consumption of staple foods was used to create an indicator called 'poor dietary intake' to identify households lacking in both dietary quality and quantity. Figure 13 shows that on average, 12 percent of the population experienced this dual deficiency but certain *marzes* were considerably more affected than others: in Tavush, Shirak and Lori the level was 14 percent, while in Vayots Dzor, it was 2 percent. Again Yerevan was the worst affected: 17 percent of its households had poor dietary intake. Differences in poverty, own production and market availability account for this, as well as methodological limitations[42] surrounding household data from Yerevan.
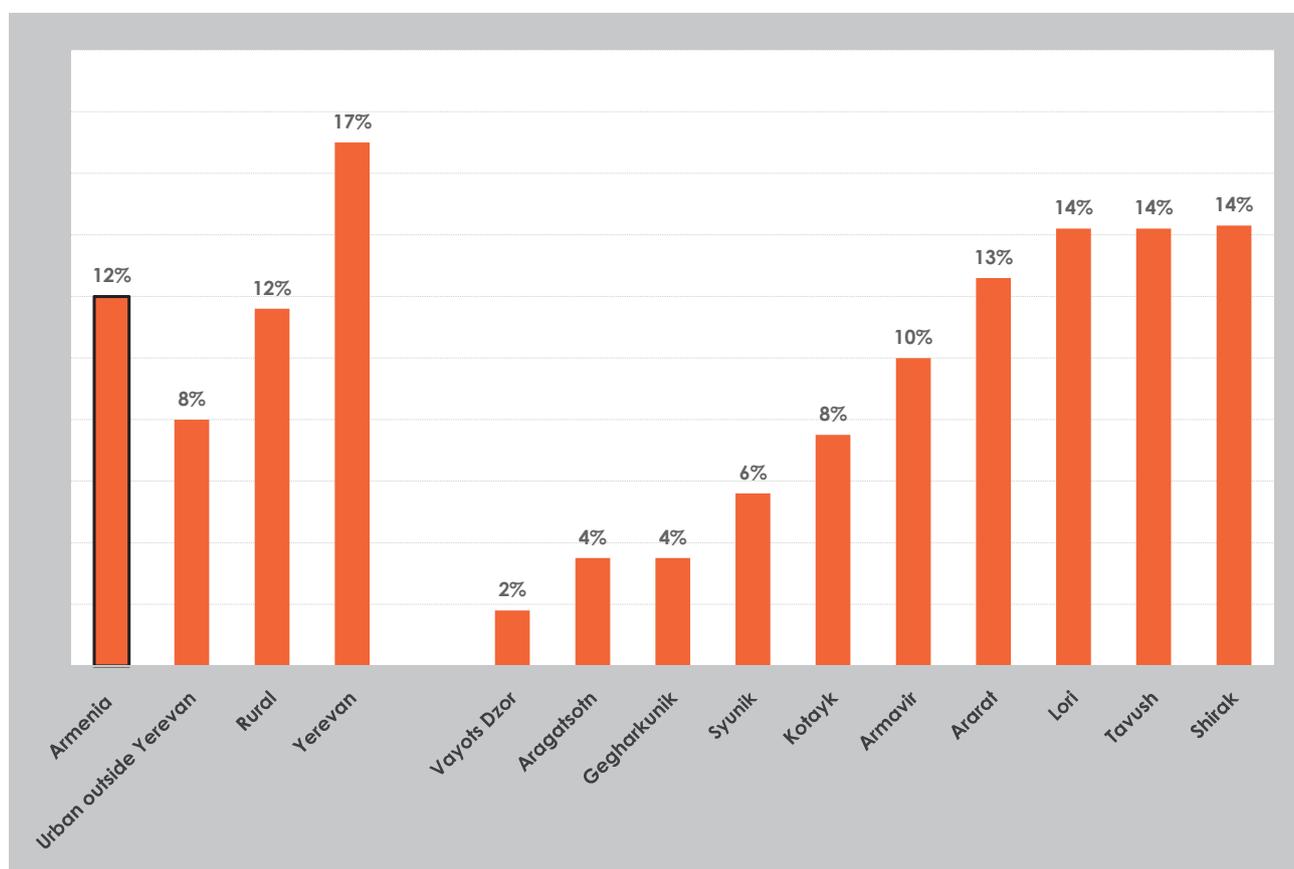
Figure 13: Percentage of households with poor dietary intake (both quantity and quality) (WFP, ILCS 2014)

Lower consumption of iron-rich foods

Food-insecure and vulnerable households had a significantly lower consumption of iron-rich foods, particularly meat and fish products.[43] This indicates their lower consumption of micronutrients and a lower dietary diversity (Figure 14).

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42   See paragraph 1.3.3.

43   Food groups were classified using FAO standards (http://www.fao.org/docrep/014/i1983e/i1983e00.pdf). Iron-rich food groups included meat and fish products. A detailed list is in Annex 2.
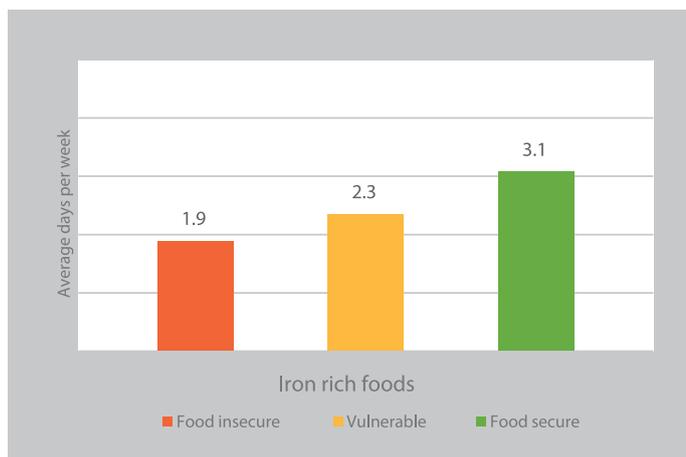
Figure 14: Average number of days per week households consume iron-rich foods, by food security groups (WFP, ILCS 2014)

2.2.4 Food access

High food expenditure

The proportion of a household's total expenditure allocated to food gives an indication of its ability to meet other important costs such as health and education. Households who devote a high share of their expenditure to food are also more vulnerable to increases in food prices. In Armenia in 2014, households devoted an average 45.7 percent of their expenditure to purchasing food. In this analysis, a proportion over 75 percent was considered a high share of food expenditure. Food expenditure was high for 12 percent of food-insecure households and 10 percent of vulnerable households, compared to 8 percent of those who were food secure.

Poverty and wealth

Food-insecure households were more likely to be below the poverty line of 40,264 Armenian drams[44] than vulnerable or food-secure groups. Around 77 percent of food-insecure households were poor (Figure 15), compared to 41 percent of vulnerable households and just 6 percent of food-secure households. This trend has been consistent since 2008. The analysis found a clear correlation between wealth quintiles and food security groups. There was a significantly greater representation of lower wealth quintiles among food-insecure households, and a significantly greater representation of higher wealth quintiles among food-secure households (Figure 16).
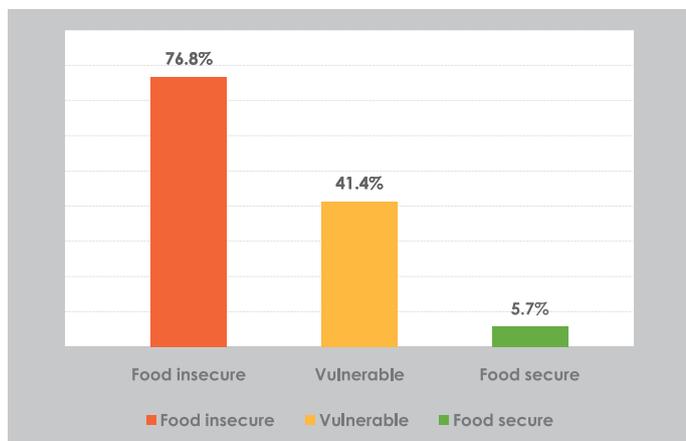
Figure 15: Percentage of poor among food security groups (WFP, ILCS 2014)

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44 In 2014 the poverty lines per adult equivalent per month were estimated as follows: upper poverty line, Armenian Dram (AMD) 40,264 (US$96.8); lower poverty line, AMD33,101 (US$79.6); and extreme poverty line, AMD23,384 (US$56.2) (ILCS).
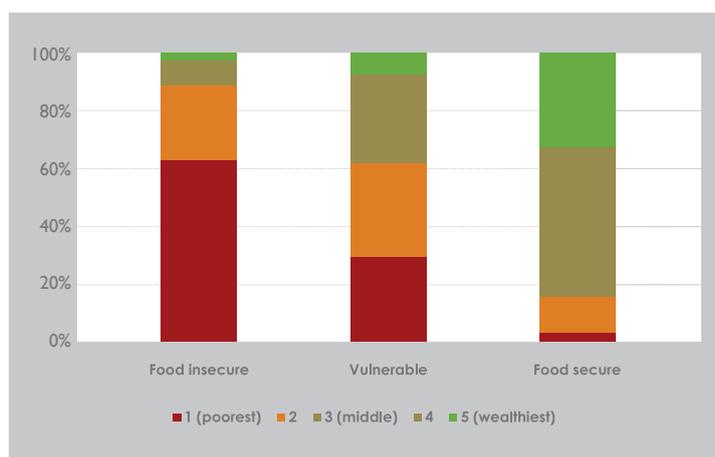
Figure 16: Food security distribution by wealth quintiles (WFP, ILCS 2014)

Higher rates of unemployment and pensioners

In food-insecure households, an average 18.5 percent of economically active adults were unemployed, compared to 16 percent in vulnerable households and 11 percent in food-secure households (Figure 17). This link between food insecurity and unemployment is a concern given the high rate of unemployment in Armenia;[45] it suggests that addressing unemployment is an important measure for improving food security.

The analysis also looked at household heads who were unemployed, including household heads who were receiving a pension.[46] A relatively small percentage of household heads were classified as unemployed, but the analysis found a significantly higher number of food-insecure households were headed by pensioners.

Overall, food-insecure households were significantly more likely to be headed by either an unemployed person or a pensioner.
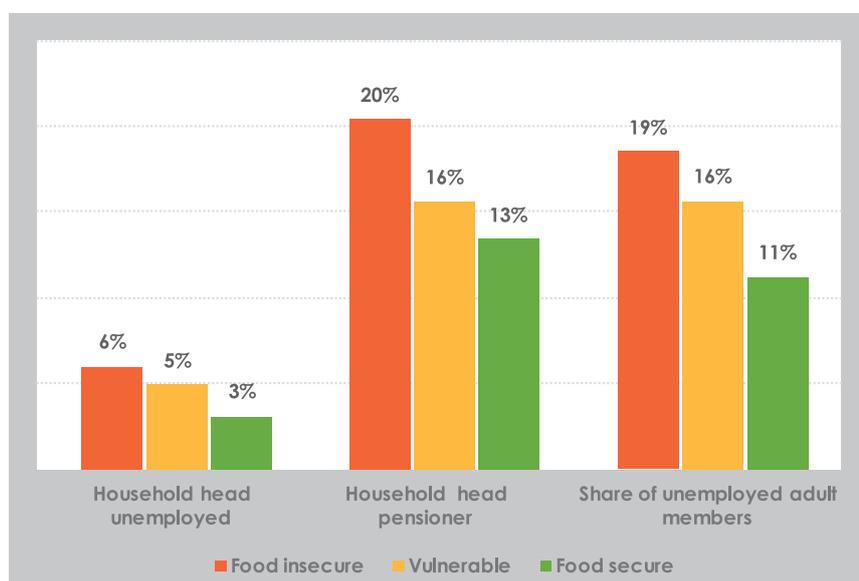
Figure 17: Food security by unemployed or pensioner head of household (WFP, ILCS 2014)

Analysis of income sources found that in food-insecure and vulnerable households received an average of 27 percent of their income from pensions, compared with 21 percent for food-secure households.[47] Despite being a relatively reliable source of income protected from economic shocks, pensions are a subsistence payment and a high share of pensioners in a household reflects a reduced earning capacity and therefore greater risk of food insecurity.

45   Unemployment was 17.6 percent in 2014 (NSS RA & World Bank 2015), and levels are higher among women and young people.

46   A pension is a regular payment made by the state to disabled people and people of or above the official retirement age. In Armenia, men and women aged 65 and over receive a social pension if they have less than five years of covered employment. With at least 25 years of covered employment, men and women over 63 get an old-age pension.

47   In Armenia, an average of 23 percent of household income is derived from pensions.

2.2.5 Food availability

Lack of productive assets (land and livestock)

Rural households who did not own or work on the land were significantly more likely to be food insecure or vulnerable (Figure 18). This is unsurprising, given that agriculture is the primary source of income for the rural population and a major employer nationally.[48]

There was no significant difference in household food security related to the amount of land cultivated. There was also no significant difference in terms of access to irrigated land, despite this being a factor which reduces vulnerability to drought and increases productivity. However, the latter finding could be explained by the general unavailability of micro-irrigation schemes.
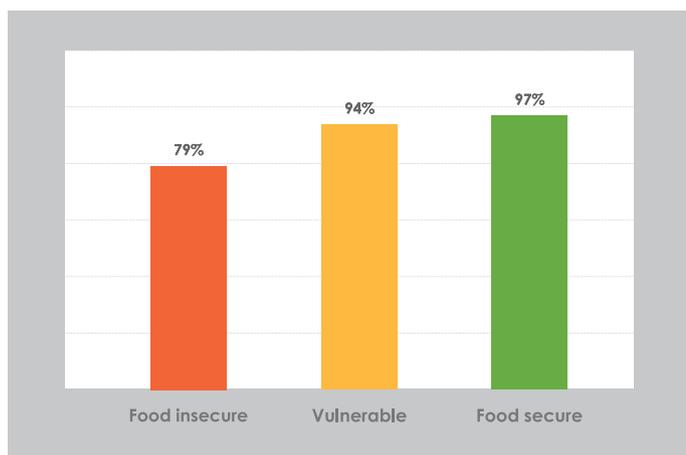
Figure 18: Percentage of rural households owning or working on the land by food security groups (WFP, ILCS 2012)

Food-insecure rural households owned significantly less livestock than food-secure households (an average of 2.1 LSU[49] compared to 3.3 LSU) (Figure 19). This has been a consistent trend over recent years (see Annex 5), suggesting the importance of livestock as productive assets that contribute to income and also food. Protein and especially iron from animal products is an important component of household dietary diversity and child nutrition (section 5.2).
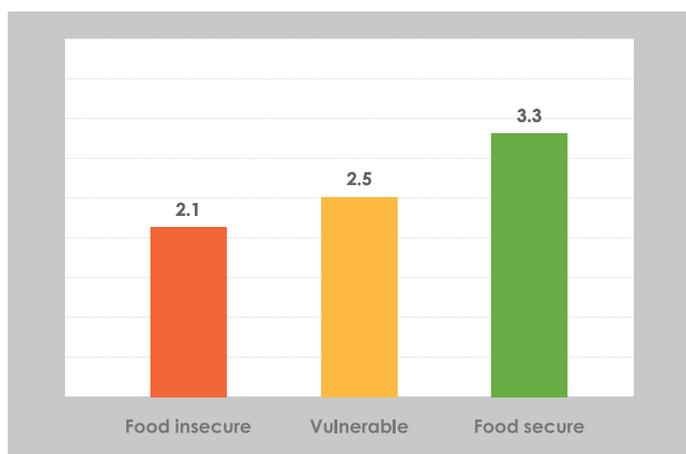
Figure 19: Average number of livestock units in rural households by food security groups (WFP, ILCS 2014)

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48   Around 28 percent of the active population is involved in agriculture.

49   The livestock unit (LSU) aggregates livestock of different species and age into standardized units using coefficients based on the nutritional or feed requirements of each type of animal. In this analysis, LSU were calculated using coefficients from EUROSTAT. When livestock groups in the ILCS were less detailed than the EUROSTAT list, an average coefficient was used. See Annex 2 for details.

2.2.6 Stability

More unsustainable income sources

Households receiving over 75 percent of their income from unsustainable sources[50] were significantly more likely to be food insecure than those less dependent on unsustainable sources (22 percent compared to 13 percent).

Among the range of unsustainable income sources, remittances are important because so many households in Armenia receive them (private remittances amounted to 18 percent of Armenia's GDP in 2014). Although the impact of remittances is not straightforward, high dependence on them was classified as an unsustainable source of income in this analysis because they derive from external economies that are subject to shocks (Chapter 4). There has been a shift in the importance of remittances. In 2008, 16 percent of food-insecure households derived over 75 percent of their income from remittances, compared with 6 percent in 2014. By contrast, the comparable proportion of food-secure households rose from 2.5 percent in 2008 to 5 percent in 2014. Although the difference between the food secure and the food insecure is shrinking, the results are significantly different for all years.

Greater presence of debt

In 2014, 51 percent of food-insecure and 42 percent of vulnerable households had borrowed money in the previous year, compared with 38 percent of food-secure households. This significant difference was also seen in the years before 2014 (Annex 5). In 2010 and 2012, food-insecure households had a higher share of debts (relative to their income) compared to food-secure households (Annex 5 and Figure 20). This has been a significant trend in recent years in Armenia: in 2009, households having debt that they could not pay back was seen as one of most important characteristics of food insecurity following the global economic crisis. At that time, 40 percent of households were in debt and 19 percent felt they were unable to pay back their debts.[51]
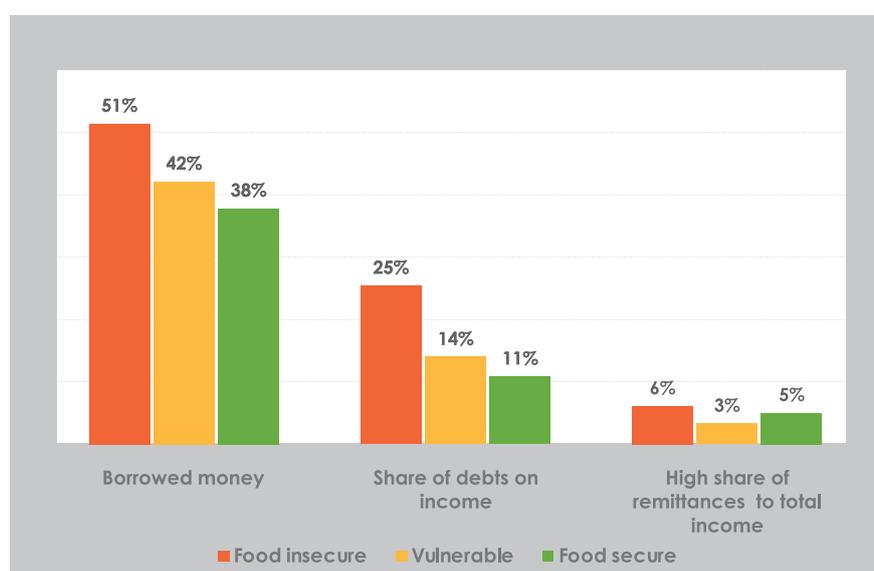
Figure 20: Percentage of households who borrowed money (2014), share of debt relative to income (2012), and remittances comprising over 75% of income (2014) by food security groups (WFP, ILCS 2014, 2012)

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50 In this analysis, the following were classified as unsustainable income sources (i.e. unable to maintain adequate household consumption over the long term): savings, credit, debt, loans, humanitarian assistance, proceeds from sale of assets or property, unemployment benefits, scholarships, lottery winnings and remittances.

51 National Institute of Labour and Social Research 2009–2010.

3. Socio-economic trends influencing food security in Armenia

KEY MESSAGES

- *At 35 percent, poverty is highest in urban areas outside Yerevan, indicating the vulnerability of a group who have less access to food of their own production, who do not benefit from the economic hub of the capital city, and who face limited opportunities in key economic growth sectors.*

- *There is a close correlation between poverty and food insecurity, with certain provinces (Shirak, Lori and Kotayk) suffering considerably higher levels of both.*

- *Multidimensional poverty analysis illustrates an uneven pace of growth and development, with many areas experiencing overlapping deprivations in education, labour and health, and an apparently widening gap between the rich and the poor.*

- *Youth unemployment is extremely high at 37 percent, causing many young people to emigrate for work and adding to concerns about population decline and loss of skills and labour.*

- *Agricultural production has increased in recent years but there is still reliance on many key food imports (e.g. wheat, legumes, vegetable oil, meat and poultry). This makes Armenia vulnerable to changes in external markets and economies.*

This chapter examines the effects of socio-economic trends on national food security. It focuses on access to and availability of food: food access is explored using indicators of poverty and inequality, unemployment, and remittances; food availability covers agricultural production and food imports. The stability component of food security is addressed in Chapter 4, in the context of shocks and stresses.

3.1 Food access

3.1.1 Poverty and inequality

Almost one in three Armenians live below the poverty line, and there is a national poverty gap of 4.5 percent.[52] The poverty level reduced dramatically from 53 percent in 2004 to 27 percent in 2008, but the global economic crisis saw it rise again to 35 percent in 2010, before a slow recovery brought it to 30 percent in 2014. Figure 21 shows trends in poverty from 2004 to 2014.

Geographically, poverty is highest in urban areas outside Yerevan, where 35 percent of the population are living in poverty. This indicates the vulnerability of Armenia's urban poor, a group whose lack of agricultural involvement gives them less access to food of their own production, who do not benefit from the economic hub of the capital city, and who face limited opportunities in key growth sectors of industry, construction and trade, and services. Certain *marzes* experience much higher poverty: Shirak, for example, has a poverty level of 44 percent, which means almost one in two households is living below the poverty line. Vayots Dzor, on the other hand, has a poverty level of 18 percent, considerably lower than the national average of 30 percent.

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52   The poverty gap is the mean shortfall of the total population from the national poverty line and thus is an indicator of the intensity or depth of poverty.
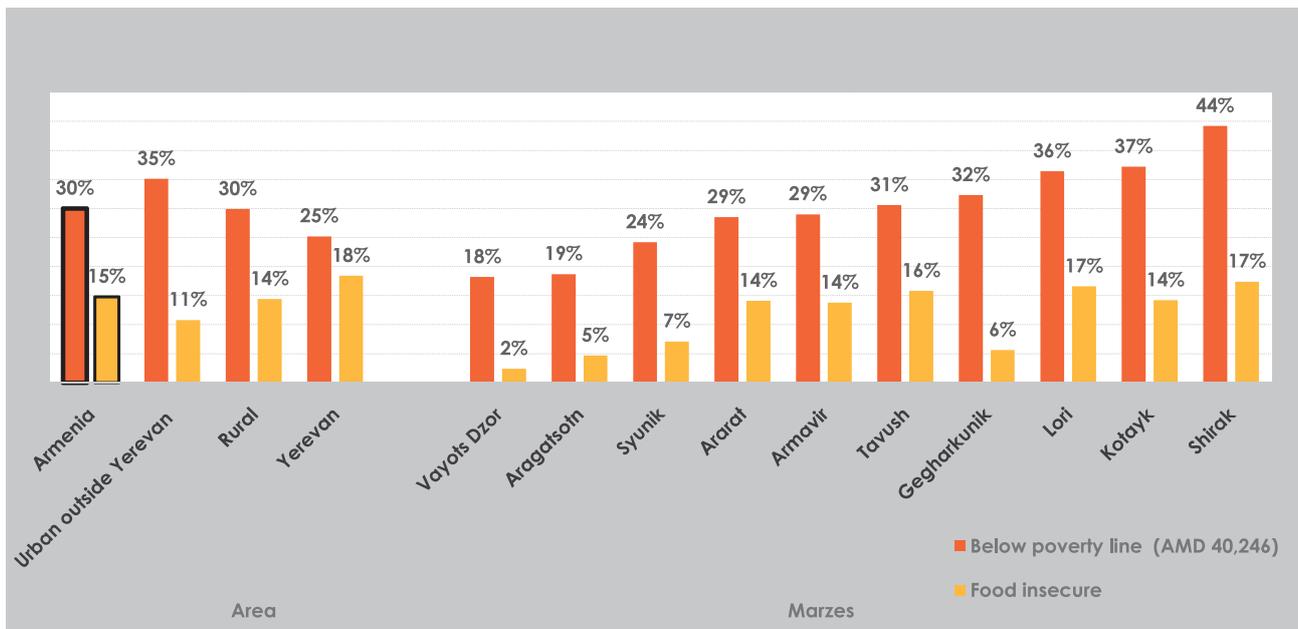
Figure 21: Percentage of population below poverty line (AMD40,246 per month) by areas and *marzes* in 2014 (ILCS 2014)

Figure 21 also shows the relationship between poverty and food insecurity: Shirak, Lori and Kotayk have a high prevalence of both, while Vayots Dzor, Aragatsotn and Syunik have below average prevalence for both. This is true in most instances except in Gegharkunik, where poverty is over 30 percent but food insecurity is very low.[53]

Demographically, poverty is known to be highest among households with more children, less education, higher unemployment and more dependency on income from agriculture. It is also more common in households headed by women.[54]. The household food security analysis (Chapter 2) finds a very similar distribution of food insecurity across the population, emphasising the correspondence between poverty and food insecurity.
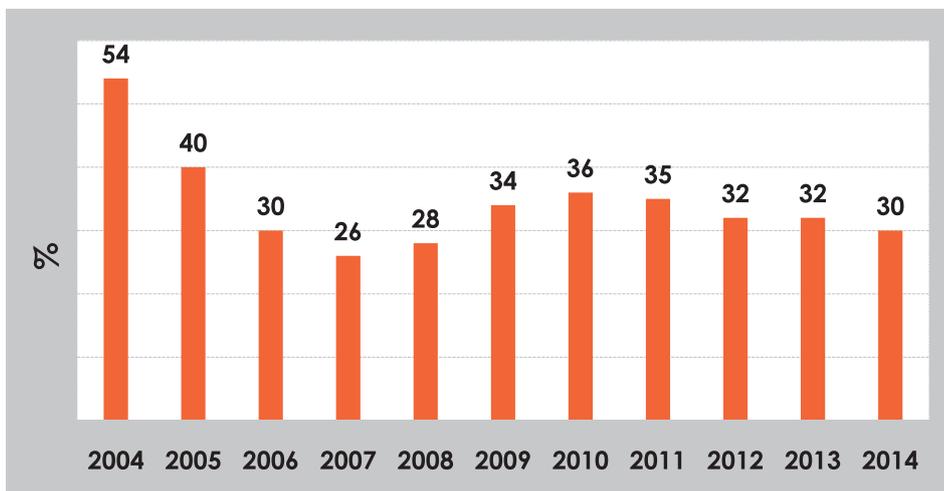
Figure 22: Percentage of population below the poverty line (NSS RA & World Bank 2015)

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53   More investigation is needed to better understand this trend.

54   NSS RA & World Bank 2015.
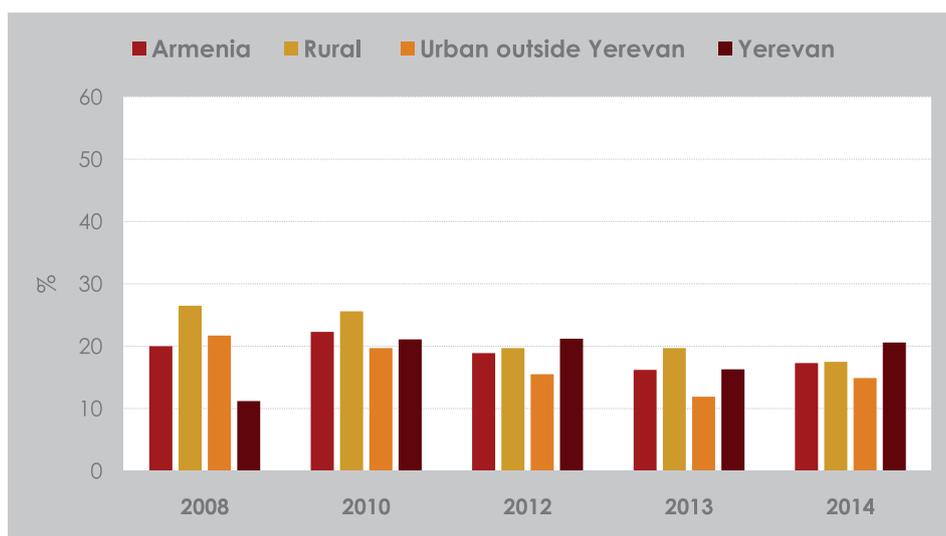
Figure 23: Percentage of population who are multidimensionally poor (NSS RA & World Bank 2015)

Measures of multidimensional poverty can also be used to show aspects of deprivation beyond income. Using ILCS data, NSS RA created a measure of multidimensional poverty that covers a range of factors including poor health, lack of education, poor housing, poor labour opportunities, and extreme consumption poverty. This showed that multidimensional poverty affected 17.7 percent of the population in 2014, an increase from the previous year (16.2 percent) but a decrease from 2010 (22.3 percent) (Figure 23). Disaggregated geographically, it also showed that Yerevan had the highest share of multidimensional poverty, at 20.6 percent. This could be explained by the higher cost of living in the capital, despite its typically higher incomes. Multidimensional poverty affected 17.5 percent of the rural population and 14.9 percent of the population in other urban areas, reflecting differences in service access and labour opportunities, among other factors.

Like other measures of poverty, the multidimensional poverty analysis shows that the worst-off areas suffer multiple deprivations, as limited access to education coincides with low labour opportunities, unemployment and poor health. In 2014, only 27.7 percent of the population did not experience deprivation in any of these three dimensions; 18 percent experienced deprivation in education, 15 percent in labour and 10 percent in health. Over 5 percent were deprived in all three of these dimensions.

The multidimensional poverty analysis also shows the uneven pace of development and growth across Armenia. The gap between the rich and poor has been growing since 2008, just as seen in food security trends (Chapter 2). Inequality can also be gauged through trends in a Gini coefficient, which reflects unequal income and consumption expenditure.[55] Figure 24 shows that the Gini coefficient decreased from 2004 to 2008, and then rose again after the global economic crisis. At its current level, the richest quintile of the population receives 40 percent of the total income, while the poorest receives just 7 percent.[56] Gini coefficient values for different areas show higher inequality in urban areas.

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55   The Gini coefficient is a popular measure of income and consumption expenditure inequality, ranging from 0 (perfect equality) to 1 (perfect inequality). It is typically in the range of 0.3 to 0.5 for both per capita income and consumption expenditures. For OECD countries, in the late 2000s, the income Gini coefficient ranged between 0.24 and 0.49.

56   OECD 2011.
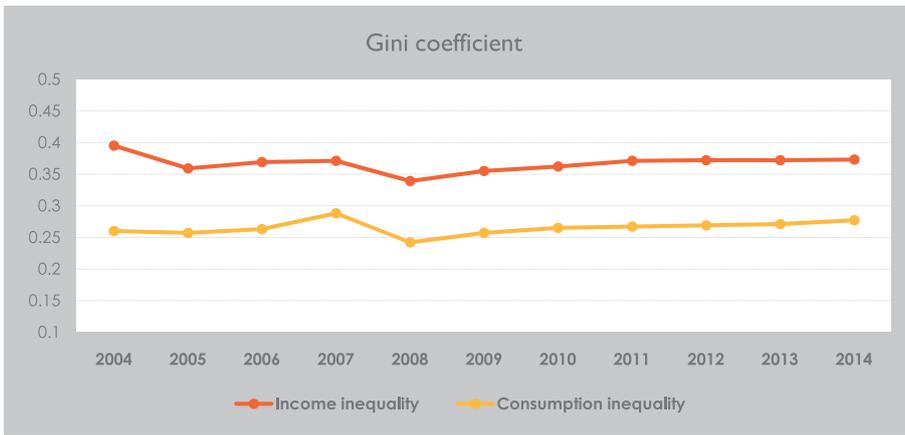
Figure 24: Gini coefficients (ILCS 2004–2014)

3.1.2 Unemployment

In 2014, 18 percent of Armenia's economically active population was unemployed,[57] a small increase from the previous year. The majority of unemployed people were in Yerevan (Figure 26), where the unemployment rate was 27 percent. Figure 25 shows that female unemployment was higher than male unemployment and that it had increased over recent years. The unemployment level of young people (aged 15–24) was extremely high at 37 percent, which is over twice the national average and means that more than one in three young people was out of work. This is likely to have been caused by an underdeveloped job market and young people having insufficient experience and skills to meet employers' needs. The implications for Armenia's economy and society are far-reaching: unemployed young people are less able to start families and more willing to move abroad for work either temporarily or permanently, potentially adding to existing concerns over population decline and the loss of skills and labour (section 3.1.3).
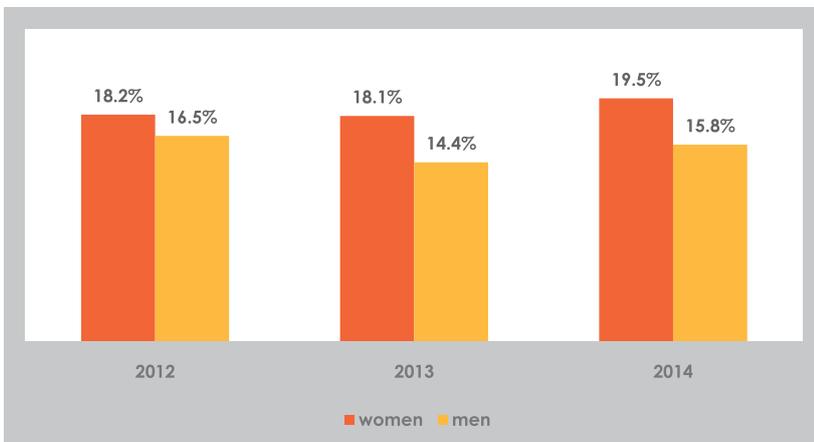
Figure 25: Unemployment rate by gender 2012–2014 (ILCS)

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57   ILCS 2014.
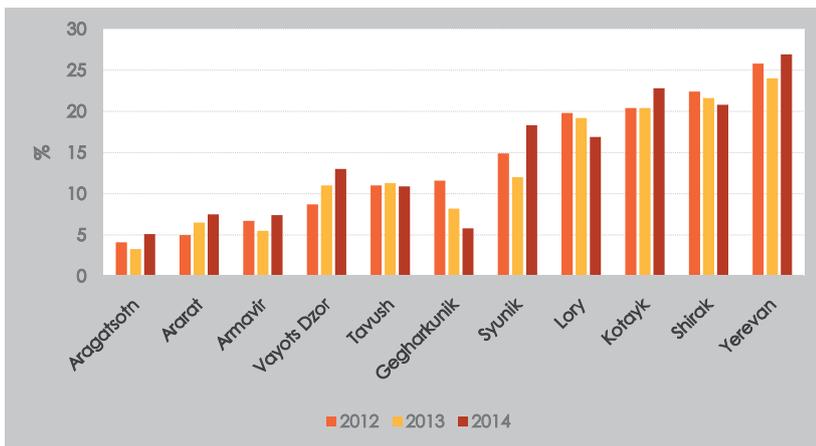
Figure 26: Unemployment by *marz* 2012–2014 (ILCS)

3.1.3 Remittances and labour migration

Armenia has seen large numbers of its citizens emigrate for work abroad, driven largely by unemployment, poverty, food insecurity and lack of social inclusion. It is estimated that between 2007 and 2013 an average 35,000 people emigrated from Armenia every year.[58] The majority of these (82 percent) were males aged 20–54.

The scale of emigration poses a threat to demographic growth and national economic potential. At the same time, the Armenian diaspora – whether long-established or recent and transient – makes a profound socio-economic contribution to the country through financial transfers or remittances (Box 2). Remittances have increased dramatically over the past 20 years, amounting to over US$2.1 billion in 2014. Remittances represented 17.9 percent of GDP in 2014, and they have consistently contributed between 16.3 and 19.7 percent since a dramatic rise in 2004 (Figure 27). The impact of this on poverty and food insecurity is very important: it is believed that 40 percent of households receiving remittances are poor or very poor, and on average, 80 percent of remittances is spent on household consumption.[59] In the aftermath of the 2008 global economic crisis, remittances were an essential source of income for many vulnerable households. Alongside a national social protection scheme (Chapter 7), remittances have reduced the severity and depth of household poverty and food insecurity in the country.

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58   IOM, NSS RA, EU, UNECE & Russian-Armenian (Slavonic University) 2014.

59   Karapetyan and Harutyunyan 2013/14.

Box 2: Migration flows from Armenia and the importance of the diaspora

Armenia has a population of 3.0 million, while estimates of the size of its diaspora range from 6 to over 7 million, mainly in Russia, USA, Canada, CIS countries and western Europe.

Mass emigration from Armenia took place after the collapse of the Soviet Union and in the early years of Armenia's independence in 1991. Key recent episodes of emigration include the following:

- Between 1988 and 1994, the Soviet economic crisis slowed economic growth in Armenia and created tensions in labour markets, especially in smaller cities and rural areas. This led to seasonal migration (people finding temporary work, mostly in the construction sector, in other republics of the former Soviet Union), as well as to long-term emigration, mainly to the USA. At least 800,000 Armenians – or 25 percent of the total population – left the country in the 1990s.

- Emigration from Armenia intensified after the devastating 6.9 magnitude Spitak earthquake in December 1988. The earthquake left 25,000 people dead, and between 1988 and 1989 some 145,000 people emigrated.

- A wave of migration was caused by the Nagorno-Karabakh conflict between February 1988 and May 1994. In the first years of the conflict around 170,000 Azerbaijani people left Armenia. Armenia received more than twice this number of refugees from Azerbaijan, but most of those then emigrated permanently to Russia and the USA.

- Due to a scarcity of jobs and low salaries, 94 percent of those who left Armenia between 2002 and 2007 were labour migrants. Of these, only 3 percent intended to permanently reside abroad, 2 percent intended to study abroad, and 2 percent had other purposes. Between 2009 and 2012, around 9.5 percent of the population above 15 years old migrated. The majority of these had migrated internationally (80.4 percent).

Many in the diaspora feel dual nationality as Armenians and as citizens of their host country. To varying degrees, the diaspora participates in the political and economic life of its former homeland (for example, by taking part in charitable causes and lobbying during elections). The diaspora also contributes to development by opening doors to global labour markets, trade, business, cultural exchange and diplomacy, saving and investing in Armenia, and contributing ideas, knowledge, experience and skills. In addition, diaspora remittances are crucial for Armenia's economy and keep many families above the poverty line. These are among the many positive aspects of emigration, set against concerns about population decline and the 'brain drain' or 'skills drain' it poses.

Despite its importance, the role played by remittances makes Armenia vulnerable to shocks in external economies. For example, following the downturn in the Russian economy, total remittances from Russia fell by 10 percent in 2014 and then by 36 percent in 2015. This underlines the fragility of a remittance-based economy (section 4.1.1) as well as the risks of mass emigration (section 4.1.4).
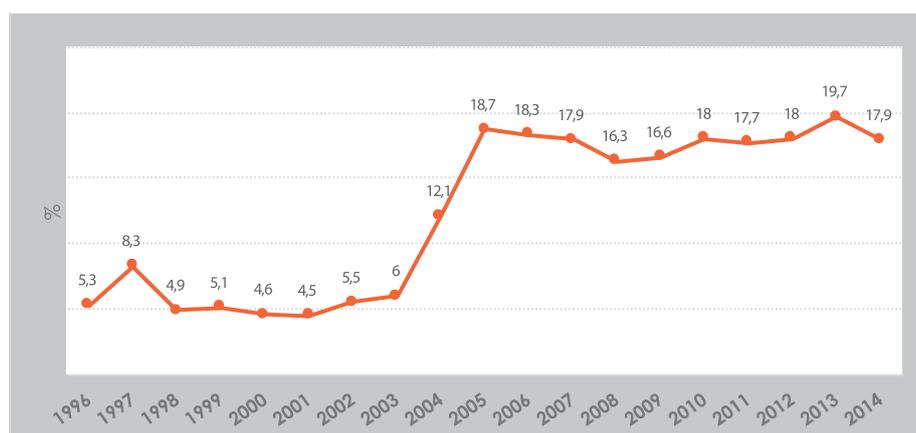
Figure 27: Personal remittances received as percentage of GDP (World Bank)

3.2 Food availability

Food security depends on food being physically as well as economically available. Armenia produces much of its own food through a strong and growing agricultural sector, but it relies on imports of key staples including wheat and meat.

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Agriculture represents the second largest share, by sector, of Armenia's GDP (around 19 percent in 2014). Agricultural production has increased significantly the last years, both in terms of livestock (roughly one third of overall production) and crops (roughly two thirds of overall production). Figure 28 shows increasing trends for livestock slaughter, grains and vegetables over the last decade. The gross harvest of grains and legumes increased from 212,000 mt in 2006 to 590,000 mt in 2014, more than doubling the production.[60] In the same period, the area of sown land increased by just 3 percent, indicating a significant improvement in yield.
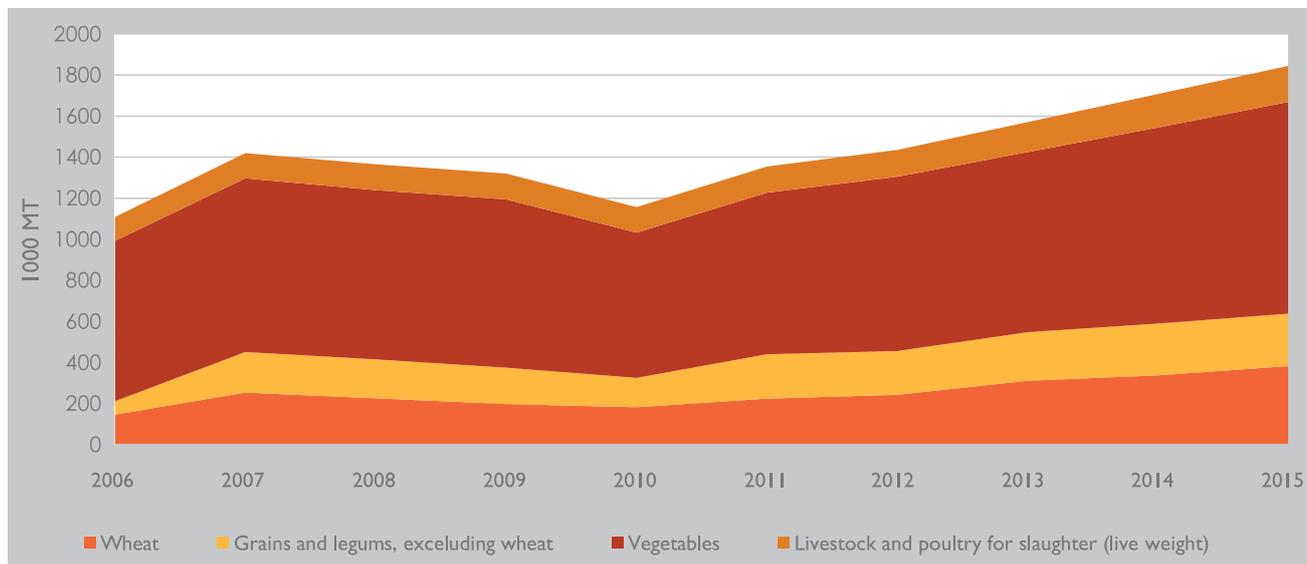
Figure 28: Agricultural output for grains, vegetables and livestock in thousand metric tons

Source: NSS RA Food security and poverty 2006–2016

Despite positive growth in agricultural production and an increase in self-sufficiency for several staples since 2008, Armenia remains reliant on many food imports. Figure 29 shows the self-sufficiency ratio for key staples, indicating that the country imports much of its wheat,[61] legumes, vegetable oil, pork and poultry products.
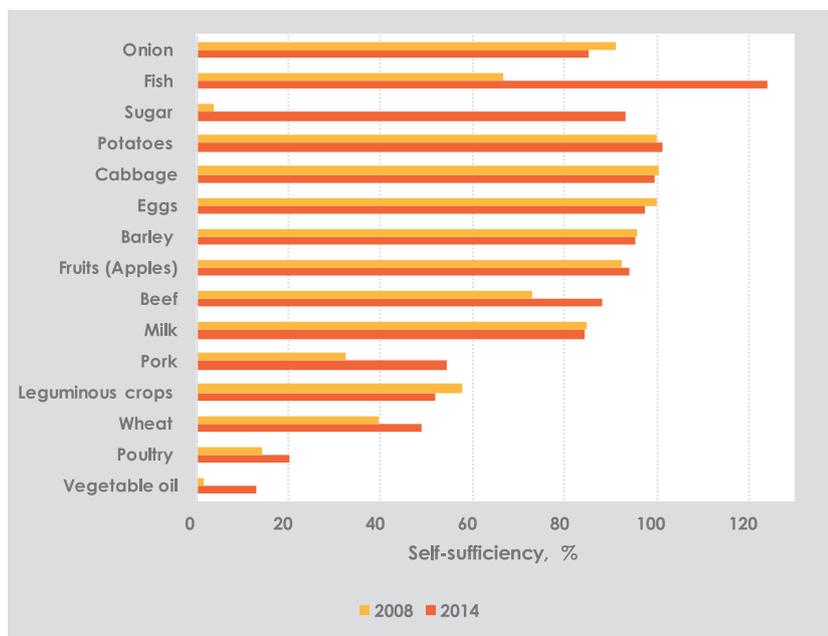
Figure 29: Self-sufficiency ratio of key food products

Source: NSS RA Food security and poverty bulletins, 2009 and 2015.

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60 NSS RA. Food security and poverty, 2015.

61 Wheat is one of the biggest food imports: Armenia imported 332,307 mt of it in 2014.

As a net importer of many food groups, Armenia depends on trading partners including Russia and Turkey. Its food security is vulnerable to changes in external markets and economies as well as political dynamics that affect terms of trade. In light of this, the country is prioritising greater self-sufficiency through increased production. For example, national beef, pork and poultry production increased from 2008 to 2014 (Figure 29) as a result of raised demand and a push for greater self-sufficiency. *Marzes* with the highest livestock production include Gegharkunik, Shirak, Aragatsotn and Lori. In spite of these increases, because of low productivity in the livestock sector the supply of meat and milk is inadequate[62] and imports of meat and dairy are needed to cover national demand (Figure 29). Overall, ambitions of self-sufficiency are currently limited given Armenia's overall size and environment and its lack of raw materials and processing facilities.

Box 3: Urban Armenia

Yerevan is the capital of Armenia and its largest city. It is also one of the world's longest continuously occupied cities. It is home to well over 1 million people, more than a third of the population. Since the early 2000s, Yerevan has boomed in construction and investment, although in recent years the contraction of the Russian economy has brought many urban renewal initiatives to a halt. Still, the city is thought to contribute 41 percent of the country's annual total industrial product (NSS RA), largely in the production of chemicals, metal and steel products, machinery, rubber products, plastics, textiles, building materials, processed stone, beverages and food. In 2013, over 85 percent of the annual total service production was in Yerevan, and over 84 percent of the annual total retail trade.

Overall, the population of Yerevan is far more likely to visit health facilities than elsewhere in Armenia, and it enjoys better access to education. Women typically have more socio-economic opportunities in Yerevan. Even so, disparity is rife in the capital, where the gap between the rich and poor is visible in housing and living standards. Food insecurity levels and unemployment are higher than among the rest of the population. Allegations of poor governance focus on Yerevan, with recent protests by civil society groups against electoral processes, corruption, electricity price rises, inequality and other issues.

'Other urban' areas include numerous towns and cities beyond Yerevan. **Gyumri**, (Shirak province) is the second largest city, 126 km from Yerevan. Its economy depends on construction, tourism and banking services, but it also manufactures building materials, textiles, foods and beer. The population shrank following the 1988 Spitak earthquake but it is 117,700 as of January 2016. **Vanadzor** (Lori province) is the third largest city, 128 km from Yerevan. Its main industries are clothing firms, sewing factories and building material production. It hosts a thermal power plant and a plant for gemstone-cutting machines. The population is 82,200 as of January 2016. The vulnerability of these other urban areas may be less recognised than their rural equivalents, even though economic crises have hit them hard and they have the highest percentage of poverty compared with rural areas and Yerevan. For example, child malnutrition, an indicator of chronic poverty, is seen in this analysis to be significantly higher in other urban areas than anywhere else in Armenia.

Table 4 Comparison of national, Yerevan and 'other urban' indicators

2014 ILCS data	Armenia	Yerevan	'Other urban'
Poverty	30%	25%	35%
Unemployment rate	17%	26%	-
Food insecurity	15%	18%	11%
Child stunting (under 5s)	20%	15%	22%
Child overweight	15%	15%	17%

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62 World Bank 2015a.

4. Stability of food security – shocks and stresses

KEY MESSAGES

- *Armenia is at risk of a multitude of human-induced and natural shocks and stresses that affect the stability of food security.*

- *Changes in external economies can impact the economy and population because of the country's high dependence on remittances and food imports.*

- *Political risks are linked to the recently escalated Nagorno-Karabakh conflict. The ongoing land blockade of Armenia (since 1993) has a negative influence on the economic growth and living standards of the population of the Republic of Armenia, especially its vulnerable groups.*

- *Natural disaster risks include extreme weather and ecological events – from flooding, mudslides and landslides to hailstorms, frost and drought – which threaten agricultural productivity and livelihoods.*

- *Armenia's principal natural hazard in terms of impact is earthquakes, which have greater potential losses than other more probable disasters.*

- *Climate change poses a significant risk to future productivity and food security in Armenia.*

Armenia is subject to multiple shocks and stresses that are natural, industrial, political and economic. Their impacts include loss of livelihoods and assets, social and psychosocial trauma, reduced access to services, destroyed infrastructure and national economic losses. They can also have significant impacts on household food security. This chapter describes Armenia's key human-induced and natural shocks and stresses, and how they affect the stability of food security.

4.1 Human-induced shocks and stresses

4.1.1 Crises in external economies: global and regional

Global economic crisis

The 2008 global economic crisis had a severe impact on Armenia. The economy contracted by 14.1 percent in 2009, one of the steepest GDP declines in the world.[63] After a decade of strong economic growth, the crisis effectively reversed Armenia's achievements overnight. Armenian exports fell by more than 30 percent in value in 2009, due to falling global demand and commodity prices. There was a sharp decline in remittances and private capital inflows, and a drop in employment opportunities abroad. At the same time, global food prices increased sharply, which put additional pressure on households: 78 percent of the population changed their diets to more affordable food and about two thirds reduced the quantity of food they ate.[64] Those already vulnerable became even more so – a 2010 WFP study[65] on the impact of the global economic crisis on households found the most vulnerable households were those with:

> ⇒ **Shocks** are sudden events that impact the vulnerability of a system and its components
>
> ⇒ **Stresses** are prolonged events that undermine the potential of a system and increase the vulnerability of actors within it, or slow-onset hazards that develop and pass a tipping point to become extreme events

- Female, single, divorced/separated, widowed or disabled heads of household;
- A large proportion (over 70 percent) of dependent members;
- No seasonal migrant or internal migrant;
- No receipt of remittances, or receipt of remittances in 2008 but not in 2009;
- Men not regularly employed; and
- Their main source of income from pensions, unskilled casual labour, social benefits or loans/credit.

Regional economic shocks

Since 2013, economic contraction in the surrounding region has also had a critical impact on household poverty and food security in Armenia. The Russian economy suffered as a result of falling oil prices and economic sanctions linked to developments in Ukraine and Crimea. This led to a serious devaluation of the rouble and a slowdown in economic growth and employment opportunities. Russia is Armenia's largest trading partner, accounting for 25 percent of imports and 20 percent of exports in 2014; therefore, this had serious knock-on effects in terms of exports and trade. Russia is also the principal destination for Armenian labour migrants,[66] so the recession caused a sharp reduction in remittances and in the household income or economic investments they were supporting[67] (section 4.1.4).

Armenia's dependence on international trade and capital inflows makes it vulnerable to currency fluctuations. Figures 30 and 31 show the exchange rates of the US dollar and Russian rouble against the dram since 2003. The dram appreciated against both the dollar and the rouble between 2003 and 2008.[68] After 2008, the dram depreciated significantly against the dollar, making imports of food and other dollar–denominated commodities more expensive. In the last two years, the dram has strengthened considerably against the rouble, which has had a negative impact on the inflow of remittances from Russia.

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63 National Institute of Labour and Social Research 2009–2010.

64 National Institute of Labour and Social Research 2009–2010.

65 WFP 2010, using ILCS data.

66 The majority of Armenia's migrants work in Russia, which is the source of 87 percent of all remittances (UNDAF 2015).

67 Remittances, mainly from Russia, fuelled Armenia's economic boom in the 2000s. The construction sector grew at an average annual rate of 20 percent until 2008, concentrated mainly in Yerevan in residential properties but also in energy, agriculture and communications infrastructure.

68 Annual average rates from Central Bank of Armenia.

**Figure 30: Dram per US dollar 2003–2015
(Central Bank of Armenia)**
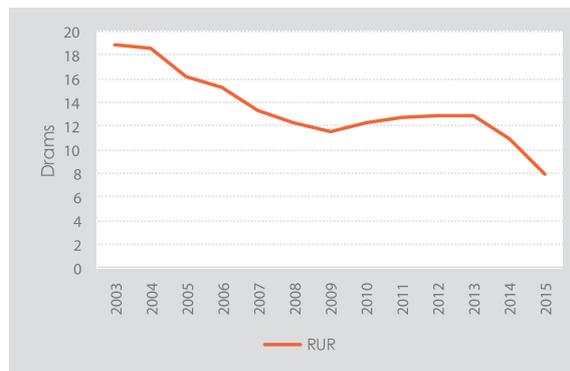
**Figure 31: Dram per Russian rouble 2003–2015
(Central Bank of Armenia)**

Fluctuations in food prices

The Consumer Price Index (CPI) is a standard international measure for inflation that measures changes in the prices of a basket of consumer goods, food and services purchased by households. Figure 32 shows annual changes in the CPI between 2003 and 2015, as well as changes in a related Food Price Index (which measures change in prices of a basket of staple foods). It shows that in 2008, the CPI rose by 9 percentage points, but then fell by 3 percentage points in 2014. The Food Price Index followed roughly the same trend but was more volatile. Global food prices rose sharply in 2008 and 2011, which is reflected in the 11 percent rise in Armenian food prices in 2008 and the 12 percent rise in 2011. As Armenia is a net importer of food, increases in global food prices push up the cost of food in-country.

Figure 32: Armenia Consumer Price Index and Food Price Index (NSS RA)

The higher food prices affected poor and urban households most severely. In 2008 the prices of staple products such as bread and flour – important components of the Armenian diet – increased by 28 percent. In vulnerable households, more food was bought on credit, people bought less food and chose cheaper alternatives,[69] and the most vulnerable households fell below the poverty line.

Overall, it is clear that Armenia's economy and food security are strongly linked to global and regional economies, making it vulnerable to future shocks caused by external factors. In particular, the importance of remittances from Russia means that further contractions in Russia's economy pose a macroeconomic risk to Armenia. Other potential risks include a deepened EU crisis and global economic shifts such as reduced demand for Armenia's metals by the USA or China, or rising food prices.

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69 WFP 2011.

4.1.2 Political tensions

Nagorno-Karabakh conflict

Stability in the country is impacted by the volatile regional geo-political context and the Nagorno-Karabakh conflict. The conflict is negatively impacting the vulnerability of Armenia's population especially along the border with Azerbaijan. The peaceful resolution of the Nagorno-Karabakh conflict is negotiated under the internationally agreed format of the OSCE Minsk Group, co-chaired by Russian Federation, United States of America and France.[70]

The Minsk Group Co-Chair countries are actually carrying out two missions. One is to maintain stability in the conflict zone and the other mission is to contribute to reaching a peace agreement on the settlement of the issue through compromise.[71] The heads of the Minsk Group Co-Chair states regularly make statements emphasizing the three key principles for the peaceful settlement of the conflict i.e., non-use of force or threat of force, territorial integrity, and equal rights and self-determination of peoples. Armenia supports the implementation of the right of the people of Nagorno-Karabakh to self-determination as a fundamental part of guaranteeing human rights.[72]

Almost a year ago - in the first days of April 2016, large scale fighting erupted along the Line of Contact in the Nagorno-Karabakh conflict zone, which was the most dangerous escalation of the conflict since the signing of the cease-fire agreement between Azerbaijan, Armenia and Nagorno-Karabakh in 1994.

In 1993 Turkey unilaterally closed the border with Armenia in support of Azerbaijan in the Nagorno-Karabakh conflict. The border is still closed and there are no diplomatic relations between the two countries. For Armenia, the ongoing tension compounds the challenges of being a land-locked state and constrains economic development.

Impact of closed borders on economic development

The studies by the World Bank have shown that if there was no blockade, Armenia would be better able to eradicate poverty, Its GDP would increase significantly (by about 30 percent) and the trade deficit would be reduced by half.[73]

4.1.3 Energy crises

Armenia's energy sector is considered to be relatively stable thanks to recent reforms and increased efficiency. However, it faces significant challenges, including an emerging supply gap, the need to maintain supply reliability, and the need to maintain affordable tariffs. Affecting all these is the country's dependency on natural gas imports, mainly from Russia, which has caused harmful fluctuations in local prices. The past decade has seen several sharp increases in energy tariffs – for example, there was a 20 percent rise in July 2013 and a similar rise in June 2015. This raises inflation and reduces national industrial growth,[74] putting pressure on food and other household expenditures. This is particularly acute for poorer households, who typically spend around 15 percent of their disposable income on energy – and even more in winter.[75] Energy crises also have environmental implications: a price rise in the 1990s, combined with poor forest management practices, created a spike in illegal deforestation that resulted in the country losing almost 20 percent of its forest cover between 1990 and 1995. Armenia plans to increase its future energy production, including through renewables and 'green energy', to reduce the high risks posed by dependency on energy imports and thus on external economies.

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70 Government of Armenia and UN. (2015). UNDAF 2016-20

71 Kocharyan S. (2016), Why is the Nagorno-Karabakh conflict still not resolved? Yerevan.

72 United Nations General Assembly. (2014). Armenia National report submitted in accordance with paragraph 5 of the annex to Human Rights Council resolution 16/21

73 Ibid.

74 Industrial growth from mining, quarrying and the production of pharmaceuticals, food, and drinks fell from 7.0 percent in 2012 to 4.9 percent in 2013 following steep price rises for electricity and imported gas in July 2013.

75 World Bank 2015a.

4.1.4 Emigration

The scale of migration out of Armenia has brought critical material gains. Remittances from migrant labour help reduce poverty, and in the aftermath of the 2008 global economic crisis, they are believed to have kept many vulnerable Armenian households above the poverty line (section 3.1.1). At the same time, for many households, remittances have created socio-economic vulnerability. Dependence on them makes recipient households vulnerable to instability of income and consumption caused by economic shocks in the host country. For example, the Central Bank of Armenia reported that the total amount of private remittances sent to Armenia in January 2016 was 14 percent lower than the amount in January 2015 (which in turn had dropped significantly from January 2014), because of the depreciation of the rouble and the associated regional economic situation. For poor or very poor households (who make up around 40 percent of those receiving remittances), this fall in income has significant effects on their spending and food security.

Another cost of mass emigration is that many migrants' families and communities are thought to experience social vulnerability because of family splitting and separation. In rural areas where many men have migrated for work (for example Syunik, one of the poorest provinces), women can be left with a heavy burden of agricultural as well as domestic tasks.

Nationally, remittances have important economic impacts – reducing poverty, boosting GDP in the short term and developing the construction and service sectors – but it is not clear how they positively contribute to the economy and society in the long term, and most private remittances are spent on household consumption (section 3.1.3). The volume of remittances may also facilitate reduced government spending on education and health, and certainly the extent of sustained emigration risks becoming a skills and labour drain, as well as contributing to population decline (Figure 33).[76]
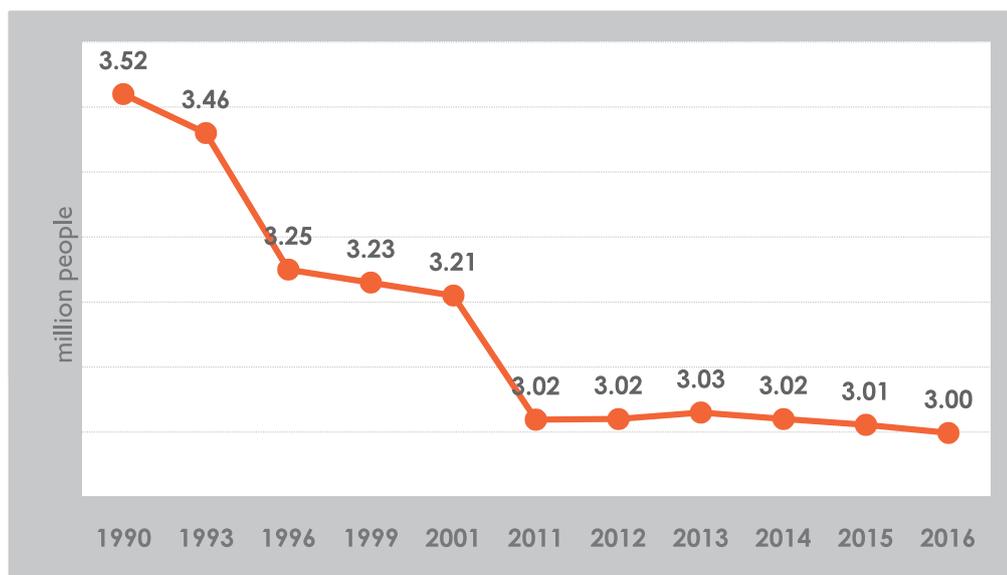
Figure 33: Population figures 1990–2016
Source: NSS RA – 2001 and 2011 are census data

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76   However, there are also counter-analyses of the phenomenon of 'returnees' who boost the country's skills capacity, innovation and economy.

4.1.5 Industrial hazards

Nuclear power plant

Armenia's nuclear power plant at Metsamor (Map 6), which began operation in 1976, is a vital source of energy for a country that otherwise (besides several hydroelectric plants) relies heavily on imported primary energy sources. Although the power plant was not damaged after the 1988 earthquake, it was shut down in 1989 and restarted (only Unit 2) again in 1995, taking into account the lack in national energy resources. In 2013 "stress tests" were conducted at the power plant in accordance with the approach of Western European Nuclear Regulation. The preliminary results of stress tests and assessment of safety allows the safety of the power plant to be stated. At the same time, weaknesses and areas for improvement have been identified along with specific recommendations to be implemented.[77]

After thorough consultations with the International Atomic Energy Agency and other international partners, with a focus on ensuring its safety and security, the Armenian Government has made a decision on extension of the life cycle of the power plant until 2026 to ensure its capacity is replaced.

4.2 Natural shocks and stresses

Armenia is one of the most disaster-prone countries in the South Caucasus. In recent years, it has suffered the highest level of deaths from natural disasters in the region: 419 per million people were killed between 1988 and 2007.[78] These figures were elevated by a major earthquake in Spitak in 1988, but even without the earthquake there have been very high human, financial and asset losses caused by flooding, drought and other disasters.

Over 80 percent of the population is exposed to major natural hazards with a probability of occurrence of 0.5 percent (i.e. 1-in-200-year events), and over 30 percent is exposed to more frequent, lower-intensity natural hazards with a probability of occurrence of 5.0 percent (i.e. 1-in-20-year events). In terms of cost, a 1-in-200-year event has been estimated to cause direct physical losses totalling US$12.2 billion, well over 100 percent of GDP.[79]

The agricultural sector is most affected by natural disasters including frost, hailstorms, floods, landslides, mudslides, drought and earthquakes. Figure 34 shows the difference between actual and potential agricultural outputs caused by natural disasters between 1995 and 2010. In 2010, it is estimated that US$416 million was lost from potential agricultural output because of natural disasters. The national impact of these losses is particularly acute given that agriculture represents 19 percent of GDP and employs 28 percent of the population.

In terms of food security, food access and availability can be seriously affected by the natural shocks and stresses described in this section.

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77 International Atomic Energy Agency. https://cnpp.iaea.org/countryprofiles/Armenia/Armenia.htm
78 CAC DRMI.
79 Pusch 2004.
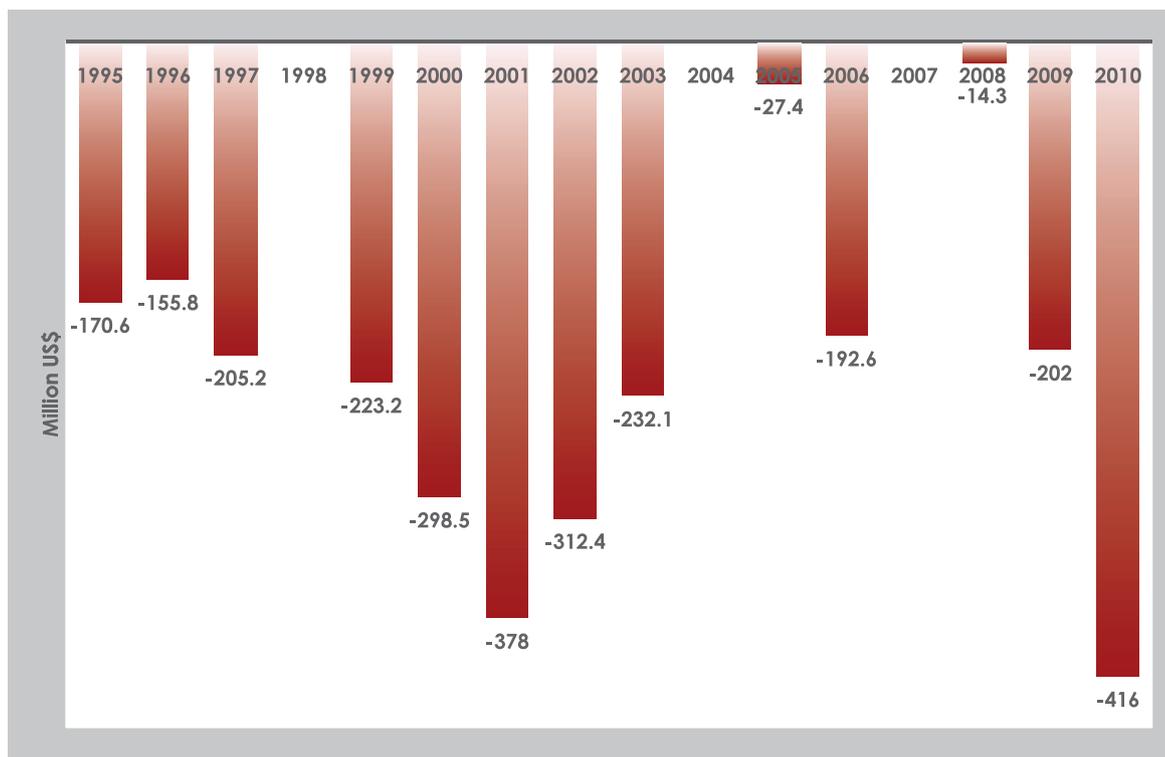
Figure 34: Difference between actual and potential agricultural output mainly caused by natural disaster (UNDP 2012)

4.2.1 Hailstorms and frost

Hailstorms are a major threat to agricultural production, with hundreds of villages located in hailstorm hazardous areas. It is estimated that 15–17 percent of Armenia's total agricultural area suffers from hail damage, and average annual losses are around US$30–40 million.[80] In some years, severe hailstorms constitute a national crisis; for example, in 2002 hail and frost damage to crops and fruit trees was so severe in northern Armenia that the government provided emergency wheat seed.[81] Severe hailstorms typically hit several regions at once, affecting agriculture and slowing economic growth for the rest of the year. In areas most prone to hailstorms, for example Ararat and pre-mountain zones, the Ministry of Agriculture and partners are exploring the use of hail nets to mitigate the devastating damage that can be caused by extreme storms.

Map 1 shows the areas most at risk of hailstorms. Areas are classified as low, medium and high risk, based on the hailstorm frequency during the year.[82]

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80 CAC DRMI.

81 World Bank 2009.

82 National Hydro-Meteorological Service.

Map 1: Hailstorm risk (Armenian State Hydro-meteorological and Monitoring Service, WFP)
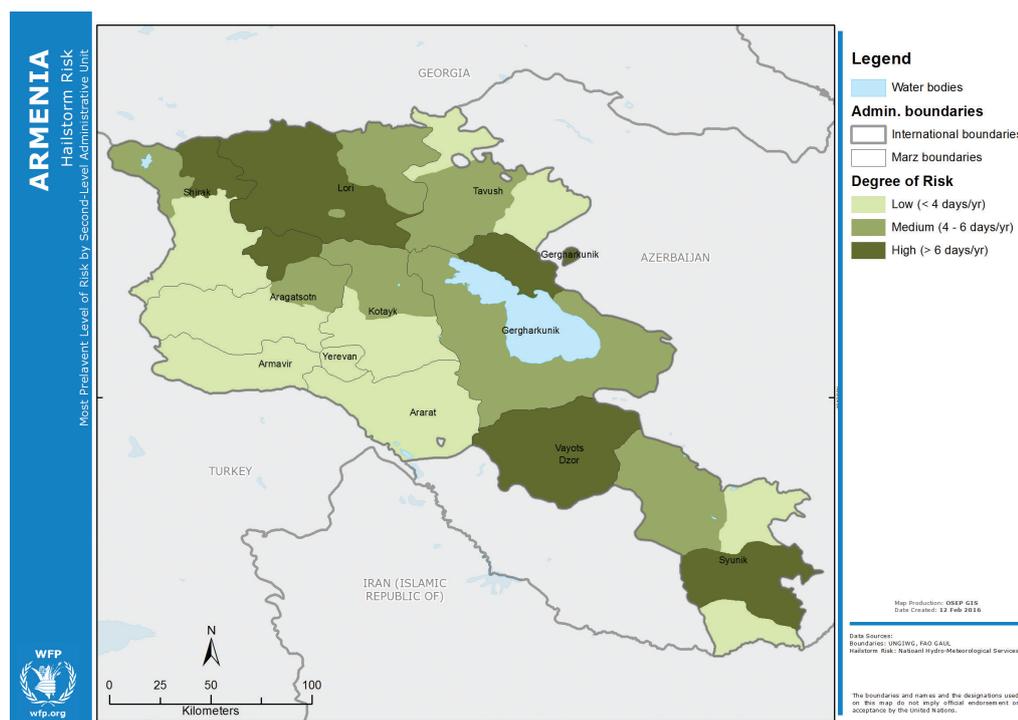
Frosts are another serious threat to productivity and food security. Depending on the zone, frosts can last from late summer until the end of spring. Severe frosts can completely destroy annual crop yields for some farmers. In 2014, spring frost damaged nearly the entire apricot harvest and caused tens of millions of dollars' worth of damage. It is difficult for farmers to mitigate the effects of sudden onset and destructive frosts, although new technologies for heat distribution in high-risk areas are being explored.

4.2.2 Floods, landslides and mudslides

Floods and landslides potentially affect half of Armenia's territory, mainly in medium-altitude mountainous areas. Major events typically occur every 3–10 years, during springtime when snow melts. With 30 percent of cultivated land located in areas prone to floods (including flash floods), and most of these areas being densely populated, floods are estimated to cause an average annual loss of US$700,000.[83]

Landslides and mudslides pose a similar risk, with 35 percent of settlements located in landslide-prone areas.[84] The effects of these events are exacerbated by poorly built water, sewage and irrigation systems. Areas where wildfires or human activity have destroyed vegetation on slopes are particularly vulnerable to landslides during and after heavy rains.

> *Landslides and mudslides*
>
> *Landslides occur when masses of rock, earth or debris move down a slope. Debris flows, also known as mudslides, are a common type of fast-moving landslide that tends to flow in channels. (Source: CDC)*

Maps 2, 3 and 4 shows the distribution of flooding, landslide and mudslide risks across Armenia, derived from information on surface area at risk combined with maximum flood/landslide/mudslide frequency at *marz* level.

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83   CAC DRMI.

84   World Bank 2009.

Map 2: Flood risk (WFP, UNEP/UNISDR 2011)
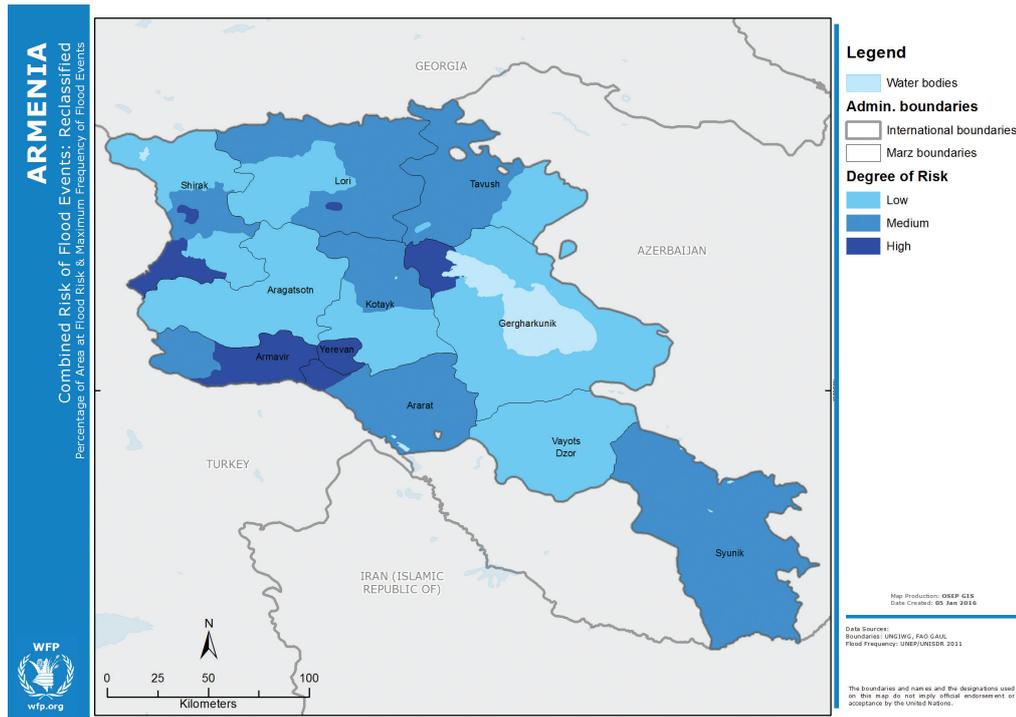
Map 3: Landslide risk (WFP, UNEP/UNISDR 2011)
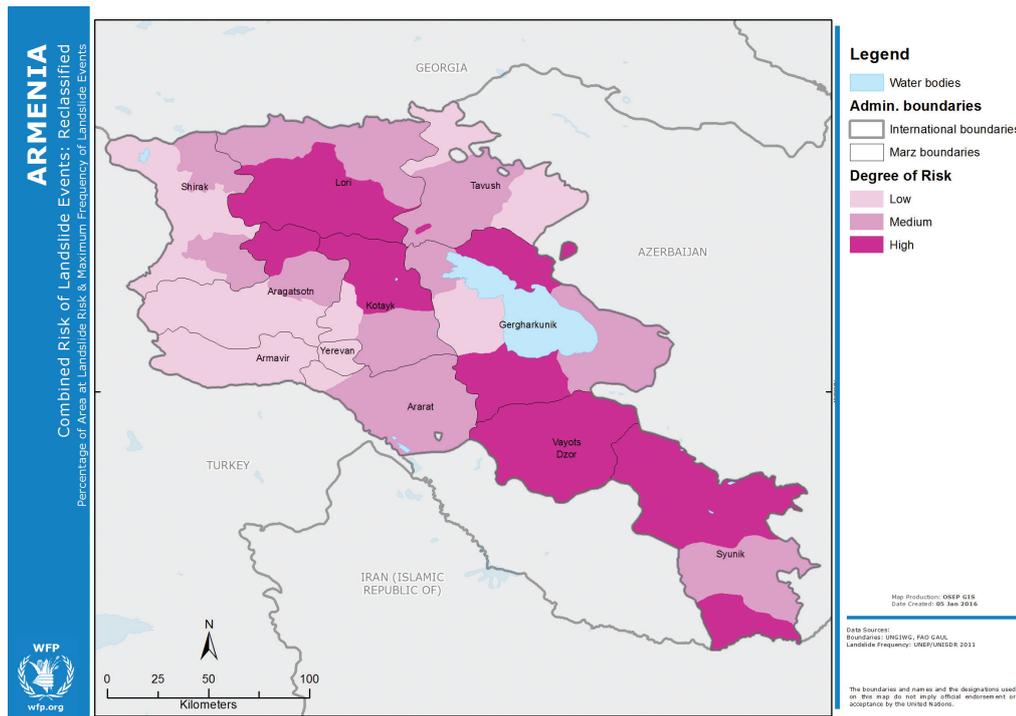
Map 4: Mudflow risk (Armenian State Hydro-meteorological and Monitoring Service 2012, and WFP)
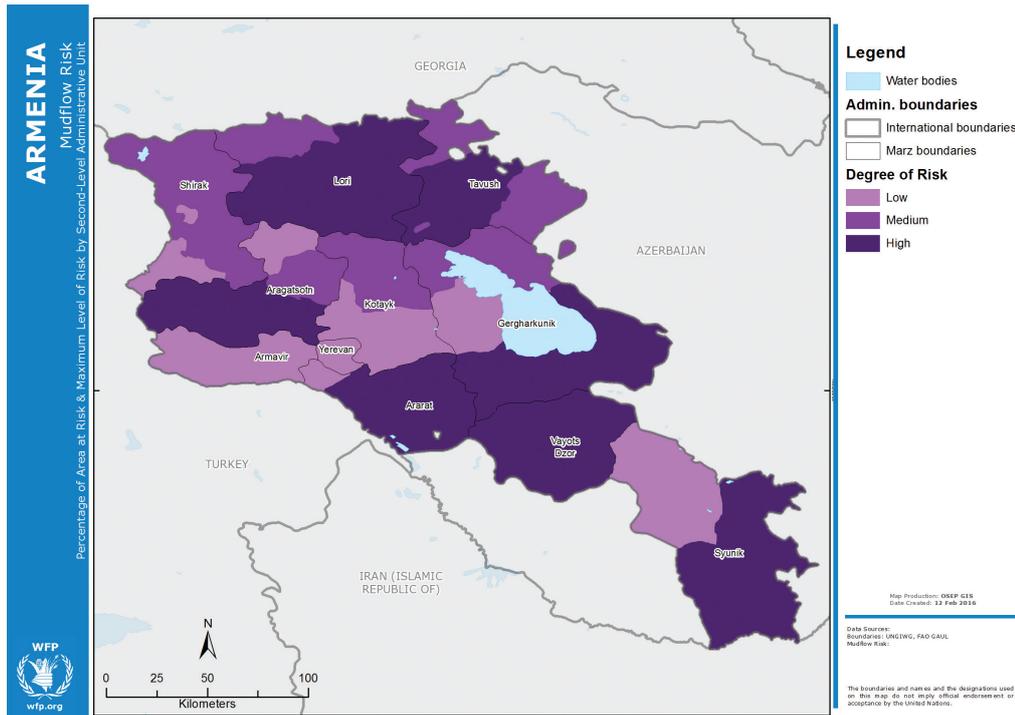
4.2.3 Drought

Extreme fluctuations in temperature and climate mean that drought is increasingly a very costly risk in Armenia, estimated to cause average annual losses of US$6 million.[85] About 15 percent of agricultural land is drought-prone, especially in Ararat lowland and foothill areas. Higher temperatures and hot winds damage crops and fruit trees, as well as reducing livestock productivity. Soil becomes stripped of nutrients, and processes of erosion and desertification occur. Desertification now threatens 80 percent of the country, and severe desertification 50 percent of the country. This is exacerbated by climate change and increased human activity or poor resource management practices.[86] Efforts to reduce the impacts of drought on agriculture include distributing drought-resistant species of crops and livestock, improving soil management practices and creating large reservoirs for irrigation.

Map 5 shows the risk of drought based on the number of poor growing seasons experienced in different areas between 2011 and 2015, and on the proportion of areas affected. Poor rainfall could damage crop and pasture growth; darker-shaded areas are those most at risk of drought.[87]

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85   CAC DRMI.

86   Environmental sustainability is a major concern in Armenia, where during the 1990s a lack of forest management and an energy crisis drove illegal deforestation and destroyed 20 percent of national forest cover over five years.

87   A 20-year average (1994–2012) of normalized difference vegetation index during the growing seasons was created as a benchmark. Each year in the last five (i.e. 2011–2015) the index was individually compared against the long-term average benchmark to determine the number of years when the growing seasons were significantly below the benchmark.

Map 5: Drought risk map (WFP 2015)
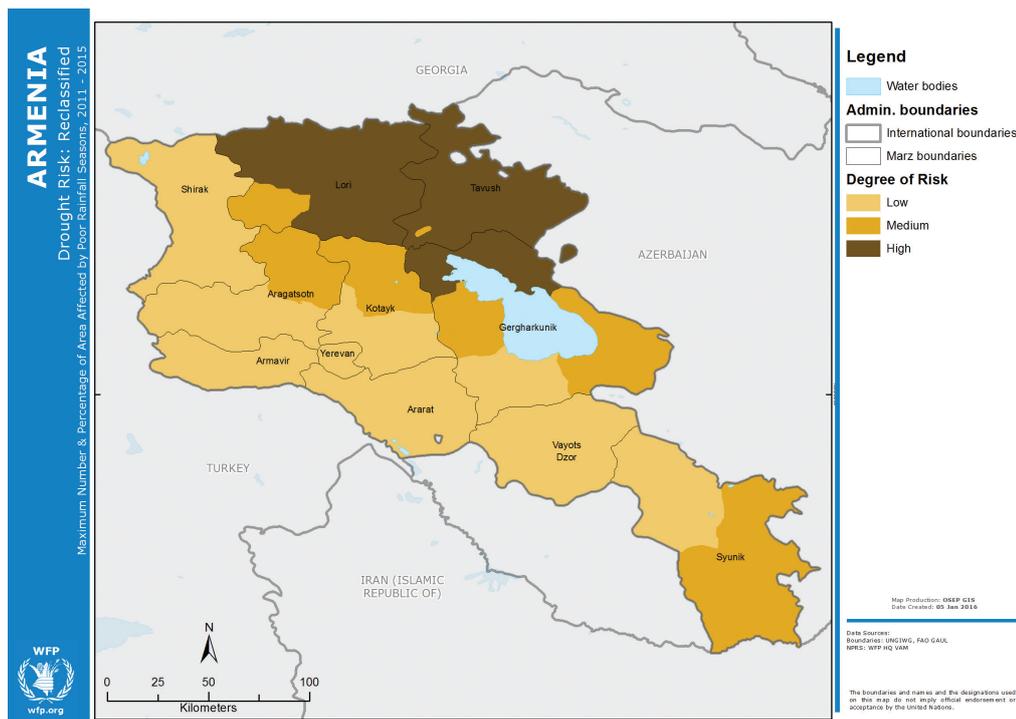
4.2.4 Earthquakes

Armenia is located in one of the most seismically active regions of the world.[88] The most destructive recent earthquake occurred in Spitak on 7 December 1988, with a magnitude of 6.9 on the Richter scale. The earthquake killed 25,000 people (including 6,000 school children), injured 15,000 people, left 517,000 people homeless, and destroyed 190 schools. Direct economic losses reached US$14.2 billion and prompted decades of recovery. While Spitak eclipses other recent seismic activity, in 1997 an earthquake in Noyemberyan city affected 15,000 people and caused economic losses of US$33.33 million.[89]

Map 6 is a seismic 'hazard zoning' map for Armenia, with darker areas indicating greater risk. It shows that most of the country faces high or very high levels of risk. Earthquakes are the main threat facing Armenia in terms of impact.[90] The potential economic losses they pose surpass those of all other more probable disasters such as industrial accidents (including radioactive pollution), transport accidents and the range of natural disasters.

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88 In 2011, an earthquake struck Van in eastern Turkey (200 km from Yerevan) killing more than 600 people; in 2012, an earthquake in northern Iran, close to the Armenian border, killed more than 300 people; and in 2013, a 7.8-magnitude earthquake hit southern Iran.

89 CAC DMRI.

90 Asian Development Bank 2014.

Map 6: Seismic hazard zoning (UNDP Disaster Risk Reduction – DRR)
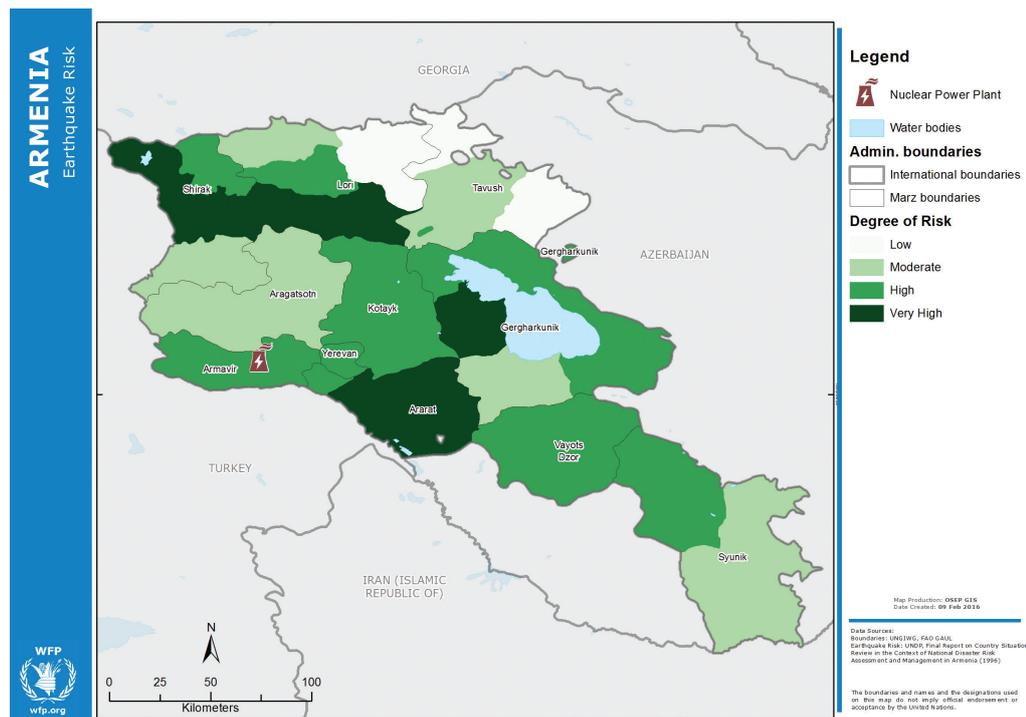
4.2.5 Climate change and environmental degradation

Extremes in temperature – and the frequency and intensity of shocks such as flooding, hailstorms and droughts – are expected to increase. A reduction in rainfall and snow is likely, as is a 15–20 percent decrease in the annual river flow. If the temperature increases by 2°C, the annual evaporation from Lake Sevan is set to rise by 13–14 percent.[91]

The main implication of climate change for agricultural productivity is that water will be less available or reliable. Yields are likely to fall by between 8 and 14 percent depending on ecological zones (hot and arid areas will be more affected).[92] Animal-based livelihoods will be highly impacted by reductions in pasture across all zones. Box 4 lists the possible impacts of climate change on productivity.

Table 5 shows potential reductions in productivity as a result of climate change, particularly pasture losses (of up to 22 percent) in both semi-desert and sub-alpine livestock-keeping areas, but also general losses (of 7–14 percent) for all types of agricultural products.

Table 5: Forecast lost productivity caused by climate change (CAC DRMI)

Productivity reduction/decrease due to climate change	
Cereals	9–13%
Vegetables	7–14%
Potatoes	8–10%
Horticulture	5–8%
Grazing land	4–10%
Low-yield pasture in the semi-desert belt	17%
High-yield pasture in the sub-alpine belt	22%
Mountain grasslands production	7–10%

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91   CAC DRMI.

92   CAC DRMI.

An indication of the severity of climate change risk is the rate of ecological change already underway. Map 7 shows the average ecological change across different areas of Armenia from 2001 to 2012. This is obtained by comparing the land cover classes between the two years: each land cover class is assigned an ecological value from 0 to 7 (higher values representing land cover classes with greater biomass and providing more ecosystem services). The difference between the initial (2001) and final (2012) values is calculated. Positive values indicate an improvement in the ecological value of the land, and negative values indicate deterioration. The average change is then calculated for each *marz*, considering the extent and severity of both the positive and negative changes. While several areas experienced a degree of positive ecological change, most of the country saw high, medium and low negative change, with clear implications for productivity and food security.

Map 7: Average ecological change, 2001–2012 (WFP 2016)
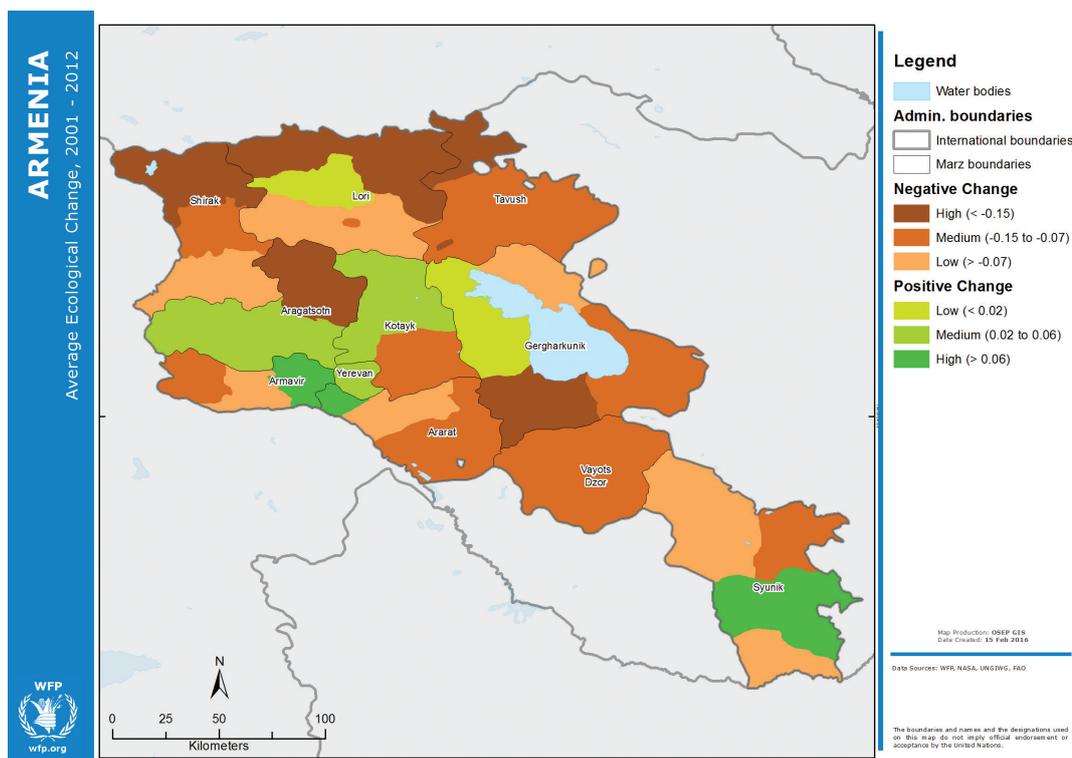
Box 4: How climate change impacts productivity

(1) Reduced productivity and degradation of agricultural land.

(2) Shift of agro-climatic zones 100 m upward by 2030, and 200–400 m upward by 2100.

(3) Reduced crop yields as a result of temperature increases, reduced rainfall and increasing evaporation from the soil surface.

(4) Increasing negative impact of extreme weather events due to expected increases in their frequency and intensity.

(5) Expansion of irrigated land areas and the need for additional irrigation water.

(6) More intensive degradation of land, including natural grazing land.

(7) Settlements and infrastructure plus households and national economy made vulnerable to hazardous natural phenomena.

Source: Armenia's Third National Communication on Climate Change, Ministry of Nature Protection of the Republic of Armenia under UNFCCC, 2015

5. Malnutrition – a dual burden

KEY MESSAGES

- *A 'dual burden' of malnutrition exists among children under 5, with worrying levels of children who are stunted (19.4 percent) or overweight (14.8 percent) in 2014. These levels have not improved over the past years.*

- *While stunting and overweight levels were falling among children in rural areas, both were rising in urban areas in 2014. Urban areas outside Yerevan showed the worst levels of stunting (22.0 percent) and overweight (16.7 percent).*

- *Child stunting was linked with household poverty, poor food consumption, poor care and feeding practices, and lower education attainment of mothers.*

- *The prevalence of overweight was the same across poor and rich households. This indicates the need for greater awareness of healthy diet and lifestyle across the population.*

- *There is insufficient data to understand the prevalence of overweight among children under 5. Data is also needed for school-age children, adolescents and adults – vital given the scope of this public health issue.*

- *Iron-deficiency anaemia is a public health concern because of the low consumption of iron in most household diets.*

This chapter analyses underlying causes of malnutrition among children under 5, addressing the so-called 'dual burden' of undernutrition and overnutrition. This relatively new and complex phenomenon is present in many low- and middle-income countries where the distribution of child nutritional diseases is shifting from a predominance of undernutrition to a combination of this and overnutrition. Using available qualitative and quantitative[93] data, this analysis focuses on stunting and overweight, exploring their distribution and underlying causes.

Information on micronutrient deficiencies among children and women of reproductive age is also given in this chapter. Micronutrient deficiencies are a key public health concern, particularly iron-deficiency anaemia, which inhibits growth and development as well as nutrition and immunity. This chapter briefly explores distribution and causes despite a lack of up-to-date data, and it also includes some lessons from a past salt iodisation initiative in Armenia.

The analysis was conducted in several steps, as follows:

1. The prevalence of stunting and underweight in children under 5 in 2014 was derived from ILCS 2014 data.

2. Causes of malnutrition were identified using the food security and nutrition analytical framework (Chapter 1). Where data was available in the ILCS 2014, identified causes were tested[94] against the incidence of stunted and/or overweight children; where data was not available, a description of the causes of malnutrition identified in previous analyses (DHS 2010 and 2005) was reported.

3. Where relevant data was unavailable or out of date, suggestions were made for collecting this in future.

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93   Unless otherwise specified, data is from ILCS 2014.

94   Different tests were run depending on specific indicators. Anova, t-test, z-test and chi-square were conducted to test the significance of differences among stunted and non-stunted children, and overweight and non-overweight children. Because of the limited sample size of 1348 children, many tests were not significant. The report mentions results were not statistically significant but still of interest.

5.1 Overall distribution of child malnutrition

This section gives information on the distribution of child malnutrition in Armenia. The sample used for the ILCS 2014 anthropometric data on children under 5 was representative at the national level; therefore, sub-national data presented here is merely indicative.

Armenia has a 'dual burden' of malnutrition, with concerning levels of both stunting and overweight in children. Figure 35 shows that in 2014, stunting among children under 5 was almost at 20 percent and it has been gradually rising since 2000.[95] At the same time, almost 15 percent of children under 5 are overweight, and this trend has not reduced in recent years.
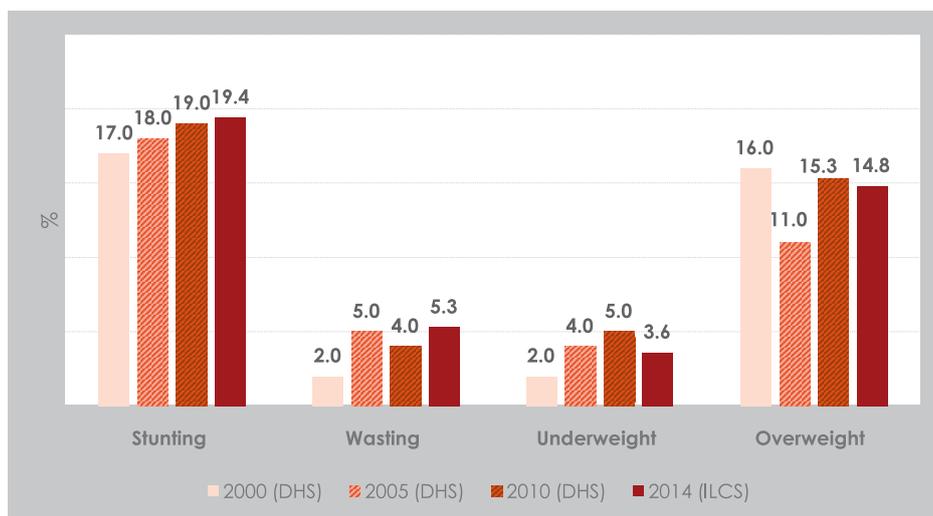
Figure 35: Malnutrition trends 2000–2014 (DHS, ILCS)

Figure 36 shows the prevalence of child stunting and overweight across Armenia in 2014. Every *marz* had a 'dual burden' of child malnutrition, with variation between them: Shirak, Syunik and Lori had the highest levels (19–23 percent prevalence of overweight and 22–31 percent prevalence of stunting); Vayots Dzor, Aragatsotn and Tavush were better off. Urban areas outside Yerevan had the highest levels of both stunting (22 percent) and overweight (17 percent).

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95 WHO classifies the severity of stunting prevalence as follows: low <20 percent, medium 20-29 percent, high 30-39 percent and very high >40 percent.
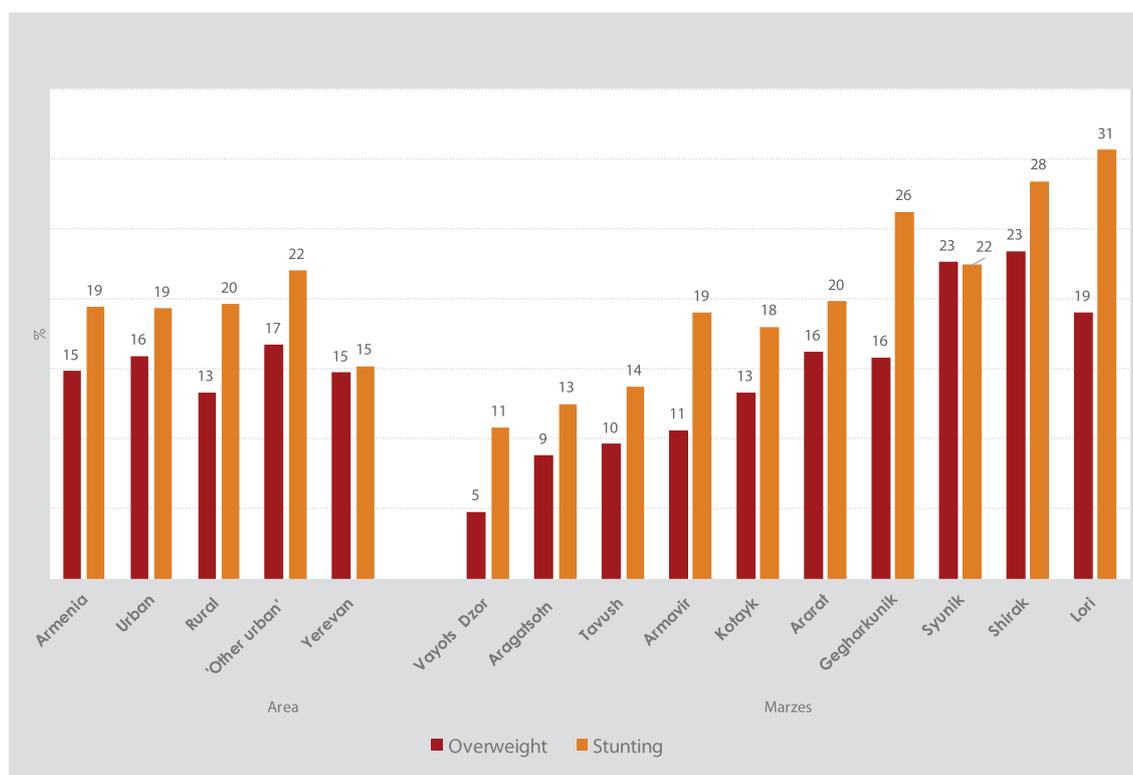
Figure 36: Prevalence of stunting and overweight among children under 5, by area and *marz* in 2014 (ILCS 2014)

5.2 Stunting

The stunting of children under 5 is a largely irreversible outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. It is a key undernutrition indicator in Armenia, and one for which available data suggests a public health concern. With long-term and irreversible effects on individuals and societies, it represents a major impediment to national development. This analysis explores trends in stunting and its underlying causes.

5.2.1 Distribution and trends

- Figure 37 shows that 19.4 percent of children under 5 were stunted in 2014 (ILCS), a rise from 17 percent in 2000, to 18 percent in 2005, to 19.3 percent in 2010 (DHS).
- In 2010, rural children were more stunted than urban children. However since then, rural prevalence has dropped while levels in urban areas outside Yerevan have begun to rise. In 2014, 19.6 percent of all rural children were stunted compared to 22 percent of children in urban areas outside Yerevan, and 15.2 percent in Yerevan. This indicates a growing urban vulnerability to child undernutrition in Armenia.
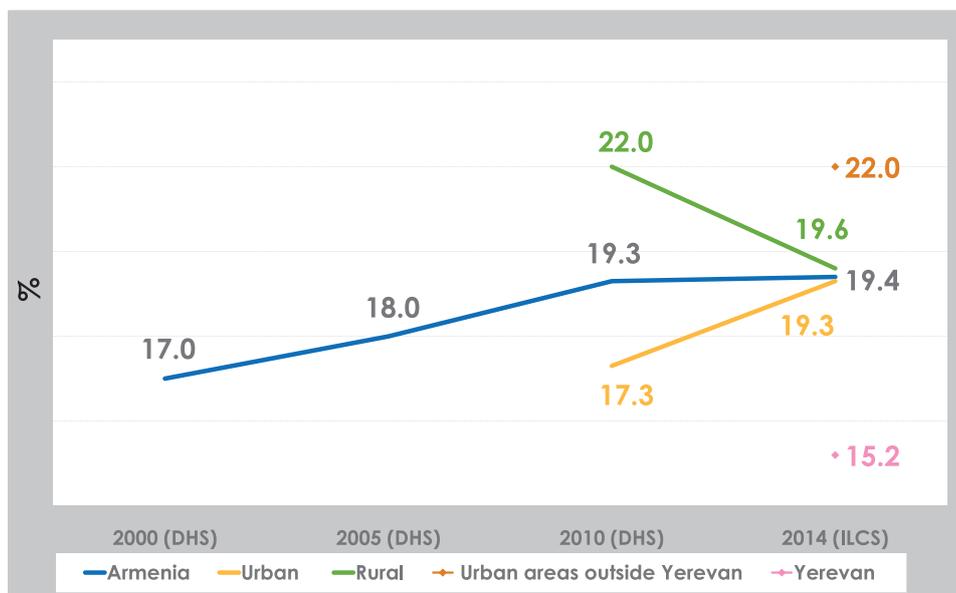
Figure 37: Stunting trends over time (DHS 2000, 2005, 2010 & ILCS 2014)

- Figure 38 shows the prevalence of severe stunting among children under 5. A severely stunted child has a height-for-age value three standard deviations below the median value in the reference population (WHO). In 2014, half of all stunted children were severely stunted.

- As shown in Figure 38, there was substantial variation in the levels of child stunting by marz: Lori had the highest prevalence (30.6 percent) while Vayots Dzor had the lowest (10.8 percent).

Figure 38: Stunting by area and marz (ILCS 2014)

5.2.2 Underlying causes of stunting

This section details underlying causes of stunting at the child, parent and household levels. Where possible, statistically significant data is used to analyse underlying causes, but secondary and qualitative data is used to complement this. Key causes explored include the child's birth weight, health, diet and preschool attendance; the mother's education and health; and the household's wealth, access to water and sanitation, food consumption, and enrolment in safety nets.

CHILD

- **Child age:** Children aged 24–35 months old were the most likely to be stunted (24.2 percent) followed by those 36–47 months old (22.6 percent).

- **Child disease and healthcare access:** One of the main causes of stunting is poor health and poor access to healthcare, particularly in contexts where a high child disease burden is contributing to stunting. However, this analysis of stunting among children under 5 did not find any significant relationship between stunting prevalence and recent child sickness or visits to a health facility. A lack of data meant it was not possible to analyse the significance of the occurrence of specific child illnesses which, along with poor nutrition, can contribute to stunting.

- **Child diet:** Infant and young child feeding practices that contribute to stunting include non-exclusive breastfeeding up to 6 months, and inadequate complementary feeding from 6–24 months. The low rates of exclusive breastfeeding in Armenia[96] indicate a persistent lack of knowledge and practice on this issue. Adequate complementary feeding can be challenging given Armenia's relatively non-diverse diet dominated by staples such as cereals, roots and tubers. Access to milk and meat, valuable protein intake for children, varies across the country: in rural areas children consume milk products more, and in urban areas meat is consumed more.[97]

- **Preschool or nursery attendance:** Attending preschool potentially reduces the chance of stunting because it offers an opportunity for screening and for child and parent awareness of health and diet. ILCS data seems to validate this, showing that children attending preschool had a lower level of stunting (17.0 percent) that those not attending preschool (20.1 percent), although this was from a small sample not considered representative.

- **Child birth weight:** Poor maternal nutrition and health before, during and after pregnancy influences a child's early growth and development, beginning in the womb. Intrauterine growth restriction is reflected in low birth weight, thought to account for 20 percent of child stunting worldwide.[98] DHS 2010 data shows that children considered by their mother to be smaller than average at birth were indeed more likely to be stunted (25.9 percent) than children who were average or larger at birth (18.5 percent).

MOTHER

- **Mother's education:** Mothers with higher levels of education are less likely to have stunted children, because their increased socio-economic status makes them more likely to secure access to a diet adequate in quantity and quality for their children. Across the country, DHS 2010 data shows that children with mothers educated only to secondary or lower level had a higher incidence of stunting (22.0 percent) than those whose mothers had completed tertiary and higher education (15.2 percent).

- **Maternal and reproductive health:** Poor maternal health and nutrition can predispose an infant to stunting from pregnancy onwards. Stunting is also more likely if children are born soon after a previous birth, especially within two years. This is an issue in Armenia, where 28 percent of second and higher order births occur after a birth interval of less than two years (DHS 2010). The proportion of closely spaced births declines as the education level of the mother increases, and it is less in urban, wealthier or more educated households where modern methods of contraception are more common. A quantitative correlation between birth spacing and child stunting prevalence was not possible, but this could be an area for future exploration. The relationship between maternal nutrition and child stunting would also be an important area for future research.

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96   DHS 2010 indicated that 34.6 percent of 0–6 month old children and only 16.0 percent of children aged 4–5 months were exclusively breastfed. The median duration of exclusive breastfeeding was just 1.8 months. The feeding practices of just 34.4 percent of breastfed children and 30.0 percent of non-breastfed children between the ages of 6–23 months met the internationally accepted minimum standards of food diversity and feeding frequency.

97   Government of Armenia Sustainable School Feeding Strategy, 2013.

98   WHO 2014b.

HOUSEHOLD

- **Wealth:** Households with higher income and wealth have greater access to food in terms of both quality and quantity. Children in households below the poverty line had a higher incidence of stunting (20.8 percent) than those above it (18.6 percent). Similarly, just over 20 percent of children in households in each of the two lowest wealth quintiles were stunted, while the richest quintile had a much lower rate (15.2 percent).

- **Access to safe water and sanitation:** The availability of safe water for drinking, hand-washing and general hygiene reduces the likelihood of infections that contribute to stunting. Access to safe drinking water through the centralized water supply (piped into the home or yard) has dramatically increased in the past 15 years: almost all households are connected, although 5 percent of rural households still depend on tanker trucks or carts with drums. Fewer children in households with an indoor toilet were stunted (18.1 percent) than those who use an open or outdoor toilet (22.4 percent). While this could be relevant in rural areas – where only 16.5 percent of households have a centralized sanitation compound – it was not found to be a statistically significant difference.

- **Food consumption:** Children living in households with more access to food, and a more diverse and nutritious diet, were less likely to be stunted. While this analysis found no difference in terms of the number of kilocalories consumed between stunted and non-stunted children, it was evident that children living in households who consumed more vitamin A-rich foods had a significantly lower prevalence of stunting. Households with stunted children consumed vitamin A-rich food an average 3.2 days per week, compared to 3.4 days per week for households with non-stunted children.

- **Family Benefit Program:** The analysis investigated the relationship between the level of stunting in children from households receiving a monthly benefit through the Family Benefit Program (FBP),[99] and the level of stunting in all those not included. The difference was not statistically significant but more research is warranted in this area.

5.3 Overweight

The proportion of overweight children under 5 is a growing public health concern in Armenia. Being overweight through an excessive consumption of food and a lack of physical activity can increase the risk of developing serious and long-term health conditions or NCDs such as heart disease, hypertension, cancers and diabetes (Chapter 2). This has healthcare costs for individuals but also places demand on social care services and affects the economy through lost productivity. This analysis explores trends in children who are overweight (weight for height ratio above +2SD) and some underlying causes. Available qualitative and quantitative data has been used, but there is a relative scarcity of quantitative data related to overweight which should be addressed in future. This section contains some tentative findings based on a small sample size (indicated in the text).

5.3.1 Distribution and trends

- 14.8 percent of children under 5 were overweight in 2014. This proportion had not improved over the previous 15 years: it was 16 percent in 2000, 11 percent in 2005, and 15.3 percent in 2010. In a normally distributed population, the proportion of overweight children would be 2 percent (WHO).

- Between 2010 and 2014 more urban children were overweight (15.9 percent) than rural ones (13.3 percent); levels were even higher in urban areas outside of Yerevan, where 16.7 percent of children were overweight. This indicates a growing vulnerability in terms of child malnutrition in urban areas.

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99 The FBP is a national safety net scheme for vulnerable households in operation since 1999. Under the FBP, households receive a monthly cash benefit (depending on the number of children) as well as free or subsidised access to basic social services and gas energy.

Figure 39: Overweight trends over time (DHS 2010, ILCS 2014)

- In 2014 there was considerable variation in the prevalence of overweight children in different *marzes*: the highest was in Shirak (23.4 percent) and Syunik (22.6 percent), while the lowest was in Vayots Dzor (4.8 percent).
- Within *marzes* it is thought that communities further from markets – i.e. those in remote, border and mountainous areas – tend to have reduced access to a diverse diet, in particular in terms of fruit and vegetables, and that this is worse in certain seasons.[100] Their resulting dependency on a diet high in staple foods has implications for child nutrition including the risk of overweight.

5.3.2 Underlying causes of overweight

This section details underlying causes of overweight at the child, parent and household levels. Where possible, statistically significant data is used to analyse underlying causes, but there were considerable data gaps when it came to exploring causes of overweight in children under 5. Factors explored using quantitative and qualitative data include the child's diet, exercise and stress; the mother's education; the age of the household head; the parent's understanding of healthy eating; and community and national dietary norms and practices.

CHILD

- **Child age:** Children aged 12–17 months had a higher prevalence of overweight (22.1 percent) than other age groups under 5. This was also clear in DHS data from 2010.
- **Diet and eating habits:** A high consumption of sugary food and drinks at home, or at preschool[101] and in other public places, can contribute to child overweight and obesity.[102] Qualitative data also suggests that many children who are overweight or obese have poor eating habits that include eating high-fat, high-sugar snacks and eating erratically.[103] Bad dietary habits established during childhood can last throughout adult life. However, the quantitative data available did not support any statistical analysis of this among children under 5.
- **Activity and exercise:** Insufficient physical activity or exercise is a direct cause of overweight among children, but representative data for this is currently unavailable in Armenia.

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100 The lowest availability of fruit and vegetables is usually winter or spring, but it depends on specific food products (OXFAM 2015).

101 In Armenia the official age for starting primary school is 6; therefore, children under 5 (the focus of this analysis) are likely to be at preschool only.

102 WHO 2015.

103 A UNICEF study that informed the ENPARD programme found that 78 percent of rural children and 88 percent of urban children reported not having breakfast at home. This poses gastro-intestinal problems. The report found that for some children, it also poses nutrition issues since after skipping breakfast at home they eat at school instead, opting for food high in fat and sugar and low in cellulose, as well as consuming fizzy, sugary drinks.

- **Psychosocial stress:** Stress contributes to children becoming overweight or obese by influencing their diet and lifestyle choices. While DHS 2010 indicates considerable levels of stress in children (70 percent of those aged 2–14 had experienced psychological or physical punishment in the previous 30 days), data is unavailable to support a link between this and increased overweight in children under 5.

PARENT

- **Mother's education:** DHS 2010 showed that mothers with a higher level of education had a higher prevalence of overweight children (16.9 percent) compared to mothers with only secondary education (14.9 percent). Unlike stunting, a mother's higher education does not make her less likely to have overweight children. This indicates that the higher socio-economic status of educated mothers/parents provides increased access to food but may also be associated with less activity and does not guarantee a better understanding of healthy diet and lifestyle. It underscores the importance of raising awareness of a healthy diet and lifestyle across socio-economic groups.
- **Awareness:** Lack of awareness in parents of healthy eating practices is a cause of child overweight recognised in numerous public health initiatives and surveys.[104] This may be the case among parents who have left traditional, agricultural living and moved to urban areas where much of the available and affordable food is processed, non-local, and high in fat and sugar. While quantitative data was not available to analyse this, it could be an area for future exploration.

HOUSEHOLD

- **Dietary norms and practices:** Poverty affects access to a diet sufficient in quality and quantity, but Armenian households of all demographics tend to follow a traditional diet dominated by staples, which has implications for overnutrition as well as undernutrition. A quantitative survey carried out by OXFAM in 2015 found that while access to foods rich in vitamin A and iron was varied and in many areas/groups worryingly low, less than 6 percent of respondents had limited access to bread and potatoes. The same survey explored household preferences for certain food types and found that many available and nutrient-rich components of a diverse diet (for instance, pumpkins) were simply not favoured in many areas. This further suggests that alongside a lack of awareness, unhealthy dietary norms and practices must be addressed to reduce malnutrition.
- **Wealth**: Data from DHS 2010 shows that there is no relationship between wealth quintiles and the prevalence of overweight children. This underlines the need for greater awareness of healthy eating and lifestyle across the entire population.

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104 OXFAM 2015.

Box 5: Overweight and obesity

What are overweight and obesity?

⇒ Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.

⇒ Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in metres (kg/m^2).

⇒ The WHO definition is:

       o   *a BMI greater than or equal to 25 is overweight*

       o   *a BMI greater than or equal to 30 is obesity*

Global prevalence

⇒ Worldwide, obesity has more than doubled since 1980.

⇒ In 2014, more than 1.9 billion adults (aged 18 years and older) were overweight. Of these, over 600 million were obese.

⇒ 39 percent of adults were overweight in 2014, and 13 percent were obese.

⇒ Most of the world's population live in countries where overweight and obesity kills more people than underweight.

⇒ 42 million children under 5 were overweight or obese in 2013. Overweight and obesity are on the rise in low- and middle-income countries, particularly in urban settings. In these countries, the rate of increase of child overweight and obesity has been more than 30 percent higher than that of developed countries.

⇒ Obesity is preventable.

Prevalence and distribution of adult overweight and obesity in Armenia

Adult overweight and obesity (WHO 2008)
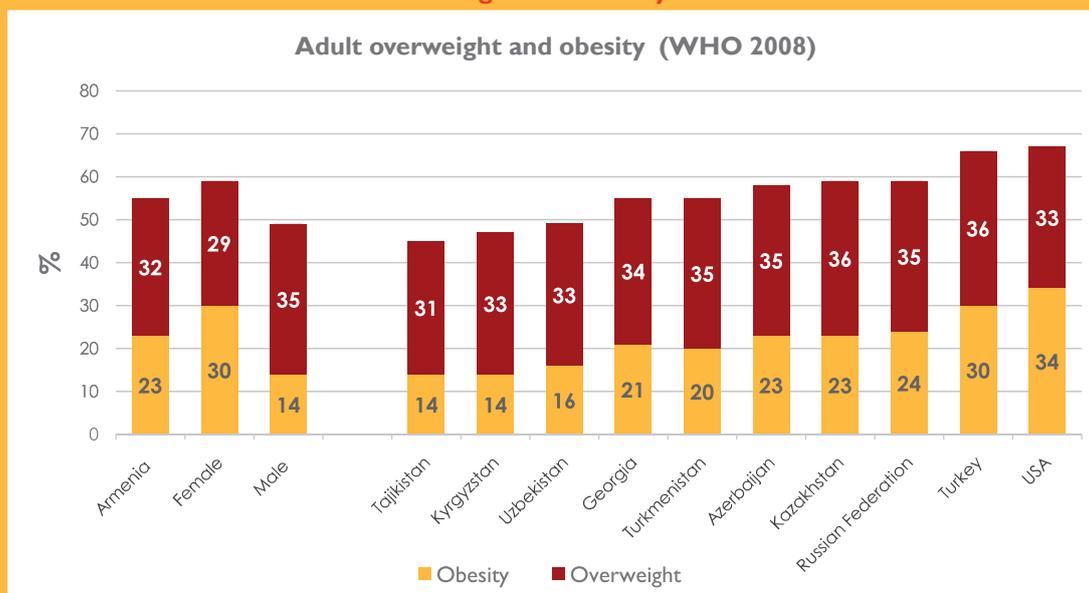
Sources: WHO 2015, Global Nutrition Report 2015

5.4 Micronutrient deficiencies

Micronutrient deficiencies, often known as 'hidden hunger', are a public health problem in many developing countries. In Armenia, they are arguably a third burden in child malnutrition, alongside undernutrition and overnutrition. The deficiencies can be caused by a diet of low diversity dominated by staple foods, a high incidence of infectious diseases, and/or a physical inability to absorb nutrients. Globally, a considerable burden of disease among children and mothers is associated with deficiencies of iron, zinc and vitamin A, while deficiencies in B vitamins, iodine, calcium and vitamin D are also highly prevalent. Overall, micronutrient deficiencies are thought to cause as much as 10 percent of the global disease burden,[105] and they inhibit mental as well as physical health and development. Micronutrient deficiencies also have profound implications for economic development and productivity, particularly in terms of public health costs and loss of human capital.

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105 Global Summit on Food Fortification 2015. Available at http://www.hki.org/sites/default/files/attach/2015/09/Final%20Arusha%20Statement%20on%20Food%20Fortification%2011%2009%202015.pdf

This analysis focuses on iron-deficiency anaemia among women of reproductive age and children under 5. It also refers to a salt iodisation initiative that addressed iodine deficiency diseases in Armenia in the past. Even though micronutrient deficiencies are an important public health issue, there is limited information on their prevalence in Armenia. Given the public health implications, this report recommends that updated information and an expanded evidence base be established (Chapter 8).

Iron-deficiency anaemia

Anaemia is a condition where blood haemoglobin (responsible for carrying oxygen) is below normal levels for age, gender, and physiological conditions due to a deficiency of one or more basic nutrients – iron, folic acid, zinc, vitamin B12 or proteins. Iron-deficiency anaemia is by far the most common type of anaemia, caused by a lack of dietary iron.[106] It has detrimental health implications, particularly for mothers and young children:

o *Severely affected pregnant women are at higher risk of maternal or infant birth complications or death.*
o *Iron-deficiency anaemia in children is associated with impaired cognitive performance, motor development, coordination, language development, and educational achievement.*
o *If untreated, iron-deficiency anaemia increases the risk of stunting in children.*
o *Morbidity from infectious diseases increases because iron-deficiency anaemia adversely affects the immune system.*

Distribution and trends

There is not enough recent evidence for a comprehensive analysis of the distribution of anaemia in Armenia, but investments are being made into generating relevant data and research (e.g. DHS 2015). At the same time, anaemia prevalence in Armenia is widely thought to be above the level of a public health problem; the global prevalence is 5 percent according to WHO.[107] There is no formal monitoring of iron-deficient anaemia in Armenia (health facilities, polyclinics and healthy child visits carry out screening but the results are not coordinated)[108] but since 1995 DHS has been collecting data through fingertip blood samples as part of its biomarker tests. The most recent DHS results for anaemia among children under 5 and reproductive-age women were in 2005, and they were as following:

Prevalence of anaemia in children under 5:

- Average: 37 percent
- By wealth quintile: lowest, 32 percent; middle, 29 percent; highest, 48 percent
- By region: lowest, Lori, 18 percent; highest, Gegharkunik, 63 percent
- By residence: urban, 38 percent; rural, 35 percent
- By mother's education: basic, 30 percent; higher, 44 percent

Prevalence of anaemia in women of reproductive age:

- Average: 25 percent
- By wealth quintile: lowest, 22 percent; highest, 27 percent
- By region: lowest, Tavush, 14 percent; highest, Gegharkunik, 33 percent
- By residence: urban, 27 percent; rural, 21 percent
- By education: basic, 20 percent; higher, 25 percent

Overall, the DHS data shows that anaemia for women of reproductive age and children under 5 was a moderate public health concern in 2005. The disaggregation above shows that for both groups, anaemia was more likely in richer households and among women (or the children of women) with higher education. Poverty and social status were certainly important, underscoring the importance of access to food of adequate quality and

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106 There are two forms of dietary iron. Haem iron (which the body absorbs the most iron from) is derived from haemoglobin and found in animal foods such as red meats, fish and poultry. Nonhaem iron (which the body is less efficient at absorbing but which constitutes the majority of dietary iron) is from plant sources including lentils, beans and spinach, and this is the form added to iron-enriched and iron-fortified foods.

107 WHO anaemia prevalence guidelines. Available at http://www.who.int/vmnis/anaemia/prevalence/anaemia_data_status_t4/en/

108 Demirchyan et al. 2015: vii.

quantity, specifically iron-rich foods including meat, which is more expensive than staple items such as bread and potatoes. Yet this data shows that poverty and social status did not appear to be the major contributing factors: a lack of awareness of a balanced and nutritious diet, or adherence to a traditional low-iron diet, seemed to be the major concerns to address (Chapters 7 and 8).

Since 2005 it is not clear how anaemia levels in children under 5 and women may have changed in Armenia. It can tentatively be assumed that they may not have significantly decreased in children because other indicators of chronic child malnutrition (notably stunting) have not improved over the same time period. However, this assumption needs to be validated through better future data collection, particularly given the public health significance of the issue.

It should also be noted that as well as children under 5 and women of reproductive age, other segments of the population are susceptible to iron-deficiency anaemia.[109] A better understanding of anaemia (as well as of health and nutrition in general) and access to dietary/supplementary iron for school-age children, adolescents and non-pregnant women would be a valuable component of broader research into anaemia in Armenia.

Causes

INDIVIDUAL

- **Dietary intake of iron-rich foods**: Access to dietary sources of iron is limited for poorer households in Armenia: meat is relatively expensive, as are vegetables at certain times of year, so many household diets are dominated by cheaper staple foods such as potatoes and bread. Yet disaggregated DHS data on anaemia indicates that it affects all wealth quintiles, so while wealth is a factor there are other contributors, particularly a lack of awareness and adherence to a traditional iron-poor diet. The bioavailability of iron in the traditional diet of Armenia, eaten across social and wealth groups, is considered 'low'[110] for several reasons:

  - *It contains a high proportion of staple foods (cereals, roots or tubers) with negligible amounts of meat, fish, poultry and ascorbic acid-rich foods.*
  - *It is high in foods that inhibit iron absorption such as maize, beans, wheat flour and sorghum.*
  - *It favours processed flours stripped of outer layers (bran and germ) that promote absorption of iron as well as folic acid.*

  The 2010 DHS found that 68 percent of children aged 6–23 months had recently consumed foods rich in iron; this age group covers an important child growth period in which iron deficiency is most critical. Although this is a relatively low level, it is an increase on previous years. Iron-rich foods were more widely consumed in urban areas, but there was no relationship with the mother's education and wealth, again indicating lack of awareness as a key underlying factor. A 2015 survey by Oxfam and partners showed that meat (both iron-rich organ meat and meat in general) was the least accessed food group: one third of households consumed little or no meat.[111]

- **Supplementation:** The 2010 DHS collected information on iron supplementation among children and pregnant women. This found that only 7 percent of children age 6–59 months had received an iron supplement in the week preceding the survey, with urban children twice as likely to have received a supplement as rural children (8 percent vs. 4 percent) and considerable differences by area (11 percent of children in Yerevan received a supplement compared to less than 1 percent in Lori). The DHS also collected data on pregnant women taking iron supplements during their last pregnancy (if this occurred in the last five years): 70 percent did not take any supplement, 98 percent did not complete the recommended minimum of 90 days' supplementation during pregnancy, and rates were lower in rural areas and certain regions (i.e. Gegharkunik and Syunik). While this did not reflect differences in terms of wealth or education, other studies have linked lower rates of anaemia in women with their higher education because the use of iron supplements is more common among educated pregnant women.[112]

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109 WHO summary of worldwide anaemia prevalence. Available at http://www.who.int/vmnis/anaemia/prevalence/summary/anaemia_status_summary/en/
110 This uses the FAO/WHO classification of dietary iron bioavailability (where 'low' is 1–9 percent).
111 OXFAM 2015.
112 Center for Disease Control 2003.

- **Women's nutritional and reproductive health:** Earlier studies based on DHS data from across the region showed that the prevalence of moderate-to-severe anaemia among women was higher among those with a lower BMI, with two or more births, with average birth intervals of less than 24 months and with methods of contraception (e.g. IUDs) that increase menstrual blood loss.[113]

HOUSEHOLD

- **Access to livestock:** Rural households who own livestock (cattle, sheep, and goats) typically have greater access to iron-rich food and therefore have a reduced risk of anaemia. However, this can fluctuate: animal body mass and milk yield can sharply decrease with animal disease outbreaks or natural hazards, particularly drought.[114] Economic shocks can also reduce dietary access to iron through milk and meat, since households commonly sell livestock in hard times.[115]

COMMUNITY

- **Environmental degradation:** In the wider region, anaemia has been shown to be linked to environmental degradation and loss: in severely environmentally damaged areas near the Aral Sea (between Kazakhstan and Uzbekistan), anaemia rates of over 70 percent were found among women of reproductive age, and rates as high as 81 percent among children under 5.[116]

Box 6: Tackling Iodine Deficiency Diseases (IDDs) in Armenia

A lack of the trace element iodine can result in Iodine Deficiency Diseases (IDDs), which mainly affect the thyroid gland. Symptoms include extreme fatigue, goitre, mental slowing, depression, weight gain and low basal body temperatures. In infants, iodine deficiency can cause mental retardation and learning and development delays.

While iodine occurs naturally in water and soil in many parts of the world, and in seafood and certain other foods (berries, vegetables and dairy products), it is deficient or lacking in remote inland and mountainous areas. As inhabitants of a landlocked and mountainous country far from oceans and seas, Armenia's population is at risk of IDDs and depends on the deliberate iodisation of water or other regularly consumed products such as salt, flour and milk. Across the country there are differences in the severity of risk of IDDs based on natural levels of iodine in water and soil: the *marzes* of Syunik and Lori have the lowest natural level. Across the country, women are typically much more affected by IDDs than men, because the female hormone oestrogen inhibits the absorption of iodine.

In 1991, with the collapse of the Soviet Union and major trade links associated with it, the population of Armenia was deprived of iodised salt and experienced high levels of iodine deficiency: a 1995 joint Ministry of Health and UNICEF study indicated that over 50 percent of pregnant women were suffering from the condition. As a result, the Armenian Government and UNICEF established universal salt iodisation and increased the use of iodised salt to 97 percent of households by 2005. In August 2006, Armenia was recognized as a country that had overcome iodine deficiency. Instances of persisting IDDs such as goitre are largely attributed to pre-intervention deficiencies, mostly among older age groups. However, it is not clear whether there is widespread understanding of the importance of using iodised salt and storing it appropriately (humidity and sunlight can destroy the iodine content). There has been relatively limited monitoring of the salt iodisation programme, and little data is available from other sources.

The experience of salt iodisation in Armenia provides several lessons relevant to other initiatives that aim to address micronutrient deficiencies in Armenia:

- It *is vital to establish and maintain an up-to-date **evidence base** on the impact of micronutrient deficiency initiatives, in order to understand, improve and be able to communicate their effectiveness.*

- *Investments in **public awareness** must be made alongside technical initiatives to address micronutrient deficiencies, to ensure adequate uptake and understanding of the health significance of interventions.*

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113 Ibid.

114 FAO found that a severe drought in 2000 severely reduced the availability of livestock protein for many rural households. Production was almost half the normal output of 86,000 tons of meat and 460,000 litres of milk. This could be connected to the rising trend in anaemia levels after 2000.

115 Intercooperation and Shen 2010, cited in UNDP 2013.

116 Sharmanov 1998, cited by Center for Disease Control 2003.

6. Overlay of natural disaster risk with food insecurity and malnutrition

KEY MESSAGES

- *Most* marzes *in Armenia are at medium or high risk of a combination of natural disasters; Lori, Tavush, Vayots Dzor and Kotayk are most prone to natural disasters.*

- *Tavush and Yerevan have the highest proportion of food-insecure and/or vulnerable households, but all northwest* marzes *are highly affected.*

- *Shirak, Lori, Gegharkunik, Ararat and Syunik have a 'dual burden' of child malnutrition, with high stunting and overweight levels.*

- *Lori and Shirak have a dual burden of malnutrition plus a high (over 15 percent) proportion of the population being food insecure. Lori also faces a high risk of natural disasters.*

- *Combining the different data reveals multidimensional vulnerability in many* marzes, *and the need for risk-informed approaches to targeting and interventions across the country.*

This chapter looks at how the distribution of risks of natural disasters (or shocks) corresponds to the prevalence of food insecurity and malnutrition across Armenia. Maps have been created that overlay the different data, thereby showing which geographical areas are more or less vulnerable. The objective of this is to demonstrate which areas are more prone to multiple risks, and which of these areas are also affected by higher levels of food insecurity and malnutrition. This has implications for the geographical targeting of interventions and the design of risk-informed programming.

6.1 Natural disaster risk distribution

The main natural disasters affecting Armenia are floods, landslides, mudslides, hailstorms, drought and earthquakes (Chapter 3). Map 8 combines data on the distribution of risk of all these natural disasters, indicating the geographic risk of natural disasters in general.[117] Darker areas are at higher risk, while lighter areas are at lesser risk. The *marzes* of Lori, Tavush, Vayots Dzor and Kotayk are most prone to natural disasters, while only a few *marzes* are at overall low risk.

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117 Each risk was classified using a score of 1 (Low) to 3 (High) as depicted on the individual risk maps. The combined risk was then calculated by adding up all the individual risk scores, giving equal weight to each hazard. This calculation yielded a combined risk score ranging from 6 to 18. The values were then grouped into three categories: Low (6 to 9), Medium (10 to 12) and High (13 to 18). Note that this shows which marzes are at risk of a combination of natural disasters; Chapter 3 maps risk distribution for individual natural shocks.

Map 8: Combined natural disaster risk map (WFP)
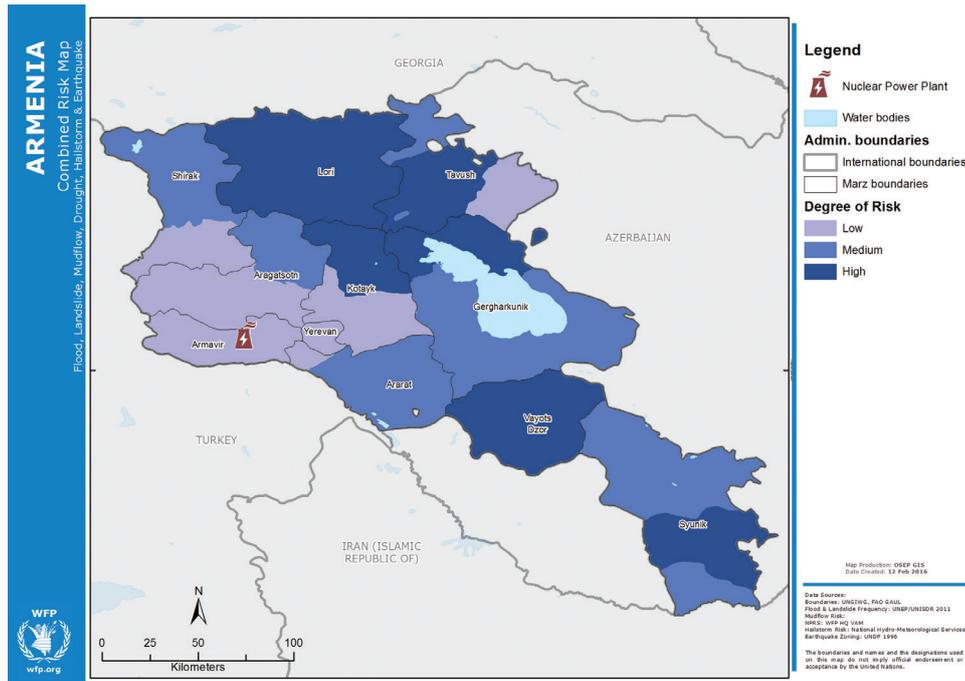
6.2 Food insecurity and malnutrition distribution

6.2.1 Food insecurity map

Map 9 shows the distribution of household food insecurity, with darker areas representing *marzes* where over 15 percent of households are food insecure. These areas are mainly in the north of the country and in Yerevan.

Map 9: Food-insecure households in 2014
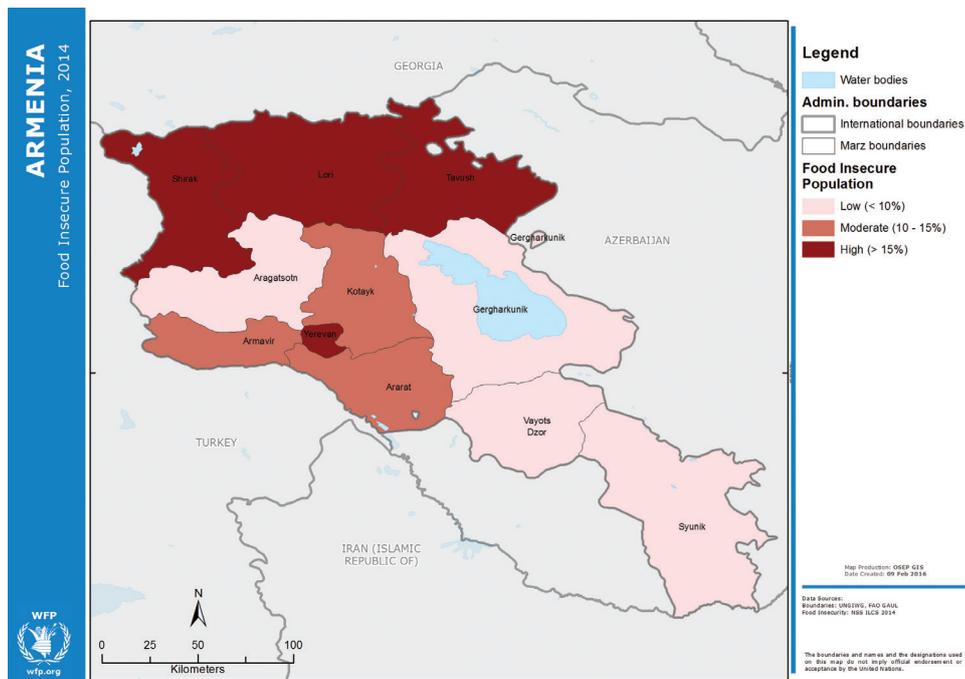
6.2.2 Malnutrition distribution

Armenia has a 'dual burden' of malnutrition; four *marzes* have both stunting and overweight prevalence at medium/high level. The distribution by *marz* of both types of malnutrition among children under 5 is shown in Maps 10 and 11.

For stunting, WHO international standards have been used to determine the thresholds (i.e. low, medium, high prevalence). For overweight, international standards were not available: because the national mean average for overweight in Armenia was 15 percent, it was decided to use 15 percent as a 'cut-off' threshold for this indicator.

Several *marzes* have a medium/high prevalence of both stunting and underweight. These include Lori, Shirak, Syunik and Gegharkunik. Lori is the only *marz* with prevalence of stunting above 30 percent, while Shirak and Syunik have a high prevalence of overweight (above 20 percent).

Map 10: Prevalence of stunting among children under 5 (ILCS 2014)
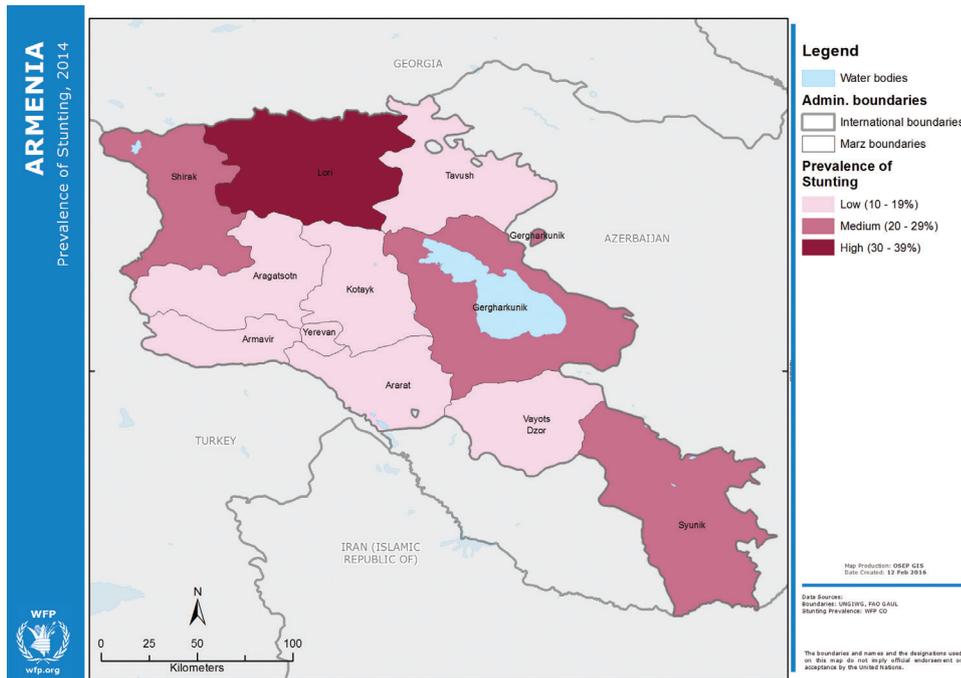
Map 11: Prevalence of overweight among children under 5 (ILCS 2014)
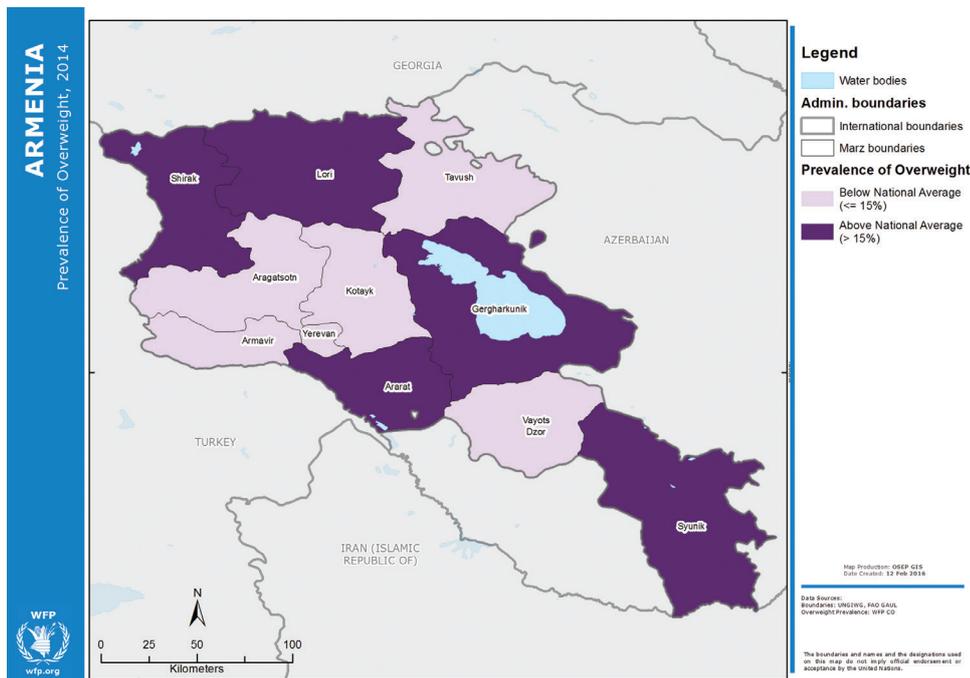
6.3 Combining natural disaster risk, food insecurity and malnutrition

The most vulnerable areas of Armenia are revealed by examining the distribution of key socio-economic indicators together with food security, malnutrition and the risk of natural shocks by *marz*. In Table 6, values in red are above the national average, while those in green are below it. While some *marzes* are better off for all indicators, in others almost all the indicators are below national averages, for instance Lori and Shirak. Most *marzes* display a combination of results, demonstrating the particular characteristics of each *marz*. For example, in Gegharkunik, the share of the population that is food insecure is lower than the national average (marked in green), while the share of households in poverty is higher than the national average (in red). The table shows that Tavush is worse off in terms of food security and poverty, but better off with regards to malnutrition indicators, with a lower share of children suffering from stunting and wasting. Finally, the figures for Yerevan show the correlation between its food insecurity and unemployment, with above-average values for both.

Table 6: Summary of key indicators by *marzes*

2014	Food insecurity	Stunting	Overweight	Poverty	Unemployment	Risk of natural shocks
Yerevan	18.4%	15.2%	14.7%	25.2%	26.9%	low
Aragatsotn	4.7%	12.5%	8.8%	18.7%	5.1%	low–medium
Ararat	14.1%	19.8%	16.2%	28.5%	7.5%	medium–low
Armavir	13.8%	19.0%	10.6%	29.0%	7.4%	low
Gegharkunik	5.6%	26.2%	15.8%	32.3%	5.8%	medium–high
Lori	16.6%	30.6%	19.0%	36.4%	16.9%	high
Kotayk	14.4%	18.0%	13.3%	37.2%	22.8%	medium
Shirak	17.4%	28.4%	23.4%	44.2%	20.8%	medium–low
Syunik	6.8%	22.4%	22.6%	24.2%	18.3%	medium–high
Vayots Dzor	2.4%	10.8%	4.8%	18.2%	13.0%	high
Tavush	15.8%	13.7%	9.6%	30.6%	10.9%	high–medium
Armenia	*14.6%*	*19.4%*	*14.8%*	*30.0%*	*17.6%*	

Map 12 illustrates the combination of natural disaster risk (purple shading), food insecurity (red outline) and child malnutrition (hatching).

As noted earlier, the *marzes* of Shirak, Lori, Gegharkunik, Ararat and Syunik face high rates of stunting and overweight (shown as cross-hatching). In two of them – Lori and Shirak – this is combined with a high (greater than 15 percent) proportion of food-insecure households and, in the case of Lori, a higher risk of natural disaster.

Map 12: Combined map of risks, food insecurity and malnutrition (WFP)
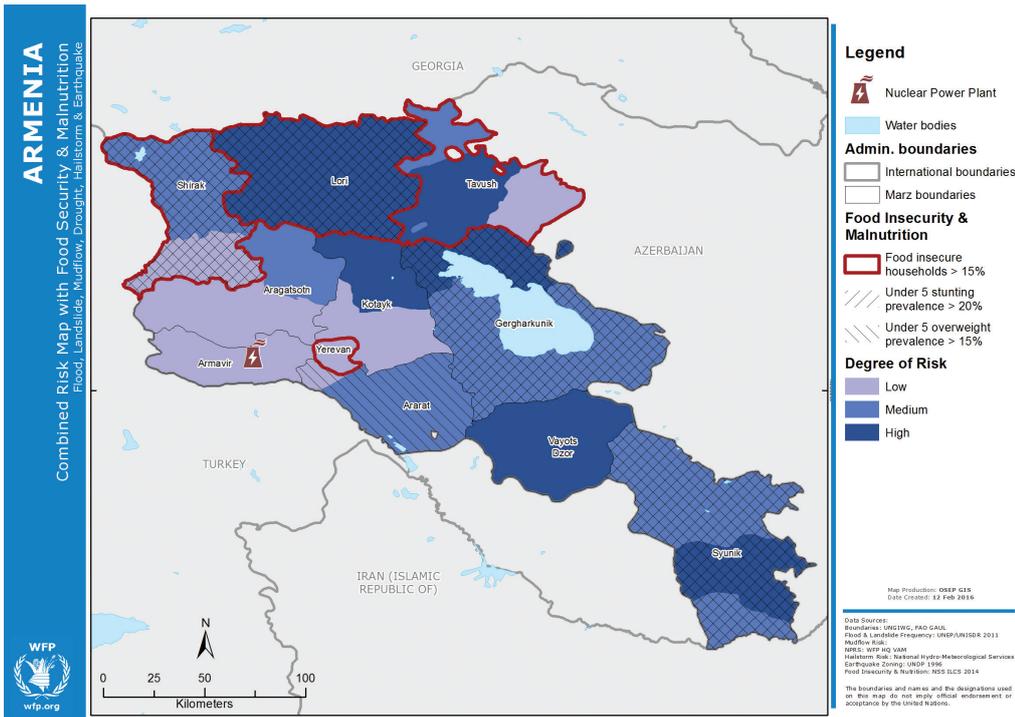
Map 13 contains the same information as the previous map, but it also highlights densely populated areas[118] and their level of natural shock risks (shaded purple). While the south of the country has a low population density, the north-western areas – where risks, food insecurity and malnutrition levels are highest – are much more densely populated.

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118 Using LandScan data, each point in the map is a square kilometre; high population density is defined as more than 10 people per square kilometre.

Map 13: Combined map of risks, food insecurity, malnutrition and population density (WFP)
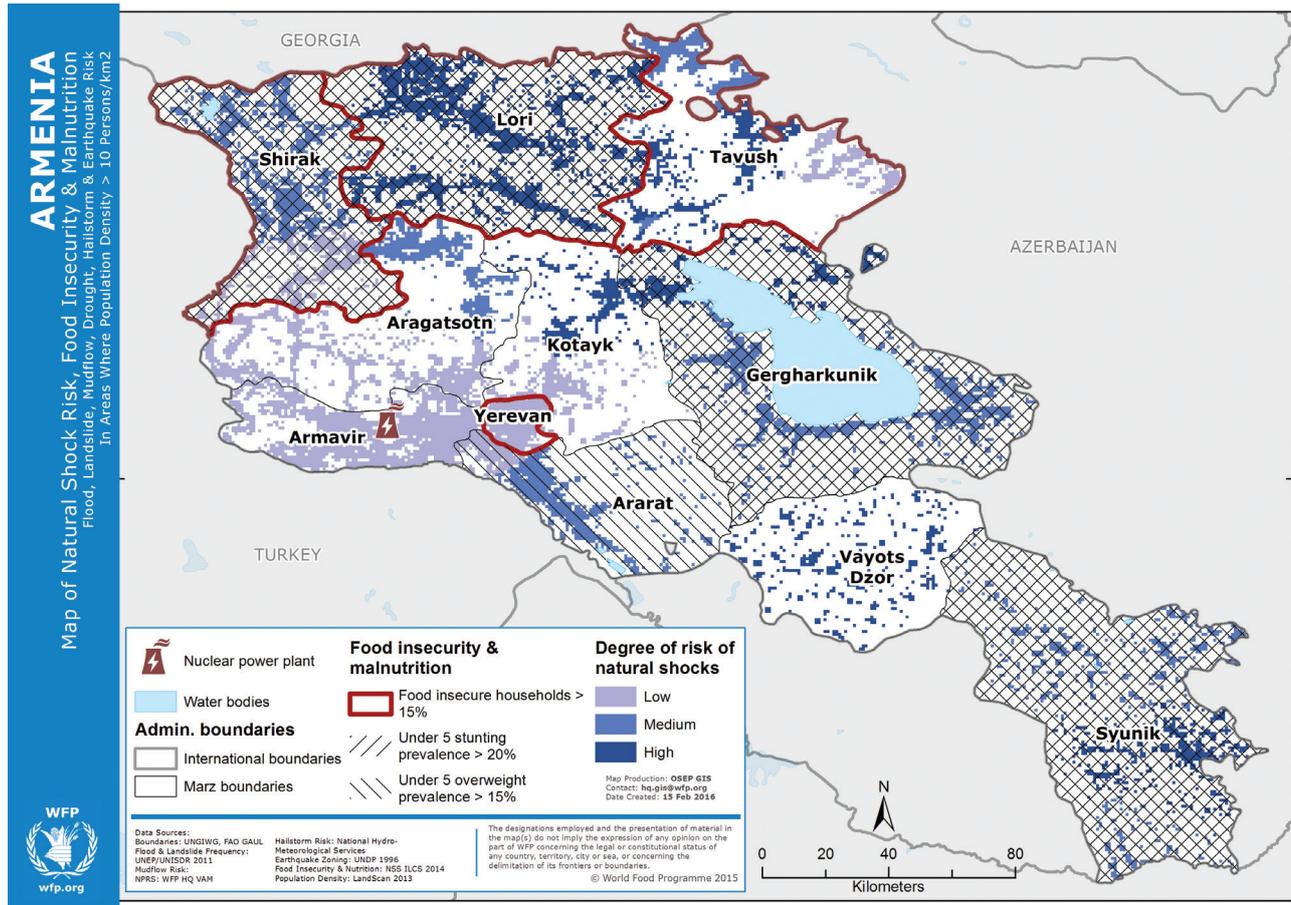
Within each *marz* there is variation according to different socio-economic groups, ecological zones and administrative areas. Yet in bringing together data on the natural disaster risk of each *marz* combined with its food insecurity and malnutrition rates, the map illustrates the need for integrated approaches to programming that consider future risks as well as current (and multidimensional) vulnerability.

7. Linking food security and nutrition outcomes to policy and programming

7.1. Armenia Development Strategy

The Government of Armenia and its partners have a comprehensive range of policies, programmes and initiatives aimed at improving national food security and nutrition. Food security is a cross-cutting issue, spanning a number of ministries including Agriculture, Education and Science, Health, Labor and Social Affairs, and Territorial Administration and Emergency Situations.

The National Security Strategy of the Republic of Armenia prioritizes biological food safety and food security, among other areas. The National Security Council – chaired by the President of the Republic of Armenia – has designated staff to report to the Chairman on the implementation of the RA Food Security Concept Paper.

Increasing food security is also one of the strategic directions of the draft *Sustainable Agriculture and Rural Development Strategy for 2015–2025*. A national strategy on nutrition is being drafted to strengthen legislative frameworks and support multi-sectoral coordination.

The **Armenia Development Strategy for 2014–25** is the main policy for improving food and nutrition security through sustainable economic growth. Its four key priorities are as follows:

1. Growth of productivity and employment, especially in formal and non-agricultural sectors, accompanied by efforts to reduce the numbers of 'working poor' and improvements to the institutional basis of the economy plus the business and investment environment;
2. Development of human capital, especially through integrated social services and considering natural resource management;
3. Expansion of social protection systems, including improved targeting particularly for areas or groups most impoverished or vulnerable to shocks; and
4. Modernisation of public administration and governance.

7.2. Existing strategies, policies and programmes

This section describes some food security and nutrition initiatives, divided by thematic area.

7.2.1 Social protection

The government has prioritized social protection, defence/national security and certain sectors of the economy for state budget expenditures over the coming years. The **Medium-term Public Expenditure Framework of the RA for 2016–2018** indicates the government's intentions to provide financial support for reforms in separate branches of the social sector[119] (particularly in education, healthcare and social protection), as well as in the sphere of public administration, to increase the effectiveness, orientation and targeting of activities of public entities and to make public services more accessible for the population.

Social protection has become an increasingly important part of poverty alleviation in Armenia. The government spends 7.7 percent of GDP on social protection. Forecasts suggest that social protection expenditures from the consolidated budget will be maintained at 8–9 percent of GDP in forthcoming years, and compared to 2013, they will increase 1.7 times in 2017 and around 2.5 times in 2021.[120] However, the largest part of state expenditure on social protection will be channelled to pensions.

In 2010, the government adopted the **Concept on Integrated Social Services Provision Process**. The reform is to provide integrated social services for individuals (and/or households) in difficult circumstances.

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119 Government of Armenia 2015.

120 Government of Armenia 2014a.

It focuses on improving access to and the quality of social services, reducing the social isolation of vulnerable groups and fostering solidarity. By 2014, 18 integrated territorial centres for complex social services had been opened.[121] The centres follow a one-stop-shop principle: they host the territorial agency delivering the social services, the territorial department of the state social security service, the territorial public employment agency and the medical–social expertise department.

To ensure that the integrated social services result in better food and nutrition security, they must provide integrated care and preventive nutrition advice, as well as fostering behavioural change. Based on identified gaps, investments are needed to a) increase the capacity and motivation of primary healthcare providers for nutrition counselling and monitoring; b) promote breastfeeding and discourage adverse infant and young child feeding practices; c) support the provision of (and demand for) family planning services; and d) develop and disseminate public education materials about pregnancy and child nutrition. Among other partners and initiatives, UNICEF is supporting the Ministry of Health with a comprehensive '1000 days' child nutrition campaign, and with centralized nutritional screening at primary health centres. Over time (and with increased access to and uptake of healthcare), the primary health centres should enable the early identification of vulnerability to overweight (and stunting).

The **Family Benefit Program (FBP)** has operated since 1999 as Armenia's flagship non-contributory social assistance programme. It is the main unconditional cash transfer,[122] providing a monthly cash benefit to around 10 percent of the population based on criteria of income, assets, living situation and vulnerability. Targeting remains one of the main problems related to the state support to vulnerable social groups because the level of representation of extremely poor populations in the system continues to be low.

Partners are increasingly supporting the government in strengthening the current social protection system. The World Bank, for example, is rethinking the current targeting formula for FBP and it is considering how existing social safety nets can address the 'dual burden' of child malnutrition. The FBP and integrated territorial centres could be adapted to become more nutrition-sensitive, while existing birth grant and childcare/attendance allowance schemes could be reformed to help improve care and behaviour among nutritionally at-risk groups.

The **National School Feeding Programme** implemented by the Government of Armenia and WFP is a powerful social safety net that provides 80,000 primary school children with one meal a day to address hunger and help increase school enrolment, retention and attendance. WFP is also supporting the government in developing and operationalizing a sustainable national school feeding programme embedded in national policies and budgets. The Government of Armenia is committed to gradually taking over the entire programme and to ensuring a smooth transition to national ownership. Over the coming years, support and investment should create a sustainable and affordable national school feeding programme. The development of a national policy framework for school feeding, not yet in existence, will be a critical foundation of this.

7.2.2 Inclusive productivity

Economic growth and the development of human capital are key to achieving food and nutrition security. Current policies seek to increase economic diversification, reduce reliance on remittances and minimise the impact of economic shocks. This includes shifting production and exports to higher value products and services, reinforcing the small and medium enterprise sector, and reforming current public finance and tax management systems. Acknowledging the rise in disparity, many strategies focus on opportunities for the most vulnerable sections of the population (the UNDAF 2016–20, for example, focuses on the rural poor, unemployed women and young people, and regional refugees or returnees). Non-agricultural and urban development/employment opportunities are vital given the vulnerability of these areas to food and nutrition security and malnutrition, yet these have been relatively overlooked in terms of investment.

The **Armenia Development Strategy for 2014–25** defines plans for agriculture and rural developments. It highlights the need to boost agricultural product processing and exports (improving product quality, as well as processing and marketing); increase efficiency through higher yield species of crops and livestock, as well as modern technologies that minimize losses; develop reservoirs and irrigation systems; and improve extension

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121 The plan is to have 56 such centres in the country.

122 Others include social pensions to the elderly, disabled and veterans; childbirth and childcare benefits; and energy subsidies.

services that provide access to information, credit and emerging insurance schemes. The establishment of new cooperatives will be encouraged to streamline costs and increase efficiency for small-scale producers who operate on fragmented farms. Large-scale commercial agriculture investments and rural infrastructure improvements (especially roads and irrigation) will also increase the sector's overall efficiency. Finally, the strategy envisages creating non-agricultural jobs and increasing the share of non-agricultural incomes for rural populations.

The **Sustainable Agriculture and Rural Development Strategy for 2015–2025** is currently being drafted. It will replace the strategy for 2010–2020 and will reflect the perspectives highlighted in the Armenia Development Strategy. A food security section has been developed as part of the new draft strategy, with the support of Oxfam and the participation of civil society. The focus is on increasing the level of food security by i) raising the level of self-sufficiency for main food items; ii) replacing imported food with local production and promoting exports; iii) ensuring physical and economic access to food; and iv) better utilizing the potential of women.

7.2.3 Risk reduction

In response to the range and severity of risks faced by Armenia, there is a National Platform for **Disaster Risk Reduction (DRR), supporting a DRR National Strategy** and 2016–20 implementation plan. The national strategy derives from the National Security Strategy of RA. It was originally based on the Hyogo Framework and was updated to reflect the Sendai Framework's actionable indicators on the capacity of the DRR system. Among the potential risk factors outlined in the national security strategy are the outbreak of epidemics; devastating earthquakes or other natural and human-induced disasters in the country, in bordering regions and in the region; inadequate infrastructure networks; and the further urbanization of Armenia with settlements in areas prone to seismic activity.

With United Nations support, the government is increasing the response and preparedness capacity of national emergency services, supporting risk-proofed infrastructure, and taking steps to mitigate the impacts of climate change. The scope of investment required is huge, including integrating earthquake standards in urban construction, keeping up with the pace and breadth of climate change impacts, and maintaining competitiveness and growth in a 'greener economy'. Community-level disaster risk reduction is particularly important,[123] and it should include food and water storage, as well as the scalability of basic services across seasons and in the event of shocks. Improved risk assessment and risk modelling at sub-*marz* level may help prioritize investments.[124]

Armenia also faces significant environmental risks associated with the expansion of mining, illegal forest logging, the overexploitation of water resources and increased desertification. Some of its environmental risks are both a result and a cause of climate change; mitigation and adaption is set to be a major national challenge. A first step is a comprehensive evaluation of climate risks (both extreme risks and the constant, incremental ones). This could also provide a rationale for investments in impact mitigation.[125]

The position of the Republic of Armenia stated at Conference of the Parties of the UN Framework Convention on Climate Change was that efforts should be made to limit global warming to a rise of 1.5°C.[126] In recent years, Armenia has adopted a number of laws and regulations – and has developed and is implementing national and sectorial development programmes – based on sustainable and low-carbon development principles. However, there are still legislative and implementation gaps that affect the assessment of the impact of climate change on development in different sectors. For instance, the food security strategy does not reflect climate change impacts on food security.

7.2.4 Nutrition awareness

The scale of non-communicable diseases (NCDs) – such as cardiovascular diseases, pulmonary diseases, cancers and diabetes – has placed them high on the political agenda in Armenia, and there is a strong commit-

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123 World Bank and UNISDR (CAC DRMI).
124 World Bank and UNISDR (CAC DRMI).
125 UNDP 2013.
126 Ministry of Nature Protection 2015.

ment to preventing them by reducing overnutrition and unhealthy lifestyles. An in-depth analysis of risk factors is needed so the government can address the negative trends in NCD morbidity and mortality rates. While a broad span of policies are in place and initiatives are under way, there is a large unmet need relative to the vast scope of the problem, and coordinated efforts are needed to improve both the prevention and control of NCDs.[127]

A **Strategic Plan on Promoting Healthy Lifestyle**, approved in 2014, aims to develop and introduce legislative and structural mechanisms to promote healthy lifestyles and reduce NCDs. The plan sets out the goal of a 7 percent reduction in overweight and obesity by 2020. A related **National Program on Combating Most Prevalent Non-communicable Diseases (NCDs) 2016–2020** addresses the main risk factors of smoking, alcohol, blood pressure and obesity. The **UNDAF 2016–20** places important emphasis on NCDs, and many agencies work on preventing them in some form. Overnutrition (as part of general malnutrition) is addressed by the **Concept on the Improvement of Child Feeding,** which supports the emerging **National Strategy on Nutrition**. Several awareness-raising initiatives are under way in schools and school cafeterias, including as part of the **2016–25 State Programme on Education Development.**

Iron-deficiency anaemia is probably the most pressing micronutrient deficiency in Armenia both in terms of prevalence and concern (Chapter 5). The government and its partners are collaborating on education, supplementation, fortification, guidelines and a research agenda to address iron deficiency, and future DHS biomarker data on anaemia will support this. Fortification of flour with iron and folic acid[128] is being considered, and a draft Flour Fortification Law has been developed and submitted to Parliament in 2016. A consistent public communication strategy is required to explain the initiative and its benefits to the population. This is particularly important given the lack of historical food fortification initiatives in Armenia,[129] and the relative lack of data on those that have been implemented.

7.2.5 Education to support youth productivity

The Government of Armenia plans to increase expenditure on education from the consolidated budget, to reach 3.3 percent of GDP by 2021 and 3.7 percent by 2025. The current level of 2.4 percent is low relative to other countries.[130] The developments in the education sector are a government priority: currently several reforms are being implemented at all levels of education, in particular, higher education reforms and an Education Improvement Project supported by the World Bank.[131] Achievement of higher (i.e. post-secondary) education significantly improves the chances of food and nutrition security for an individual and their children, so an increase in the current level of investment in education is particularly needed. Women should be equally included, also because there is a clear correlation between the lack of post-secondary education of mothers and a higher risk of stunting in children. For higher education investments to be effective, they must increase graduates' access to economic opportunities in a competitive and changing labour market – an area thought to be a current shortfall.[132] This could facilitate a much-needed increase in the productivity of young people (currently, 20.1 percent of 25–34 year olds and 37.2 percent of 15–24 year olds are unemployed[133]). Other initiatives are addressing this through skills training: for example, the Ministry of Agriculture and the European Union are supporting vocational education for young people in rural areas, providing skills in agricultural and non-agricultural sectors and according to community-defined priorities.

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127 Government of Armenia and UN: page 27.

128 Folic acid anaemia is a related deficiency caused by too little folate (vitamin B9), which is necessary for manufacturing oxygen-carrying red blood cells. Folic acid is naturally present in leafy greens and liver; like iron it is barely present in the diets of impoverished or staple-dependent Armenian households.

129 Food fortification has a long history in industrialised countries for the successful control of deficiencies of vitamins A and D, several B vitamins (thiamine, riboflavin and niacin), iodine and iron. In less industrialised countries it is increasingly being viewed as an attractive option for wide scale and sustained tackling of micronutrient deficiencies.

130 World Bank, available at http://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS

131 World Bank 2014b.

132 World Bank 2015a.

133 NSS RA.

8. Conclusion and recommendations

The 2016 Armenia Comprehensive Food Security, Vulnerability and Nutrition Analysis is a joint product by WFP, UNICEF and the National Statistical Service of the Republic of Armenia. The report aims to contribute to ongoing efforts to address food insecurity and malnutrition in Armenia. The main findings and recommendations outlined below were presented in a conference in March 2016.

1. Despite the economic growth of the last decade, the level of food insecurity has been stagnant over the past five years, and there is growing disparity between the food insecure and food secure. The global economic crisis caused food insecurity in Armenia to increase sharply. Despite economic growth, the level of food-insecure households remained high at 15 percent, almost double the level in 2008. By contrast, the level of food-secure households has been steadily increasing. These trends indicate that although the situation is improving for a large share of the population, those worst off are being left behind.

In general, food-insecure households have less wealth, less reliable and diverse income, more debt and more reliance on remittances or pensions. They have less educated members and household heads, and they allocate less of their overall income to education expenses. They also tend to be less employed and have worse dietary intake in terms of micronutrients. Food-insecure and vulnerable households have poor diet quality (in terms of diversity) and quantity (in terms of kilocalories) and they eat significantly less foods rich in iron and vitamins.

The northern *marzes* of the country and Yerevan have the highest percentage of food-insecure households.

Recommendations

i. To improve food security, efforts are needed in many cross-cutting domains, including investments in employment – particularly for women and young people, education and agricultural productivity.

   a. Support is needed for sustainable employment opportunities, especially for young people and in sectors less exposed to external economic shocks.

   b. Agricultural policies and strategies should refer increasingly to the production of diversified, nutrient-rich and affordable food as key programmatic priorities for the Government of Armenia.

   c. Since education helps households and individuals to reduce their risk of food and nutrition insecurity, investments should be made in quality education that reflects available socio-economic opportunities.

   d. For rural households involved in agriculture, efforts should be made to reinforce their productive assets (especially livestock and access to land). Support should be maintained to establish rural cooperatives that can reduce costs, increase efficiency and increase productivity.

2. A dual burden of malnutrition among children under 5 exists across the country, with large numbers of children who are either stunted or overweight. Among children under 5, 19 percent were stunted and 15 percent were overweight in 2014. Along with the burden of micronutrient deficiencies and NCDs, this represents a significant public concern. Child stunting is clearly associated with household poverty and poor consumption, but also with poor care and feeding practices, and a mother's relative lack of education. On the other hand, the prevalence of overweight was the same across poor and rich households, indicating the need for greater awareness of healthy eating and lifestyle across the population. Overweight children are more likely to become overweight as adults, which poses serious public health concerns. To help develop effective policies, national data collection needs to be improved to understand the prevalence and causes of overweight.

Recommendations

i.   Continue and extend ongoing initiatives that address the risk of stunting, in particular by identifying children at risk;

ii. Increase investments in tackling overnutrition by 1) collecting information on childhood overweight and obesity; and 2) increasing public awareness of healthy diet and lifestyle. Help teachers, health workers, parents and community leaders to give dietary advice and counselling to children through a range of initiatives such as school gardens, behaviour change activities, and community or media mobilization. Together, these have the potential to reverse negative trends in NCDs, which are a major public health concern.

iii. Collect comprehensive data on NCDs and micronutrient deficiencies including iron-deficiency anaemia (among children but also adolescents and adults) to better equip government agencies and their partners to tackle these.

3. Urban areas outside Yerevan are increasingly vulnerable. Economic contraction following the global economic crisis and a more recent Russian recession have hit non-agricultural and urban economies hard. This is exacerbated by a high dependence on remittances and food imports. Yerevan benefits from connectivity and regional economic opportunities, but other urban areas suffer from relative remoteness, a lack of livelihood options and lower levels of education. While 63 percent of adults in Yerevan were educated to secondary or higher level, in other urban areas the level falls to 51 percent. Unemployment, which nationally stands at 18 percent (and is worse among women and young people), is much higher (27 percent) in urban areas. As general socio-economic inequality grows, the biggest share of the country's poverty (35 percent) is in these urban areas outside Yerevan. The levels of chronic child malnutrition, both stunting and overweight, are significantly higher in other urban areas than in rural Armenia or Yerevan.

Recommendations

i. Reduce inequality in urban areas by enhancing programmes and policies that create labour opportunities, especially for young people and women.

ii. Invest in initiatives specifically for education, employment and development in urban areas.

4. Volatility in global and regional economies impedes Armenia's economic growth, and the majority of the country is at risk of one or more natural hazards

Recent trends indicate that Armenia is very vulnerable to changes in external economies. The impacts of recent regional or global economic crises effectively reversed Armenia's achievements in poverty reduction and economic growth, and pushed many vulnerable households below the poverty line. This has created an inherent vulnerability for food security.

Armenia is also a shock-prone country where the majority of the population is at risk of one or more types of natural disaster. In terms of economic impact, earthquakes are the most significant. Less severe, but more frequent shocks include hailstorms, frost, flooding, land- or mudslides and drought. In addition, Armenia is exposed to human-induced disasters, including industrial accidents and escalation in existing political tensions within the region.

Recommendations

i.   Strengthen emergency preparedness, disaster risk management, and social protection measures to reduce the effects of shocks and stresses on household food and nutrition security.

ii. Support income diversification and generation in anticipation of economic shocks.

iii. Invest in flexible credit policies, surveillance of financial flow changes, and more effective insurance institutions targeted at smallholder farmers and enterprise owners.

iv. Invest in preparedness and risk reduction in the most vulnerable *marzes* and urban areas.

5. Coordination around food security and nutrition initiatives needs to be improved. In terms of ministerial responsibilities, food security and nutrition are cross-cutting issues. Cooperation across ministries and agencies is ongoing in support of a range of food security and nutrition policies and strategies, and ultimately in support of the National Development Strategy. Yet given the large scale and complexity of interventions required, increased support for the coordination of actors and activities is required.

Recommendations:

i.   This analysis could be used to reinforce existing synergies between initiatives aimed at different livelihood groups and different age groups, bringing together a much needed 'life-cycle approach'. Important entry points for this would be health facilities, livelihood groups such as cooperatives, and certainly schools.

ii. As mentioned during the presentation of the results, there is a need to set up a donor coordination forum on food security which would bring together representatives of UN agencies, international NGOs, and the donor community around the themes of food security and malnutrition. WFP could chair the group (FAO could co-chair), and follow up on bringing the agreements of the group to the National Security Council.

6. A stronger evidence base is needed to support improved policy and programming. Armenia enjoys high standards of data collection and analysis: the National Statistical Service of the Republic of Armenia (NSS RA) is regarded as having a high level of professional independence and professionalism.[134] Its outputs are timely, widely used and trusted. Support for additional analysis of the wealth of data it collects could be provided. Additionally, there are other institutions – ministries, research and academic institutions – whose evidence collection, management and analysis functions could be better supported.

Recommendations:

i.   Strengthen the capacity of NSS RA and other actors to collect and analyse data on the distribution and trends in vulnerability and food and nutrition insecurity.

ii. Strengthen the capacity of NSS RA and other actors to collect and analyse data on the impact of interventions, to ensure their accountability. Without this, there is a risk that policies could outweigh programming or be under-implemented.

iii. Invest in collecting comprehensive data on childhood overweight and obesity. This should include school-age children and adolescents as well as children under 5.

iv. Strengthen the overall partnership on research and evidence-based programming between WFP, the Ministry of Health, the Ministry of Education and the Ministry of Agriculture.

v.   Encourage NSS RA and partners to use the DHS 2015 findings to improve the analysis of food security and malnutrition (and the links between them) in future studies.

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134 EU 2015.

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1. Meetings and consultations

	Organization	Position	Name
	FAO	Assistant FAO Representative in Armenia	Ms. Gayane Nasoyan
	Ministry of Agriculture	Deputy Minister	Mr. Armen Harutyunyan
	Ministry of Health	Head of Public Health Department	Mr. Hrayr Aslanyan
	Ministry of Health	Deputy Director General	Ms. Nune Bakunts
	National Center for Disease Control and Prevention	Head of Labour Hygiene and Chemical Security Department	Mr. Hovsep Hovhannisyan
	Ministry of Labor and Social Affairs	Head of Social Assistance Department	Ms. Astghik Minasyan
	Ministry of Education	Head of Division for Development Programmes and Monitoring	Mr. Robert Stepanyan
	National Statistical Service of RA	Member of State Council on Statistics	Mr. Gagik Ananyan
	National Statistical Service of RA	Head of Household Survey Division	Ms. Diana Martirosova
		Head of IT Development Division of the IT and Information Resources Management Department	Ms. Armenuhi Arushanyan
	OXFAM	Economic Justice Programme Officer	Mr. Alexey Petrosyan
	UNICEF	Programme Officer, Health and Nutrition Specialist	Ms. Liana Hovakimyan
		Programme Officer, Health and Nutrition Section	Mr. Mihran Hakobyan
	WFP	Country Director and Representative	Ms. Pascale Micheau
	WHO	Head of WHO Country Office in Armenia	Mr. Tatul Hakobyan
	World Bank	Lead Health Specialist, Health, Nutrition & Population	Ms. Claudia Rokx
		Nutrition/Social Policy Consultant	Ms. Anna Jenderedjian
		Ops Support Consultant/Social Protection	Mr. Vahan Danielyan

2. Calculation of food security indicators

Since food security is not directly measurable, a proxy indicator was constructed for the purpose of this study. A combination of consumption and income indicators was used to classify food-insecure, vulnerable and food-secure households.

		SUSTAINABILITY	
		Unsustainable source of income and two poorest wealth quintiles	Sustainable source of income
CURRENT CONSUMPTION	Poor dietary intake (high staple **and** high food energy deficiency)	FOOD INSECURE	FOOD INSECURE
	High staples **or** high food energy deficiency	FOOD INSECURE	VULNERABLE
	Adequate in quality and quantity (kcal)	VULNERABLE	FOOD SECURE

Food insecure: Households have either inadequate food consumption, or an unsustainable income source combined with a diet lacking in quantity or quality.

Vulnerable: Households either have an adequate diet but an unsustainable income source that will not allow them to maintain this in the event of a shock, or they have a sustainable income but a diet lacking in quantity or quality.

Food secure: Households are currently meeting their dietary requirements and are likely to be able to sustain similar consumption in the future.

The indicators used to establish the profile of the food insecure were calculated as described below:

Availability	
Name of the variable	**Explanation of computed variable**
Total Livestock Unit (LSU) owned	The LSU aggregates livestock of different species and age into standardized units using coefficients based on the nutritional or feed requirements of each animal type. In this analysis, LSU were calculated using coefficients from EUROSTAT. When livestock groups in the ILCS were less detailed than the EUROSTAT list, an average coefficient was used.
Total LSU owned	(see table below)

Category	Animal	coefficient
Bovine animals	Under 1 year old	0,400
	Over 1 but less than 2 years old	0,700
	Male, 2 years old and over	1,000
	Heifers, 2 years old and over	0,800
	Dairy cows	1,000
	Other cows, 2 years old and over	0,800
Sheep and goats		0,100
Equidae		0,800
Pigs	Piglets having a live weight of under 20 kg	0,027
	Breeding sows weighing 50 kg and over	0,500
	Other pigs	0,300
Poultry	Broilers	0,007
	Laying hens	0,014
	Ostriches	0,350
	Other poultry	0,030
Rabbits, breeding females		0,020

Access	
Wealth quintiles	Consumption aggregate per adult equivalent (NSS variable) is used as proxy for wealth groups. The first is poorest and fifth is richest.
Share of food expenditures	Total food expenditure divided by total expenditure
'Very high' proportion of household expenditures on food	Households spending more than 75% of their expenditure on food
Poverty line	Calculated by NSS. The food and poverty lines are published in the Social Snapshot.
Unsustainable or unreliable income	Households where more than 70% of the income is generated from unreliable or unsustainable sources, e.g. from sale of valuables and non-valuables; financial assistance from relatives living in Armenia or abroad; humanitarian assistance; credits, loans or debts; savings; winnings from lottery tickets; unemployment benefits, scholarship and other incomes.
Do not receive remittances	Households who have reported no income from remittances.
High share of remittances	Households with more than 75% of income from remittances.
Undiversified livelihoods	Households who have two or fewer types of income source.
Unemployed household head	Head of household is not employed due to lack of work (no work).
Unemployed adult members	Number of unemployed members aged 18–60 (due to lack of work) over the total adults in the household.

Availability	
Name of the variable	**Explanation of computed variable**
Pension share of total income	Income from pensions as percentage of total household income.
Utilization	
Average energy intake per adult equivalent	Kilocalories consumed per adult equivalent. Armenian Food Composition Table used to convert kilos into kcal.
Energy deficient	Households with an average kcal consumed per adult equivalent below 2100.
'Very high' proportion of food energy from staple foods	Households where more than 70% of the kilocalories consumed comes from staple foods.
Poor dietary intake	Households where two conditions are met: 1) the share of energy from staples is higher than 70%; and 2) the household is energy deficient.
Iron rich foods	Number of days per week the household consumed iron rich food (organ and flesh meat, fish and seafood).
Plant-based vitamin A	Number of days per week the household consumed plant-based food rich in vitamin A (vegetables, tubers or fruits rich in vitamin A, e.g. pumpkin, carrots, mangos, apricots or dark green leafy vegetables).
Demographic	
Elder household head	Households where the head is over 65 years old
Household head by woman	Households with woman as head
Household with more than 3 minors	Households with more than three children below 14 years old
Household with disabled member	Household with any member belonging to disabled category 1-3 or with a disabled child (under 18)
Household size	Number of household members
Education	
Poorly educated household head	The head of household is educated to below secondary level
Share of educated adults in the household	The number of adult members (over 18) who have more than secondary education divided by the total number of adult household members
Share of expenses spent on education	Expenditure on education (such as expenses for pre-school, tutoring or postsecondary education fees) divided by total household expenditure
Stability	
Family enrolled in the family benefit programme (FBP)	Household who are registered in the FBP and receive benefits
Borrowed money	Households who have borrowed money within the last 12 months
Debt share	Debt divided by annual income

3. Matrix of food security indicators 2014

source: 2014 ILCS	Diet quantity		Diet quality		Vulnerability		Livelihood		Food security	
	Daily energy consumed per adult equivalent (Kcals) average	Households with highly food energy deficient per adult equivalent (%)	Households with 'very high' proportion of food energy from staple foods (%)	Households with poor dietary intake (%)	Households with 'very high' proportion of household expenditure on food (%)	Population below poverty line (%)	Households with unsustainable livelihoods (%)	Households with high share of remittances (%)	Food insecure households (%)	Vulnerable households (%)
Strata										
Armenia	2412	28.6	25.4	12.4	8.7	30.0	13.8	4.8	14.6	28.3
Urban	2355	32.6	22.9	12.8	6.3	29.9	12.6	5.2	14.7	29.2
Urban except Yerevan	2467	23.0	19.9	8.1	10.5	34.9	14.7	6.8	10.8	25.6
Rural	2512	20.6	30.1	11.6	13.4	30.0	16.0	3.9	14.4	26.4
Marzes										
Yerevan	2247	42.0	25.9	17.4	2.3	25.2	10.7	3.7	18.4	32.7
Aragatsotn	2700	6.2	28.6	3.5	15.0	18.7	16.5	8.1	4.7	28.7
Ararat	2354	28.5	19.0	12.6	10.5	28.5	11.9	4.3	14.1	21.6
Armavir	2357	25.2	26.6	10.0	4.9	29.0	16.5	6.6	13.8	29.6
Gegharkunik	2414	15.2	5.8	3.5	11.3	32.3	24.1	3.3	5.6	15.9
Lori	2603	27.0	32.2	14.2	14.3	36.4	13.7	5.4	16.6	29.4
Kotayk	2629	19.8	26.3	7.8	15.3	37.2	22.0	5.5	14.4	25.0
Shirak	2412	29.2	26.7	14.3	14.2	44.2	14.9	8.0	17.4	27.0
Syunik	2515	14.5	20.1	5.6	13.1	24.2	4.7	2.8	6.8	22.8
Vayots Dzor	2827	7.8	6.9	1.8	11.5	18.2	9.2	1.9	2.4	12.3
Tavush	2379	21.5	47.9	14.2	6.7	30.6	9.3	2.4	15.8	40.6

Source: 2014 ILCS	Diet quantity		Diet quality		Vulnerability		Livelihood		Food security	
	Daily energy consumed per adult equivalent (Kcals) average	Households with highly food energy deficient per adult equivalent (%)	Households with 'very high' proportion of food energy from staple foods (%)	Households with poor dietary intake (%)	Households with 'very high' proportion of household expenditure on food (%)	Population below poverty line (%)	Households with unsustainable livelihoods (%)	Households with high share of remittances (%)	Food insecure households (%)	Vulnerable households (%)
Food security										
Food insecure	1814	92.3	92.6	84.9	11.8	79.7	22.7	5.7	100.0	0.0
Vulnerable	2132	53.3	41.8	0.0	9.6	43.7	10.3	3.4	0.0	100.0
Food secure	2763	0.0	0.0	0.0	7.5	6.2	13.2	5.2	0.0	0.0
Wealth quintiles										
Lowest	1899	71.7	56.9	40.6	22.5	100.0	11.5	2.4	46.8	42.6
Second	2260	35.1	36.8	13.6	8.7	28.3	11.5	3.8	18.5	45.4
Middle	2500	16.8	20.0	4.1	6.0	0.0	13.0	5.1	4.1	28.6
Fourth	2672	11.8	7.7	2.0	4.1	0.0	14.6	5.7	2.0	15.4
Highest	2963	7.8	5.6	1.8	2.6	0.0	18.0	6.8	1.8	9.8
Poverty										
Below poverty line	1922	69.4	53.7	36.6	20.7	100.0	11.8	3.0	43.0	45.4
Above poverty line	2622	14.3	15.5	4.0	4.5	0.0	14.5	5.4	4.7	22.3
Vulnerable groups										
Unemployed household head	2183	41.9	29.3	18.2	8.1	46.3	28.9	10.5	21.8	34.5
Household with 6 or more members	2337	32.0	37.3	18.2	6.2	39.3	11.7	3.4	21.5	30.9
Pensioners	2278	37.0	30.3	18.4	7.4	37.4	6.5	2.5	19.8	29.4
Households headed by women	2361	32.0	26.6	14.6	9.5	31.5	13.5	5.1	16.8	28.2
Households with high percentage of dependents	2444	26.8	31.4	13.7	9.9	33.9	31.3	12.2	19.4	28.2
Households with disabled member	2336	32.9	31.3	16.8	8.2	36.8	7.5	2.3	18.5	29.6
Enrolled in the poverty benefit system	2362	36.0	37.1	17.9	13.4	49.5	9.4	2.5	20.0	36.8

4. Food security indicator trends 2008–2014

Diet quantity														
	Daily energy consumed per adult equivalent (Kcals)							Households with highly food energy deficient per adult equivalent (%)						
year	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Strata														
Armenia	2391	2518	2412	2380	2537	2446	2412	25.2	22.7	31.0	30.8	24.0	26.0	28.6
Urban	2736	2404	2281	2288	2478	2404	2355	32.3	29.9	39.8	37.5	27.3	28.7	32.6
Rural	2512	2735	2648	2550	2644	2518	2512	11.2	8.6	13.8	17.8	17.5	20.6	20.6
Urban except Yerevan	2467	2484	2361	2330	2492	2424	2467	26.0	24.1	30.8	32.1	25.6	26.2	23.0
Marzes														
Yerevan	2321	2332	2210	2251	2466	2386	2247	38.4	35.4	48.3	42.6	28.9	31.1	42.0
Aragatsotn	2767	2875	2820	2901	2860	2575	2700	6.7	2.8	8.2	5.3	18.6	9.9	6.2
Ararat	2440	2485	2404	2286	2491	2450	2354	27.1	22.8	25.1	34.5	26.8	24.7	28.5
Armavir	2515	2543	2327	2263	2402	2270	2357	23.3	22.2	35.6	39.4	31.3	40.9	25.2
Gegharkunik	2678	2573	2504	2463	2577	2357	2414	11.5	10.6	14.6	16.3	15.0	25.3	15.2
Lori	2679	2599	2494	2453	2636	2649	2603	18.1	21.6	30.3	29.7	25.6	22.0	27.0
Kotayk	2538	2571	2477	2438	2609	2554	2629	26.4	18.8	25.3	22.5	16.6	15.9	19.8
Shirak	2555	2632	2543	2439	2534	2430	2412	20.4	15.3	19.3	26.2	21.3	25.4	29.2
Syunik	2753	2720	2702	2533	2655	2517	2515	8.5	7.7	9.9	16.3	15.5	17.4	14.5
Vayots Dzor	2706	2677	2536	2517	2682	2795	2827	15.5	11.3	21.1	19.7	15.9	12.9	7.8
Tavush	2810	2835	2737	2619	2587	2392	2379	9.5	10.3	11.1	14.0	15.0	23.5	21.5

Diet quality														
	Households with 'very high' proportion of food energy from staple foods (%)							Households with poor dietary intake (%)						
year	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Strata														
Armenia	26.8	24.2	30.8	29.4	31.3	31.9	25.4	5.8	7.3	10.9	11.7	9.7	11.7	12.4
Urban	23.9	21.0	26.3	26.8	28.9	28.5	22.9	7.5	9.3	13.4	13.2	10.7	12.1	12.8
Rural	32.4	30.5	39.6	34.5	36.0	38.5	30.1	2.5	3.4	5.8	8.7	7.7	10.8	11.6
Urban except Yerevan	27.5	25.9	29.7	31.7	30.2	28.0	19.9	6.5	8.7	11.5	11.4	9.1	9.9	8.1
Marzes														
Yerevan	20.4	16.2	23.1	22.0	27.7	29.0	25.9	8.4	10.0	15.3	15.0	12.3	14.3	17.4
Aragatsotn	10.3	11.5	30.4	21.4	21.4	41.7	28.6	2.0	1.0	2.6	1.2	5.1	7.4	3.5
Ararat	21.3	18.2	29.2	23.1	22.3	18.9	19.0	4.2	5.1	10.0	12.1	7.9	10.0	12.6
Armavir	23.6	20.4	31.3	35.3	30.9	30.0	26.6	3.4	7.7	12.1	21.1	8.5	12.8	10.0
Gegharkunik	36.9	30.9	32.6	20.0	11.7	14.2	5.8	2.1	5.5	4.0	3.7	2.9	10.5	3.5
Lori	39.7	35.9	42.4	42.8	41.1	45.1	32.2	7.5	10.0	13.1	13.6	11.3	14.7	14.2
Kotayk	38.6	39.7	47.4	49.9	46.1	41.1	26.3	8.6	8.8	13.5	9.0	9.8	6.2	7.8
Shirak	32.3	31.4	28.7	30.4	35.3	34.5	26.7	3.0	2.9	4.0	9.8	9.3	9.0	14.3
Syunik	12.0	16.2	22.2	24.0	42.5	25.7	20.1	1.3	2.8	5.1	3.6	8.9	9.3	5.6
Vayots Dzor	19.7	20.0	36.4	29.3	21.8	18.4	6.9	4.1	3.9	8.4	6.7	4.4	3.8	1.8
Tavush	44.1	40.7	39.8	40.2	47.7	54.7	47.9	4.0	5.3	5.6	6.4	10.3	13.7	14.2

	Vulnerability													
	Households with 'very high' proportion of household expenditures on food (%)							Population below poverty line (%)						
year	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Strata														
Armenia	18.1	14.1	15.4	16.5	11.1	9.7	8.7	27.6	34.1	35.8	35.0	32.4	32.0	30.0
Urban	13.2	9.1	10.7	10.8	8.8	6.7	6.3	27.6	33.7	35.7	35.2	32.5	32.2	29.9
Rural	27.8	23.9	24.6	27.6	15.5	15.5	13.4	27.5	34.9	36.0	34.5	32.1	31.7	30.0
Urban except Yerevan	19.7	14.2	16.7	17.3	11.1	9.7	10.5	35.8	41.5	45.4	43.6	40.2	39.3	34.9
Marzes														
Yerevan	6.9	4.2	4.9	4.7	3.5	3.2	2.3	20.1	26.7	27.1	27.5	25.6	25.5	25.2
Aragatsotn	27.3	26.0	20.9	22.0	16.3	19.4	15.0	20.3	25.4	28.9	20.7	21.2	22.7	18.7
Ararat	19.7	15.6	14.4	11.3	7.4	9.0	10.5	31.3	39.8	42.4	39.3	34.6	32.4	28.5
Armavir	20.5	9.7	12.8	9.8	6.8	5.2	4.9	24.5	31.3	33.0	37.0	34.3	31.3	29.0
Gegharkunik	28.1	31.1	32.1	39.8	16.9	9.8	11.3	32.0	40.4	43.6	37.0	35.5	35.8	32.3
Lori	25.2	20.0	23.2	23.0	20.1	16.6	14.3	34.2	41.7	45.9	45.4	38.7	38.6	36.4
Kotayk	14.1	9.9	11.4	20.6	10.6	11.1	15.3	39.5	43.0	46.8	45.5	42.5	42.5	37.2
Shirak	32.0	19.2	25.7	27.2	17.0	14.5	14.2	42.5	47.2	48.3	47.7	46.0	45.9	44.2
Syunik	26.4	22.5	24.3	29.7	22.8	14.1	13.1	20.3	23.4	26.8	26.8	25.6	25.2	24.2
Vayots Dzor	16.4	18.7	16.6	20.7	15.4	20.6	11.5	21.2	30.3	37.1	29.9	20.7	21.0	18.2
Tavush	26.2	29.8	28.6	25.3	22.2	20.7	6.7	23.2	31.3	26.1	26.7	27.5	27.7	30.6

	Livelihood													
	Households with unsustainable livelihoods (%)							Households with high share of remittances (%)						
year	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Strata														
Armenia	9.9	14.8	14.9	19.8	9.9	13.4	13.8	4.1	3.9	3.6	4.2	4.5	4.2	4.7
Urban	10.7	15.3	14.5	21.6	10.7	12.3	12.6	5.1	4.8	4.4	4.6	4.7	4.6	5.4
Rural	8.3	13.9	15.5	16.2	8.3	15.6	16.0	2.2	2.2	2.0	3.3	4.0	3.4	3.4
Urban except Yerevan	13.2	15.3	16.3	18.7	13.2	12.7	14.7	7.3	5.4	5.5	5.7	4.5	4.2	6.5
Marzes														
Yerevan	8.3	15.3	12.8	24.3	8.3	12.0	10.7	2.9	4.3	3.4	3.5	3.5	3.9	4.1
Aragatsotn	4.0	9.1	13.5	18.0	4.0	16.1	16.5	1.8	1.3	2.2	4.9	4.9	7.5	8.3
Ararat	6.8	13.1	11.2	12.1	6.8	13.0	11.9	2.2	3.1	0.7	2.8	2.0	3.6	4.9
Armavir	10.6	23.7	18.2	21.8	10.6	14.7	16.5	3.2	3.4	3.7	3.1	4.5	2.7	6.7
Gegharkunik	10.9	16.2	16.7	27.5	10.9	20.9	24.1	5.3	5.6	4.0	6.9	9.5	4.3	3.1
Lori	17.4	16.4	22.3	22.2	17.4	17.1	13.7	10.6	4.4	6.8	7.2	6.1	7.1	5.4
Kotayk	9.6	14.6	16.6	15.3	9.6	12.9	22.0	4.2	3.3	5.0	2.9	4.7	3.8	5.6
Shirak	15.2	16.0	20.6	19.5	15.2	14.4	14.9	6.1	6.1	4.0	7.0	6.8	4.6	6.9
Syunik	2.0	3.1	3.8	4.3	2.0	3.1	4.7	1.3	1.9	1.7	1.1	1.9	2.2	2.8
Vayots Dzor	6.9	12.4	9.1	14.9	6.9	12.7	9.2	2.1	1.7	1.1	1.7	2.8	4.0	1.9
Tavush	11.3	9.1	10.1	5.4	11.3	9.8	9.3	2.2	1.7	2.6	2.0	1.6	2.2	2.2

Food security																					
	Food-insecure households (%)							Vulnerable households (%)							Food-secure households (%)						
year	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
Strata																					
Armenia	8.2	9.8	13.6	15.3	12.9	14.1	14.6	39.9	31.4	38.5	34.3	34.2	33.4	28.3	51.9	58.8	47.9	50.4	52.9	52.5	57.1
Urban	10.0	11.8	16.0	17.1	13.9	14.3	14.7	40.7	31.4	37.9	34.8	33.2	31.8	29.2	49.2	56.8	46.1	48.0	52.9	53.9	56.1
Rural	4.6	5.8	9.0	11.6	10.9	13.8	14.4	38.2	31.4	39.6	33.3	36.2	36.5	26.4	57.2	62.8	51.5	55.1	52.9	49.7	59.2
Urban except Yerevan	10.6	11.3	15.4	16.3	13.0	12.8	10.8	39.4	32.6	35.5	37.8	36.4	32.8	25.6	50.0	56.1	49.1	45.9	50.6	54.3	63.5
Marzes																					
Yerevan	9.6	12.3	16.5	17.9	14.8	15.7	18.4	41.9	30.2	40.2	32.1	30.1	30.8	32.7	48.5	57.5	43.2	50.0	55.0	53.5	48.9
Aragatsotn	2.9	1.6	3.6	3.6	7.1	9.4	4.7	13.3	12.8	34.1	24.7	27.9	35.8	28.7	83.8	85.6	62.2	71.6	65.1	54.8	66.6
Ararat	5.0	7.3	12.3	14.1	12.0	12.5	14.1	40.9	31.3	32.7	33.1	30.7	22.5	21.6	54.1	61.4	54.9	52.8	57.3	65.0	64.3
Armavir	6.1	10.8	15.8	25.7	13.7	16.3	13.8	39.2	27.2	39.2	28.9	41.5	43.5	29.6	54.7	62.0	45.0	45.4	44.8	40.2	56.7
Gegharkunik	3.6	8.8	7.5	7.7	6.5	12.4	5.6	47.0	30.5	38.9	28.5	22.9	20.6	15.9	49.4	60.7	53.6	63.7	70.5	67.0	78.5
Lori	14.4	13.7	19.1	18.5	15.2	18.3	16.6	37.8	35.3	41.6	41.0	41.9	35.3	29.4	47.8	50.9	39.3	40.4	42.9	46.5	54.0
Kotayk	12.4	11.8	18.9	15.1	13.2	10.5	14.4	46.2	39.8	42.0	50.6	41.6	42.6	25.0	41.4	48.4	39.1	34.3	45.2	46.9	60.6
Shirak	7.5	5.7	7.5	15.7	14.1	13.4	17.4	45.4	40.6	39.8	32.1	36.7	39.6	27.0	47.0	53.7	52.7	52.2	49.2	46.9	55.6
Syunik	1.3	3.0	5.5	3.8	10.8	9.9	6.8	19.4	18.3	21.7	33.6	38.7	24.1	22.8	79.3	78.7	72.8	62.6	50.5	65.9	70.4
Vayots Dzor	4.8	4.5	11.4	9.5	5.4	4.9	2.4	27.5	24.8	38.3	33.1	28.5	24.3	12.3	67.7	70.7	50.4	57.5	66.2	70.8	85.3
Tavush	6.3	6.8	7.3	7.6	11.0	15.0	15.8	45.8	39.1	38.0	40.2	41.4	50.0	40.6	47.9	54.1	54.7	52.3	47.6	35.1	43.5

6. Summary of the characteristics of food-insecure households

Understanding the characteristics of food-insecure and vulnerable households helps define possible targeting criteria. This section presents a summary of the characteristics of food-insecure households found to be significant throughout the years analyzed. The proxy indicators for the four pillars of food security and key household characteristics were explored and analyzed for their significance. Various tests were performed based on the characteristics of the variables. Anova, T-test and Z-test were performed to analyze whether the difference between the groups was significant, and the results reported are the ones with a mean difference significance level < 0.05. The analysis was done for different years (2008, 2009, 2010, 2012 and 2014), and when the characteristics of food-insecure and vulnerable households were consistently significant, they were reported in the tables below. Empty cells mean that the differences between the food security groups were not significant.

Food availability

Food-insecure and vulnerable rural households:
- are less involved in agriculture; and
- own less livestock.

Table 1: Food availability and food security (2008–2014)

		2008	2009	2010	2012	2014
Own or work on land	Food insecure	87.1%	93.4%		79.1%	
	Vulnerable	92.0%	95.7%		93.8%	
	Food secure	93.5%	96.8%		96.9%	
Livestock Unit owned (mean LSU)	Food insecure	3.2	3.1	1.9	1.7	2.1
	Vulnerable	3.8	4.0	3.7	2.6	2.5
	Food secure	4.7	4.6	3.7	2.9	3.3

Food access

Food-insecure and vulnerable rural households:
- belong to the poorest wealth quintile and are more impoverished;
- commit a higher share of their expenditure to food;
- have a higher share of pensions in their income; and
- have more unemployed adults.

Table 2: Food access and food security (2008–2014)

Wealth		2008	2009	2010	2012	2014
Poorest wealth quintile	Food insecure	38.6%	67.1%	58.2%	65.9%	65.3%
	Vulnerable	23.7%	31.3%	25.5%	30.1%	30.3%
	Food secure	13.9%	5.4%	3.7%	3.6%	4.2%
Below poverty line	Food insecure	53.7%	83.1%	73.2%	80.1%	76.8%
	Vulnerable	42.5%	48.1%	41.5%	41.0%	41.4%
	Food secure	13.3%	11.3%	8.9%	6.3%	5.7%
'Very high' share of food expenditure (>75%)	Food insecure			14.3%	13.2%	12.3%
	Vulnerable			17.3%	15.4%	10.2%
	Food secure			14.1%	7.7%	8.4%

Wealth		2008	2009	2010	2012	2014
Food expenditure share (mean)	Food insecure	56.7%	57.7%	57.9%	56.8%	55.4%
	Vulnerable	59.1%	58.0%	58.0%	57.4%	53.6%
	Food secure	57.8%	56.2%	57.5%	52.1%	51.9%
Income						
Number of income sources (mean)	Food insecure	2.20	2.25	2.29		2.39
	Vulnerable	2.42	2.40	2.55		2.42
	Food secure	2.48	2.37	2.33		2.31
Pension share of total income (mean)	Food insecure	19.6%		20.5%	22.1%	27.1%
	Vulnerable	22.9%		23.1%	29.2%	26.5%
	Food secure	19.9%		20.6%	20.8%	20.7%
Unemployed adult members (share)	Food insecure	27.3%	31.4%	30.0%	22.5%	18.5%
	Vulnerable	15.8%	19.1%	17.5%	14.2%	15.7%
	Food secure	11.4%	13.3%	12.6%	11.9%	11.2%

Demography and education

Food-insecure and vulnerable households:

- are more likely to have a disabled member;

- have a bigger household size; and

- are less educated and invest less of their total expenditure in education.

Table 3: Demography and education by food security (2008–2014)

Household demography		2008	2009	2010	2012	2014
Disabled member in the household	Food insecure	18.2%	27.5%	20.6%	19.9%	21.9%
	Vulnerable	19.9%	19.7%	20.8%	19.1%	18.1%
	Food secure	15.1%	16.5%	15.1%	14.4%	15.8%
Household size	Food insecure	4.19	4.66	4.66	4.68	4.34
	Vulnerable	4.26	4.44	4.42	4.02	4.02
	Food secure	3.90	3.70	3.64	3.67	3.61
Education						
Proportion of adults educated beyond secondary level	Food insecure	18.4%	37.1%	11.3%	38.5%	39.2%
	Vulnerable	19.8%	42.8%	20.3%	40.6%	48.8%
	Food secure	23.5%	49.8%	26.3%	52.3%	50.9%
Share of education expenditure	Food insecure		0.9%		0.4%	
	Vulnerable		1.7%		0.6%	
	Food secure		1.7%		1.1%	
Household head educated to secondary or lower level	Food insecure	84.9%	61.3%	91.5%	62.8%	63.4%
	Vulnerable	82.6%	59.4%	82.4%	62.9%	54.1%
	Food secure	79.6%	52.3%	75.5%	48.8%	50.7%

Food utilization

Food insecure and vulnerable households:

- consume less food in terms of kilocalories, and food of lesser quality (more staples); and

- have a lower intake of vitamin A and iron-rich foods.

Table 4: Food utilization and food security (2008–2014)

Utilization		2008	2009	2010	2012	2014
Vitamin A-rich food consumed (average number of days in one week)	Food insecure	2.41	2.52	2.53	2.61	2.89
	Vulnerable	2.66	2.73	2.70	2.86	3.02
	Food secure	2.88	3.08	2.92	3.32	3.30
Iron-rich food consumed (average number of days in one week)	Food insecure	2.15	1.92	1.89	2.06	1.88
	Vulnerable	2.46	2.26	2.33	2.32	2.34
	Food secure	3.05	2.94	3.00	3.05	3.07

Stability

Food-insecure and vulnerable households:

- had borrowed money more often in the 12 months previous to the survey;

- have more unreliable sources of income;

- have a higher share of remittances in their income.

Table 5: Stability of food security (2008–2014)

Stability		2008	2009	2010	2012	2014
Household members borrowed money (within the last 12 months)	Food insecure		51.9%	48.4%	46.4%	51.0%
	Vulnerable		45.0%	43.9%	41.5%	42.4%
	Food secure		38.0%	34.2%	33.8%	37.8%
Share of debts on annual income	Food insecure			16.3%	25.4%	
	Vulnerable			11.8%	14.0%	
	Food secure			11.5%	10.8%	
>70% of income comes from unsustainable sources	Food insecure	35.4%	37.5%	32.6%	36.1%	22%
	Vulnerable	9.5%	11.2%	10.3%	11.8%	10%
	Food secure	6.2%	13.0%	13.4%	14.2%	13%
Remittances >75% of total income	Food insecure	16.6%	6.6%	4.4%	8.3%	6.1%
	Vulnerable	3.6%	3.1%	2.4%	3.6%	3.3%
	Food secure	2.5%	3.9%	4.3%	4.1%	5.0%

7. Map specifications

The table below describes the specifications of the maps presented in the report.

MAP			
TITLE OF ATTRIBUTE	**DESCRIPTION**	**THRESHOLD**	**SOURCE**
Level 2 Administrative Unit Code			FAO GAUL 2015
FLOODS			
Admin 2 Surface Area at Flood Risk (in km²)			Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Total Admin 2 Surface Area in km²			Calculated in ArcGIS using CO Admin 2 boundaries
Percentage of Admin 2 Surface Area at Flood Risk		Values range from 0 to 41%.	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Maximum Flood Frequency in Admin 2		Values range from 0 to 10 events.	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Percentage of Surface Area at Flood Risk RECLASSIFIED		Using Jenks (Natural Breaks): Percentage of Surface Area at Flood Risk: 0–2% (Low); 3–7% (Medium); > 9% (High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Maximum Flood Frequency in Admin 2 RECLASSIFIED		Using Jenks (Natural Breaks): Maximum Flood Frequency: 0 events (Low); 2 events (Medium); 10 events (High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Flood Risk Score	Percentage of Surface Area at Flood Risk RECLASSIFIED + Maximum Flood Frequency in Admin 2 RECLASSIFIED	Flood Risk Score: 2 (Very Low); 3 (Low); 4 (Moderate); 5 (High); 6 (Very High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Flood Risk Score RECLASSIFIED		Flood Risk Score RECLASSIFIED: 1 (Low); 2 (Medium); 3(High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
LANDSLIDES			
Percentage of Admin 2 Surface Area at Landslide Risk		Values range from 0 to 73%.	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Percentage of Surface Area at Landslide Risk RECLASSIFIED		Using Jenks (Natural Breaks): Percentage of Surface Area at Flood Risk: 0–15% (Low); 16–40% (Medium); > 40% (High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Maximum Landslide Frequency in Admin 2		Values range from 0 to 15 events.	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Maximum Landslide Frequency in Admin 2 RECLASSIFIED		Using Jenks (Natural Breaks): Maximum Flood Frequency: 0 events (Low); 5 events (Medium); 15 events (High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Landslide Risk Score	Percentage of Surface Area at Landslide Risk RECLASSIFIED + Maximum Landslide Frequency in Admin 2 RECLASSIFIED	Landslide Risk Score: 2(Very Low); 3(Low); 4(Moderate); 5(High); 6(Very High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
Landslide Risk Score RECLASSIFIED		Landslide Risk Score RECLASSIFIED: 1 (Low); 2 (Medium); 3(High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
FLOODS + LANDSLIDES			
Flood & Landslide Risk Score	Flood Risk Score RECLASSIFIED + Landslide Risk Score RECLASSIFIED	Flood + Landslide Risk Score: 2(Very Low); 3 (Low); 4 (Moderate); 5 (High); 6 (Very High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016

MAP			
TITLE OF ATTRIBUTE	DESCRIPTION	THRESHOLD	SOURCE
Flood & Landslide Risk Score RECLASSIFIED		Flood + Landslide Risk Score: 1 (Low); 2 (Medium); 3(High)	Original Data: UNEP/UNISDR 2011. Analysis: OMEP GIS January 2016
DROUGHT			
Percentage of Admin 2 Surface Area affected by Poor Growing Seasons 2011–2015		Values range from 0 to 100%	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
Percentage of Admin 2 Surface Area affected by Poor Growing Seasons 2011–2015 RECLASSIFIED		Using Jenks (Natural Breaks): Percentage of Surface Area affected by PGS 2011 - 2015: 0 - 10% (Low); 10 - 80% (Medium); > 80% (High)	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
Maximum Number of Poor Growing Seasons 2011–2015		Maximum number of seasons 2011–2015 with NDVI Vegetation Index < 80% of average. Values range from 0 to 2	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
Maximum Number of Poor Growing Seasons 2011–2015 RECLASSIFIED		Using Jenks (Natural Breaks): Maximum Number of Poor Growing Seasons: 0 (Low); 1 (Medium); 2 (High)	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
Drought Risk Score	Maximum Number of Poor Growing Seasons 2011–2015 RECLASSIFIED + Percentage of Admin 2 Surface Area affected by Poor Growing Seasons 2011–2015 RECLASSIFIED	Drought Risk Score: 2 (Very Low); 3 (Low); 4 (Moderate); 5 (High); 6 (Very High)	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
Drought Risk Score RECLASSIFIED		Drought Risk Score RECLASSIFIED: 1 (Low); 2 (Medium); 3(High)	Original Data: WFP VAM January 2016. Analysis: OMEP GIS January 2016
EARTHQUAKES			
Earthquake acceleration zone			Earthquake zoning 1996. Final Report on Country Situation Review in the Context of National Disaster Risk Assessment and Management in Armenia
Earthquake Acceleration Score RECLASSIFIED		Natural Shocks Risk Score RECLASSIFIED: 1 (Low); 2 (Medium); 3 (High), 4 (very high)	Earthquake zoning 1996. Final Report on Country Situation Review in the Context of National Disaster Risk Assessment and Management in Armenia
MUDFLOWS			
Mudflow risk zone	Capacity/Hazard	Mudflow Zone Score RECLASSIFIED: 1 (Low/less than 5000 cub.m/sq. km per 1 mudflow); 2 (Moderate/5000–15000 cub.m/sq. km per 1 mudflow); 3(High/15000–35000 cub.m/sq. km per 1 mudflow)	Hydro-Meteorological services, national
HAIL STORMS			
Hail zone	Frequency of occurrence during the year, days	Hail Zone Score RECLASSIFIED: 1 (Low/2–8); 2 (Moderate/8–12); 3 (High/more than 12)	Hydro-meteorological services, national
AVERAGE ECOLOGICAL			
CHANGE			

MAP			
TITLE OF ATTRIBUTE	DESCRIPTION	THRESHOLD	SOURCE
Average Change in Ecological Value	Positive values represent an average improvement of ecological classes within the district; negative values represent an average deterioration of ecological classes within the district		Original Land Cover Data: MODIS-NASA 2001 & 2012. Analysis of Land Cover Change: WFP OSEP GIS, January 2016
Average Change in Ecological Value: Positive Values	Positive values represent an average improvement of ecological classes within the district		Original Land Cover Data: MODIS-NASA 2001 & 2012. Analysis of Land Cover Change: WFP OSEP GIS, January 2016
Average Change in Ecological Value: Negative Values	Negative values represent an average deterioration of ecological classes within the district		Original Land Cover Data: MODIS-NASA 2001 & 2012. Analysis of Land Cover Change: WFP OSEP GIS, January 2016
Average Change in Ecological Value: Positive Values RECLASSIFIED		Using Jenks (Natural Breaks): Average Positive Ecological Change: Low (0 to 0.02); Medium (0.02 to 0.06); High (> 0.06)	Original Land Cover Data: MODIS-NASA 2001 & 2012. Analysis of Land Cover Change: WFP OSEP GIS, January 2016
Average Change in Ecological Value: Negative Values RECLASSIFIED		Using Jenks (Natural Breaks): Average Negative Ecological Change: Low (0 to -0.07); Medium (-0.07 to -0.15); High (< -0.15)	Original Land Cover Data: MODIS-NASA 2001 & 2012. Analysis of Land Cover Change: WFP OSEP GIS, January 2016
Percentage of Admin 2 Surface Area with Significant Erosion Propensity		Values range from 0 to 45%	Original Data: FAO global precipitation (1961–1990), FAO global soil map, NASA SRTM DEM (500m), NASA MODIS Land Cover (2012). Analysis: OSEP GIS January 2016
Percentage of Admin 2 Surface Area with Significant Erosion Propensity RECLASSIFIED		Using Jenks (Natural Breaks): Percentage of Area with Significant Erosion Propensity: Low (0 –10%); Medium (10 –25%); High (> 25%)	Original Data: FAO global precipitation (1961–1990), FAO global soil map, NASA SRTM DEM (500m), NASA MODIS Land Cover (2012). Analysis: OSEP GIS January 2016
Percentage of Admin 2 Surface Area with Significant Erosion Propensity RECLASSIFIED			
COMBINED NATURAL SHOCKS			
Natural Shocks Risk Score	Flood & Landslide Risk Score RECLASSIFIED + Drought Risk Score RECLASSIFIED + earthquake risk score + hailstorm reclassified +mudflow reclassified	Each risk was classified using a score of 1 (Low) to 3 (High) as depicted on the individual risk maps. The combined risk was then calculated by summing all the individual risk scores, giving equal weight to each hazard. This calculation yielded a combined risk score ranging from 6 to 18, and the values were grouped into three categories: Low (6 to 9), Medium (10 to 12) and High (13 to 18)	
Natural Shocks Risk Score RECLASSIFIED		Natural Shocks Risk Score RECLASSIFIED: 1 (Low); 2 (Medium); 3 (High)	